

RECORD OF AMENDMENTS

Weekly Notices to Mariners (Section IV)

[illegible]

All charts and publications should be kept up to date with the latest amendments.

NP 39

SOUTH INDIAN OCEAN PILOT

**Comores, Madagascar, Seychelles Group, La Réunion, Mauritius,
Chagos Archipelago and other islands lying westward of
Longitude 90° East.**

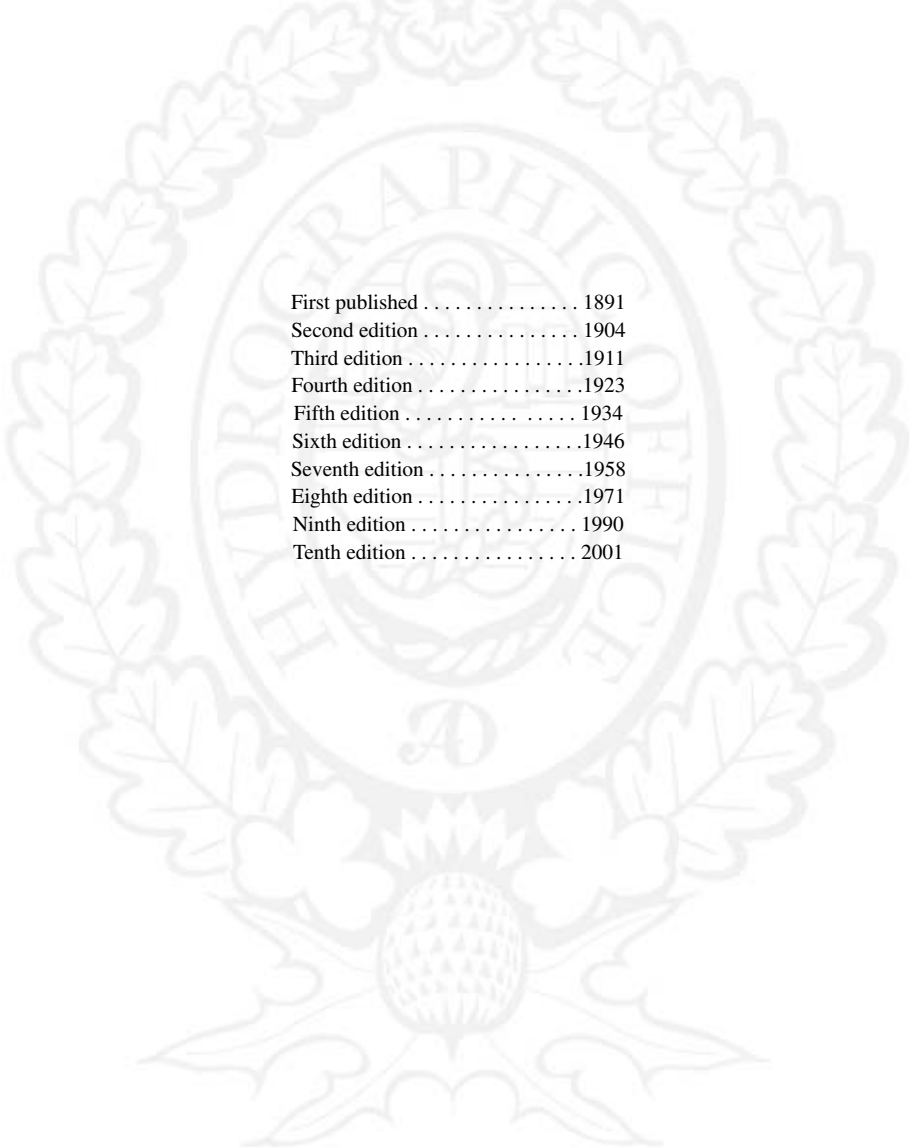
ELEVENTH EDITION

2004

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Tenth edition	2001

PREFACE

The Eleventh Edition of the South Indian Ocean Pilot has been prepared by Captain S. C. Mason, Master Mariner, and Captain J. A. Attwater, Master Mariner, and contains the latest information received in the United Kingdom Hydrographic Office to the date given below.

This edition supersedes the Tenth Edition (2001), which is cancelled.

Information on climate, currents and ice has been based on data provided by the Meteorological Office, Exeter.

The following sources of information, other than UKHO Publications and Ministry of Defence papers, have been consulted:

Fairplay World Ports' Directory 2004.

Guide to Port Entry, 2004.

Instructions Nautiques L9, Îles de L'Océan Indien (Partie Sud), Terre Adélie, 2001 as amended by *Fascicule No 1 de Corrections*

United States Sailing Directions (Planing Guide) Publication 160 for South Atlantic Ocean and Indian Ocean, 2nd Edition 2002.

United States Sailing Directions (Enroute) Publication 171 for South Indian Ocean, 7th Edition 2001.

Whitaker's Almanac, 2004

Statesman's Year Book, 2004.

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27th May, 2004

PREFACE

The Tenth Edition of *South Indian Ocean Pilot* has been compiled by Captain B. C. Smith, Master Mariner, and contains the latest information received in the United Kingdom Hydrographic Office to the date given below.

This edition supersedes the Ninth Edition (1990) and Supplement No 4 (1999), which are cancelled.

Information on climate, currents and ice has been based on data provided by the Meteorological Office, Bracknell.

The following sources of information, other than Hydrographic Office Publications and Ministry of Defence papers, have been consulted:

Diplomatic Service List, 2000.

Fairplay World Ports Directory 2000.

Lloyds Ports of the World 2000.

Guide to Port Entry, 2000.

Instructions Nautiques, Océan Indien Sud, 1991.(corr. to 1998)

United States Sailing Directions (Enroute) for South Indian Ocean, 1995.

East Africa Pilot, by Delwyn McPhun (ILN&W).

Whitaker's Almanac, 2000

Statesman Year Book, 2000.

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15th March, 2001

CONTENTS

	<i>Pages</i>
Preface	iii
Preface to the Tenth Edition	iv
Contents	v
Explanatory notes	vii
Abbreviations	ix
Glossary	xi
Index chartlet	<i>facing 1</i>

CHAPTER 1

Navigation and regulations	
Limits of the book (1.1)	1
Navigational dangers and hazards (1.3)	1
Traffic and operations (1.10)	2
Charts (1.12)	2
Aids to navigation (1.23)	3
Pilotage (1.26)	3
Radio facilities (1.27)	4
Regulations (1.35)	5
Signals (1.48)	6
Distress and rescue (1.49)	6
Piracy and armed robbery (1.58)	7
Countries and ports	
Comores (1.63)	8
Mayotte (1.75)	8
Madagascar (1.85)	9
Seychelles (1.97)	10
La Réunion (1.109)	11
Mauritius (1.119)	12
British Indian Ocean Territory (1.133)	13
French Southern and Antarctic Territories (1.139)	14
Principal Ports, Harbours and Anchorages (1.146)	14
Port services — summary (1.147)	15
Natural conditions	
Maritime topography (1.153)	17
Currents, tidal streams and flow (1.162)	18
Sea level and tides (1.173)	19
Sea and swell (1.175)	19
Sea water characteristics (1.179)	24
Ice conditions (1.182)	24
Climate and weather (1.184)	24
Climatic tables (1.230)	41
Meteorological conversion table and scales (1.246)	56

CHAPTER 2

Central and eastern parts of Mozambique Channel	59

CHAPTER 3

Comores	65

CHAPTER 4

West coast of Madagascar – Cap Sainte Marie to Cap Amparafaka	87

CHAPTER 5

Madagascar – Cap Amparafaka to Pointe D'Angadoka	117

CONTENTS

CHAPTER 6

North-west coast of Madagascar – Pointe D’Angadoka to Cap D’Ambre	139

CHAPTER 7

South and east coasts of Madagascar – Cap Sainte Marie to Baie D’Antongil	163

CHAPTER 8

North-east coast of Madagascar – Baie D’Antongil to Cap D’Ambre	187

CHAPTER 9

Islands north of Madagascar	211

CHAPTER 10

Seychelles Bank including the Seychelles Group with outlying islands	223

CHAPTER 11

Islands and banks east of Madagascar	251

CHAPTER 12

Chagos Archipelago	287

CHAPTER 13

Île Saint-Paul and Île Amsterdam	299

INDEX

Index	303

EXPLANATORY NOTES

Admiralty Sailing Directions are intended for use by vessels of 12 m or more in length. They amplify charted detail and contain information needed for safe navigation which is not available from Admiralty charts, or other hydrographic publications. They are intended to be read in conjunction with the charts quoted in the text.

This volume of the Sailing Directions will be kept up-to-date by the issue of a new edition at intervals of approximately 3 years, without the use of supplements. In addition important amendments which cannot await the new edition are published in Section IV of the weekly editions of *Admiralty Notices to Mariners*. A list of such amendments and notices in force is published in the last weekly edition for each month. Those still in force at the end of the year are reprinted in the *Annual Summary of Admiralty Notices to Mariners*.

This volume should not be used without reference to Section IV of the weekly editions of Admiralty Notices to Mariners.

CD-ROM

Status. A compact disc is provided at the back of this volume. The paper publication of Sailing Directions satisfies the requirements of Chapter V of the International Convention for the Safety of Life at Sea. The CD version does not satisfy these requirements and should only be used in conjunction with the paper publication and any amendments affecting the paper publication. Where any discrepancy exists between data on the CD and in the paper publication of Sailing Directions, the paper publication (inclusive of amendments) is to be relied upon.

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References to hydrographic and other publications

The Mariner's Handbook gives general information affecting navigation and is complementary to this volume.

Ocean Passages for the World and *Routeing Charts* contain ocean routeing information and should be consulted for other than coastal passages.

Admiralty List of Lights should be consulted for details of lights, lanbys and fog signals, as these are not fully described in this volume.

Admiralty List of Radio Signals should be consulted for information relating to coast and port radio stations, radio details of pilotage services, radiobeacons and direction finding stations, meteorological services, radio navigational aids, Global Maritime Distress and Safety System (GMDSS) and Differential Global Positioning System (DGPS) stations, as these are only briefly referred to in this volume.

Admiralty Maritime Communications is a comprehensive guide on all aspects of maritime communications for the yachtsman and small craft user. It provides general information on Global Maritime Distress and Safety System (GMDSS), the management of VHF, Maritime Safety Information, NAVTEX, Inmarsat and Radio Facsimile, and detailed information and procedures for marinas and harbours used by small craft.

Annual Summary of Admiralty Notices to Mariners contains in addition to the temporary and preliminary notices, and amendments and notices affecting Sailing Directions, a number of notices giving information of a permanent nature covering radio messages and navigational warnings, distress and rescue at sea and exercise areas.

The International Code of Signals should be consulted for details of distress and life-saving signals, international ice-breaker signals as well as international flag signals.

Remarks on subject matter

Buoys are generally described in detail only when they have special navigational significance, or where the scale of the chart is too small to show all the details clearly.

Chart index diagrams in this volume show only those Admiralty charts of a suitable scale to give good coverage of the area. Mariners should consult NP 131 *Catalogue of Admiralty Charts and Publications* for details of larger scale charts.

Chart references in the text normally refer to the largest scale Admiralty chart but occasionally a smaller scale chart may be quoted where its use is more appropriate.

Firing, practice and exercise areas. Except for submarine exercise areas, details of firing, practice and exercise areas are not mentioned in Sailing Directions, but signals and buoys used in connection with these areas are sometimes mentioned if significant for navigation. Attention is invited to the Annual Notice to Mariners on this subject.

Names have been taken from the most authoritative source. When an obsolete name still appears on the chart, it is given in brackets following the proper name at the principal description of the feature in the text and where the name is first mentioned.

Tidal information relating the daily vertical movements of the water is not given; for this *Admiralty Tide Tables* should be consulted. Changes in water level of an abnormal nature are mentioned.

Time difference used in the text when applied to the time of High Water found from the *Admiralty Tide Tables*, gives the time of the event being described in the Standard Time kept in the area of that event. Due allowance must be made for any seasonal daylight saving time which may be kept.

Wreck information is included where drying or below-water wrecks are relatively permanent features having significance for navigation or anchoring.

Units and terminology used in this volume

Latitude and Longitude given in brackets are approximate and are taken from the chart quoted.

Bearings and directions are referred to the true compass and when given in degrees are reckoned clockwise from 000° (North) to 359° Bearings used for positioning are given from the reference object.

Bearings of objects, alignments and light sectors are given as seen from the vessel.

Courses always refer to the course to be made good over the ground.

Winds are described by the direction from which they blow.

Tidal streams and currents are described by the direction towards which they flow.

Distances are expressed in sea miles of 60 to a degree of latitude and sub-divided into cables of one tenth of a sea mile.

Depths are given below chart datum, except where otherwise stated.

Heights of objects refer to the height of the structure above the ground and are invariably expressed as "... m in height".

Elevations, as distinct from heights, are given above Mean High Water Springs or Mean Higher High Water whichever is quoted in *Admiralty Tide Tables*, and expressed as, "an elevation of ... m". However the elevation of natural features such as hills may alternatively be expressed as "... m high" since in this case there can be no confusion between elevation and height.

Metric units are used for all measurements of depths, heights and short distances, but where feet/fathoms charts are referred to, these latter units are given in brackets after the metric values for depths and heights shown on the chart.

Time is expressed in the four-figure notation beginning at midnight and is given in local time unless otherwise stated. Details of local time kept will be found in *Admiralty List of Radio Signals Volume 2*.

Bands is the word used to indicate horizontal marking.

Stripes is the word used to indicate markings which are vertical, unless stated to be diagonal.

Conspicuous objects are natural and artificial marks which are outstanding, easily identifiable and clearly visible to the mariner over a large area of sea in varying conditions of light. If the scale is large enough they will normally be shown on the chart in bold capitals and may be marked "conspic".

Prominent objects are those which are easily identifiable, but do not justify being classified as conspicuous.

ABBREVIATIONS

The following abbreviations are used in the text.

Directions

N	north (northerly, northward, northern, northernmost)	S	south
NNE	north-north-east	SSW	south-south-west
NE	north-east	SW	south-west
ENE	east-north-east	WSW	west-south-west
E	east	W	west
ESE	east-south-east	WNW	west-north-west
SE	south-east	NW	north-west
SSE	south-south-east	NNW	north-north-west

Navigation

AIS	Automatic Identification System	Satnav	Satellite navigation
CVTS	Co-operative Vessel Traffic System	TSS	Traffic Separation Scheme
DGPS	Differential Global Positioning System	VMRS	Vessel Movement Reporting System
GPS	Global Positioning System	VTC	Vessel Traffic Centre
Lanby	Large automatic navigation buoy	VTs	Vessel Traffic Services
MCTS	Marine Communications and Traffic Services Centres	VTMS	Vessel Traffic Management System
ODAS	Ocean Data Acquisition System		

Offshore operations

ALC	Articulated loading column	FSO	Floating storage and offloading vessel
ALP	Articulated loading platform	PLEM	Pipe line end manifold
CALM	Catenary anchor leg mooring	SALM	Single anchor leg mooring system
CBM	Conventional buoy mooring	SALS	Single anchored leg storage system
ELSBM	Exposed location single buoy mooring	SBM	Single buoy mooring
FPSO	Floating production storage and offloading vessel	SPM	Single point mooring

Organizations

IALA	International Association of Lighthouse Authorities	NATO	North Atlantic Treaty Organization
IHO	International Hydrographic Organization	RN	Royal Navy
IMO	International Maritime Organization	UKHO	United Kingdom Hydrographic Office

Radio

DF	direction finding	RT	radio telephony
HF	high frequency	UHF	ultra high frequency
LF	low frequency	VHF	very high frequency
MF	medium frequency	WT	radio (wireless) telegraphy
Navtex	Navigational Telex System		

Rescue and distress

AMVER	Automated Mutual Assistance Vessel Rescue System	JRCC	Joint Rescue Cooperation Centre
EPiRB	Emergency Position Indicating Radio Beacon	MRCC	Maritime Rescue Co-ordination Centre
GMDSS	Global Maritime Distress and Safety System	MRSC	Maritime Rescue Sub-Centre
		SAR	Search and Rescue

Tides

HAT	Highest Astronomical Tide	MHWS	Mean High Water Springs
HW	High Water	MLHW	Mean Lower High Water
LAT	Lowest Astronomical Tide	MLLW	Mean Lower Low Water
LW	Low Water	MLW	Mean Low Water
MHHW	Mean Higher High Water	MLWN	Mean Low Water Neaps
MHLW	Mean Higher Low Water	MLWS	Mean Low Water Springs
MHW	Mean High Water	MSL	Mean Sea Level
MHWN	Mean High Water Neaps		

ABBREVIATIONS

Times

ETA	estimated time of arrival	UT	Universal Time
ETD	estimated time of departure	UTC	Co-ordinated Universal Time

Units and miscellaneous

°C	degrees Celsius	kHz	kilohertz
DG	degaussing	km	kilometre(s)
dwt	deadweight tonnage	kn	knot(s)
DZ	danger zone	kW	kilowatt(s)
feu	forty foot equivalent unit	m	metre(s)
fm	fathom(s)	mb	millibar(s)
ft	foot (feet)	MHz	megahertz
g/cm ³	gram per cubic centimetre	mm	millimetre(s)
GRP	glass reinforced plastic	MW	megawatt(s)
grt	gross register tonnage	No	number
gt	gross tonnage	nrt	nett register tonnage
hp	horse power	teu	twenty foot equivalent unit
hPa	hectopascal		

Vessels and cargo

CDC	Certain Dangerous Cargo	MV	Motor Vessel
HMS	Her (His) Majesty's Ship	MY	Motor Yacht
HSC	High Speed Craft	POL	Petrol, Oil & Lubricants
LASH	Lighter Aboard Ship	RMS	Royal Mail Ship
LHG	Liquefied Hazardous Gas	Ro-Ro	Roll-on, Roll-off
LNG	Liquefied Natural Gas	SS	Steamship
LOA	Length overall	ULCC	Ultra Large Crude Carrier
LPG	Liquefied Petroleum Gas	VLCC	Very Large Crude Carrier

GLOSSARY

<i>French</i>	<i>English</i>	<i>French</i>	<i>English</i>
anse	bay, cove	lac	lake
archipel	archipelago	lagune	lagoon
baie	bay, gulf	large	broad, wide
banc	bank, sandbank	manglier	mangrove tree
barre	bar	massif	compact group of mountains
bas	low	méridional, -e	southern
basse	shoal	mont	mountain
blanc, -he	white	montagne	mountain
bleu, -e	blue	morne	hill
bouche	mouth of river	mouillage	anchorage
boue	mud	noir, -e	black
bras	arm	nord	north
cailloux	stones, pebbles	occidental, -e	western
canal	canal, channel	oriental, -e	eastern
cap	cape, headland	ouest	west
cap escarpé	bluff	passe	channel, pass, passage
chenal	channel	palétuvier	mangrove
colline	rounded hill	péninsule	peninsula
corail	coral	petit, -e	small
côte	coast	pic	peak
crête	ridge	pierre	stone
crique	creek, inlet	piton	peak
détroit	strait	plage	shore, beach
digue	mole, breakwater	plateau	tableland or sunken flat
église	church	pointe	point
est	east	pont	bridge
estuaire	estuary	port	port, harbour
extérieur	outer	presqu'île	peninsula
falaise	cliff	promontoire	promontory
fleuve	river	quai	quay, wharf
fond	deep	rade	roadstead
golfe	gulf	récif	reef
grand, -e	great	rivière	river
gris, -e	grey	roche	rock
gros, -se	course, large	rocher	rock, generally above-water
haut, -e	high, tall	rouge	red
haut-fond	a shoal	ruisseau	stream
havre	harbour	sable	sand
île	island, isle	septentrional, -e	northern
îlot	islet	seuil	sill
intérieur	inner	sommet	summit
isthme	isthmus	sud	south
jaune	yellow	tête	head
jetée	jetty	vallée	valley
		vert, -e	green
		vieil, -e	old, ancient
		ville	town

Malagasy

<i>Malagasy</i>	<i>English</i>
abo	high
afiafy	mangroves
alao	sand
ambato	rock
ambo	high
ampanalana	isthmus
andilana	isthmus
andrefana	west
ankora	shells
antitra	old
arano	channel
ararano	channel
atsimo	south
atsinanana	east
avaratra	north
bajina	sand
banja, banjan', banjan' i	basin
be	large, great
bongo	mountain
deboka, debok'	basin
dengin-driaka	trench
dengin' i	deep
dongo	hill
dongoandrano	reef
fanilo	lighthouse
farihy, farihin', farihin' i	lake
fasika, fasina	sand
fiantsonana	anchorage
filao(s)	casuarina(s)
fotadrevo	mud
fotaka	mud
fotsy	white
harama	coral reef, rock
harambato, harambaton', harambaton' i	rock(s)
harandriaka	reef(s)
hatsambato	cliff
helodrano, helodranon', helodranon' i	bay
hoala	gulf
hoatra, hoatran', hoatran' i	shelf
honko	mangroves
horibe	gulf
hory	bay
jia	sand
kely	little, small
kiborintany	hill
kitsotendro, kitsotendron', kitsotendron' i	peak
kôsy, kôsin', kôsin' i	plateau
lalandriaka	stream
lakandrano, lakandranon', lakandranon' i	canal, channel
lava	long
lehibe	large, great
lemaka, lemak', lemak' i	plain
lembalemba, lembalemban', lembalemban' i	plain or plateau
loha	head, mountain
lohasaha	valley
lohatanjona, lohatanjon', lohatanjon' i	point

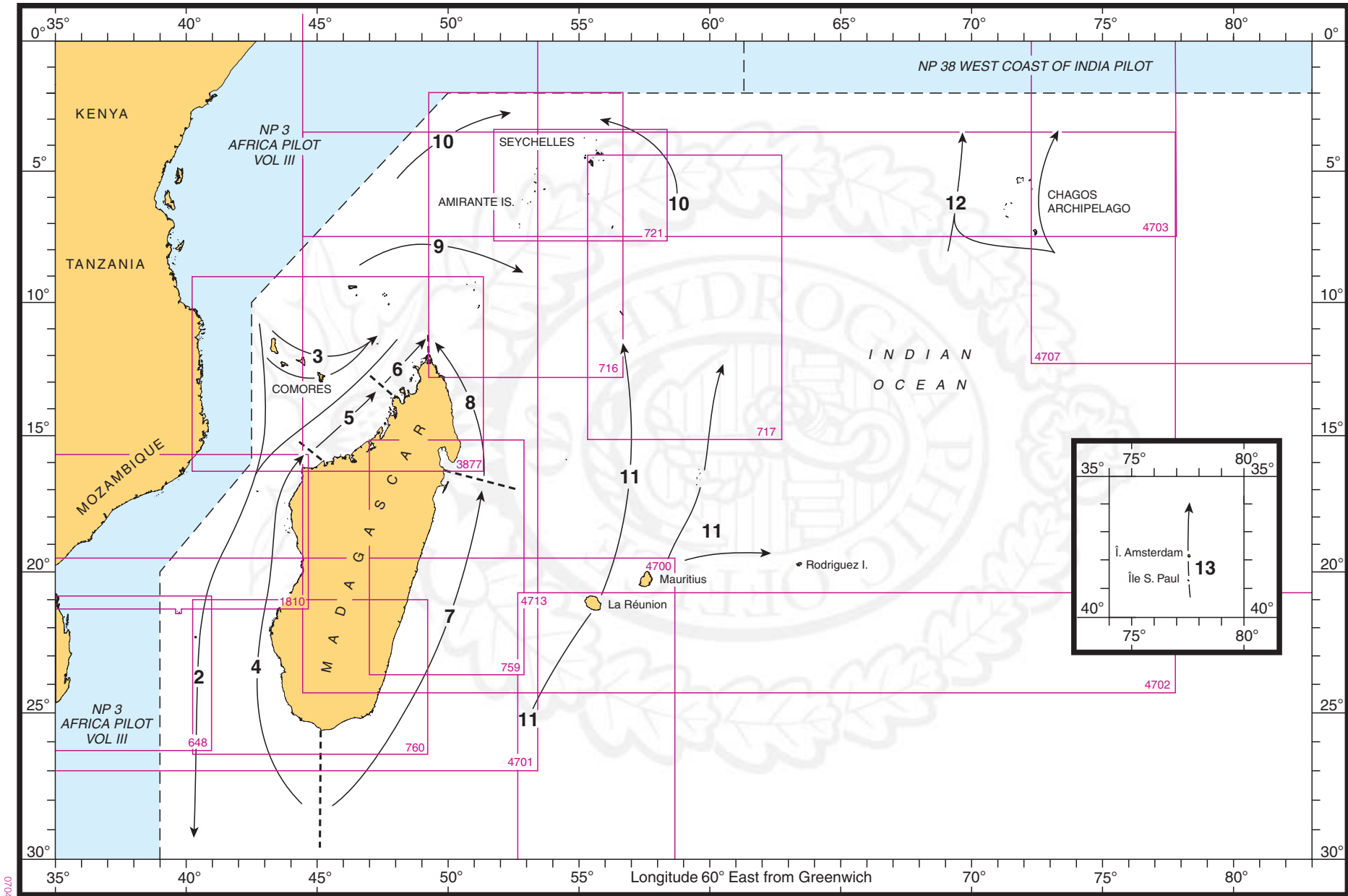
<i>Malagasy</i>	<i>English</i>
lovoka	bay
lovokely	cove
lozoka, lozok', lozok' i	canyon
mainty	black
maitso	green
malandy	striped
manga	blue
masay	little, small
mavo	yellow
mena	red
morotsangana	cliff
mpanamory	pilot
nosy, nosi	island
onibe	large river
ony	river, stream
orompasika	sandspit
oronjia	sandspit
orontany	peninsula, cape
riambe, riamben', riamben' i, riamben' ny	waterfall
riana	torrent, cascade, waterfall
rofia	palm trees
rova	fort
saha	river
saikanosy, saikanosin', saikanosin' i	peninsula
sakasaka	stream
seranana	port
tafia	tidal port
tafiana	harbour, anchorage
tahalaka	sea wall
tambohondrano	sandbank
tamboketsa, tampoketsa	plateau
tampo	peak, summit
tampolo	lagoon
tanambe	town
tanana	village
tanana-dehibe	town
tandava, tandavan', tandavan' i	mountain range
tangorombohitra, tangorombohitr', tangorombohitr' i	compact group of mountains
tanga	mangroves
tanikely	isthmus
tanjona, tanjon', tanjon' i	cape
tany mandrevo	mudbank
tendro	summit
tendrombohitra, tendrombohitr'	mountain
tetexana	bridge
tetezan-driaka	wharf, landing stage
tetezan-tany	jetty
todiana, toliana	port, anchorage
torabe, toraben', toraben' i, toraben' ny	large bank
toraka, torak', torak' i, torakin' ny, toraky' ny	bank(s), shoal(s)
tsiraka	point, peninsula
vato	reef, rocks
vatobe	rock, generally above-water
vava, vavo	river mouth
vavarano	strait
vavarano kely	creek
vinanibe	estuary
vinanihefaka, vinanihefak',	

GLOSSARY

<i>Malagasy</i>	<i>English</i>	<i>Malagasy</i>	<i>English</i>
vinanihefak' i	delta	vohitra	mountain
vinanindrano	confluence	zanabongo	hill
vinany	river mouth		



Chapter Index Diagram



LAWS AND REGULATIONS APPERTAINING TO NAVIGATION

While, in the interests of the safety of shipping, the United Kingdom Hydrographic Office makes every endeavour to include in its hydrographic publications details of the laws and regulations of all countries appertaining to navigation, it must be clearly understood:-

- (a) that no liability whatever will be accepted for failure to publish details of any particular law or regulation, and
- (b) that publication of details of a law or regulation is solely for the safety and convenience of shipping and implies no recognition of the international validity of the law or regulation.

SOUTH INDIAN OCEAN PILOT

CHAPTER 1 NAVIGATION AND REGULATIONS COUNTRIES AND PORTS NATURAL CONDITIONS

NAVIGATION AND REGULATIONS

LIMITS OF THE BOOK

Île Saint Paul (38°43'S, 77°33'E) and Île Amsterdam
(52 miles N).

Charts 4070, 4071, 4072, 4073

1.1

- 1 **Area covered.** This volume contains Sailing Directions for waters around the islands lying in the sea area contained within a line joining the following positions:

45°00'S, 39°00'E
20°00'S, 39°00'E
16°00'S, 42°30'E
2 10°00'S, 42°30'E
2°00'S, 50°00'E
2°00'S, 90°00'E
45°00'S, 90°00'E
45°00'S, 39°00'E

1.2

- 1 The principal islands and groups are:
Islands in the central and E parts of Mozambique Channel between Île Europa (22°20'S, 40°21'E) and Îles Glorieuses (11°33'S, 47°18'E).
Comores (Comoro Islands) which lie in a chain across the N entrance to Mozambique Channel.
Madagascar, on the E side of Mozambique Channel.
2 Islands N of Madagascar between Aldabra Island (Group) (9°25'S, 46°20'E) and Providence Island (9°13'S, 51°02'E).
Les Amirantes (Amirante Isles) (5°35'S, 53°15'E).
Seychelles Group (4°37'S, 55°28'E).
(Île de) La Réunion (21°05'S, 55°30'E).
Mauritius (20°17'S, 57°35'E).
3 Islands E of Madagascar between Île Tromelin (15°53'S, 54°31'E), Rodriguez Island (19°43'S, 63°25'E) and Agalega Islands (10°26'S, 56°40'E).
Chagos Archipelago (6°00'S, 72°00'E).

NAVIGATIONAL DANGERS AND HAZARDS

Coastal conditions

1.3

- 1 **Madagascar.** Almost the entire W and NW coasts of Madagascar are fronted by steep-to banks or chains of shoals extending, in places, far offshore. Numerous dangers lie on the banks and there may be others, as yet undiscovered, anywhere off these coasts.

Seychelles Group (4°30'S, 55°30'E) is dangerous to approach across Seychelles Bank, except as recommended in the text.

1.4

- 1 **Rollers,** described in *The Mariner's Handbook*, affect La Réunion (21°05'S, 55°30'E), Mauritius (20°17'S, 57°35'E) and Rodriguez Island (19°43'S, 63°25'E).

In the cyclone season (1.211) they may provide good indication of an approaching or developing storm.

The phenomenon occasionally lasts for four or five days; great damage is frequently inflicted on harbour installations and all communication is stopped, through rarely longer than for 24 hours.

Navigation amongst coral

1.5

- 1 Full information is given in *The Mariner's Handbook*.

Navigation over banks

1.6

- 1 Caution should be exercised, particularly in vessels of deep draught, when crossing the banks in the area covered by this volume; many are imperfectly surveyed and the area is subject to earthquakes and volcanic activity which

could cause shoals to build up even on well surveyed banks.

Navigation marks

1.7

- 1 **Caution.** In many places throughout this volume, due to a lack of other navigational mark or aid, use has been made of previously reported, and sometimes charted, features which include conspicuous trees and wrecks. Since these features are particularly vulnerable to the effects of weather considerable caution should be observed in their

use. In addition, where possible, such marks should not be used as the sole means of fixing a vessel's position.

Piracy

1.8

- 1 See 1.60.

Ice

1.9

- 1 The area described in this volume is generally free from the hazards of ice; for further details see 1.182.

TRAFFIC AND OPERATIONS

Fishing

1.10

- 1 The following is a summary of fishing activities likely to be encountered:

Type of fishing	Sailing canoes	Motorised boats length <10m	Auxiliary sloops length 9–14m	Shrimp trawlers length <25m	Dories <25m with mother ships	Tuna long-liners length <30m	Tuna boats 600 to 2500gt	Lobster fishing vessels length <35m	Ocean going trawlers
Fishing technique	Traps Handlines Gillnets	Traps Handlines Trolling Gillnets	Traps Handlines Trolling	Trawlers (Single and twin rig)	Traps Handlines	Deep longlines	Purse seine	Traps	Trawl
Season (see notes below)	a	a	b	c	d	e	f	g	h
Comores	x	x				x	x		
Madagascar	x	x		x		x	x		
Seychelles Bank		x	x			x	x		
La Réunion		x							
Mauritius		x							
Rodriguez Island		x							
Waters S of Mauritius						x			
Soudan Bank					x	x			x
Nazareth Bank					x	x			x
Saya de Malha Bank					x	x			x
Chagos Archipelago					x	x	x		
Île Saint Paul								x	
Île Amsterdam								x	

- 2 Notes:

- (a) All year.
 (b) All year, with maximum activity from October to May, minimum June to September.
 (c) Mainly October/November to May.
 3 (d) Mother ships from La Réunion and Mauritius with fleets of 10 to 15 dories fish Mascarene Plateau and Chagos Archipelago from October to May.
 (e) Main seasons are August to January in waters between Madagascar and the Equator, and January to June in waters S of Mauritius.
 (f) All year, with main season from September to March in the area Madagascar/Seychelles Bank/Chagos Archipelago.
 4 (g) Lobster boats are based in La Réunion; no further information available.
 (h) All year on Saya de Malha Bank by Russian Federation trawlers on passage to and from the Southern Ocean; no further information available.

Offshore oil and gas operations

1.11

- 1 Vessels conducting seismic surveys may be encountered on Seychelles Bank which is considered to have hydrocarbon potential; they may also be found on the banks of Mascarene Plateau, SSE of Seychelles Bank, and around Madagascar.
 Vessels conducting these surveys should be given a wide berth; for method of survey see *The Mariner's Handbook*.

CHARTS

Admiralty charts

Comores

1.12

- 1 Admiralty charts are based on French charts of the period 1954 to 2000, except for some harbour plans which date from the late nineteenth century. French charts are compiled from French government surveys or, in some

cases, surveys undertaken by the Madagascar Hydrographic Service, of similar date. All surveys post-1959 are of Ile de Mayotte, a French department, or Mutsamudu, the principal port of Comores.

Madagascar

1.13

- 1 Admiralty charts of waters around Madagascar are based almost entirely on French charts of the late nineteenth and early twentieth centuries and the period 1941 to 1968. French charts are compiled from French government surveys of similar date; the more modern surveys are mainly of ports, harbours and anchorages and of the E coast of the island between Toamasina and Tanjon' Antsirakosy.

Seychelles Group and outlying islands

1.14

- 1 Admiralty charts of waters in the vicinity of the islands of Seychelles Group and of the outlying islands to the S and SW depend mainly on modern Admiralty surveys; the port of Victoria and some small areas in the approaches are charted from modern Seychelles government surveys. Some small areas in the vicinity of the islands of the main group and in Les Amirantes are charted from late nineteenth century Admiralty surveys.

La Réunion

1.15

- 1 The Admiralty charts of La Réunion are based on French government charts of 1996 and 1998. French charts are compiled from French government sources of the period 1982 to 1995 covering the entire area around La Réunion.

Mauritius and Rodriguez Island

1.16

- 1 Charts are compiled from late nineteenth century Admiralty surveys, except for those of Port Louis and part of Grand Port which are based on modern commercial surveys.

Chagos Archipelago

1.17

- 1 Diego Garcia is charted from modern Admiralty and United States government surveys. Charts and plans of the remainder of the archipelago are based on old Indian Navy and Admiralty surveys, with additions from modern US government data and satellite imagery.

Outlying islands, atolls and reefs

1.18

- 1 Charts or plans of Île Juan de Nova, Assomption Island, Aldabra Island and Astove are based on modern surveys. The other islands and dangers are charted from late nineteenth century surveys; these include Île Saint Paul and Île Amsterdam which are based on French government surveys of this period.

Oceanic charts

1.19

- 1 These are based mainly on ships' passage soundings dating from the early nineteenth century to the present day; the information available is sparse.

Datums

1.20

- 1 Horizontal datums used for Admiralty charts are, in general, the same as those of the charts on which they are based. These are generally not the same as that to which satellite navigation systems are referred and the differences, where known, are normally given on the charts. When this difference is not quoted it should not be assumed to be negligible as it may be significant to navigation.

Planning charts

1.21

- 1 There are planning charts available for the area covered by this pilot. For details see *Catalogue of Admiralty Charts* (NP 131).

Foreign charts

1.22

- 1 In certain areas where Admiralty charts of Comores and Madagascar show insufficient detail for navigation close inshore these Sailing Directions have been written using French charts. These are not quoted as reference charts in the text, which has been written on the assumption that mariners wishing to navigate in these areas will have provided themselves with suitable charts on which to do so.
- 2 French charts can be obtained from the publishing authority shown in the *Catalogue of Admiralty Charts* and from agents listed in the International Hydrographic Bureau *Catalogue of Agents for Sale of Charts*.

AIDS TO NAVIGATION

Lights

Comores and Madagascar

1.23

- 1 The navigational lights on the coasts of Comores and Madagascar are frequently reported to be extinguished or irregular; details are given in the *Admiralty List of Lights Volume D*.

Buoyage

International Association of Lighthouse Authorities (IALA) Maritime Buoyage System (Region A)

1.24

- 1 This system (red to port) is in use in the waters of Ile de Mayotte, Seychelles Group, La Réunion and Diego Garcia; in 1989, this system was in course of implementation in waters around Madagascar. A description of the system is given in *The Mariner's Handbook*.

Other buoyage systems

1.25

- 1 When the characteristics of buoys in use in other areas are not charted, these are given at the appropriate place in the text; this includes those waters of Madagascar where the IALA System has not been introduced.

Caution. Buoyage around Madagascar cannot be relied upon.

PILOTAGE

Regulations

1.26

- 1 No national pilotage regulations are in force in any of the countries covered by this volume. Regulations for

individual ports are given at the appropriate place in the text, or in *Admiralty List of Radio Signals Volumes 6(3) or 6(4)*.

RADIO FACILITIES

Position fixing systems

Satellite navigation systems

1.27

- 1 **Global positioning system.** The Navstar Global Positioning System (GPS), a military satellite navigation system owned and operated by the United States Department of Defense, provides world wide position fixing.

The system is referenced to the datum of the World Geodetic System 1984 (WGS84) and therefore positions obtained must be adjusted, if necessary, to the datum of the chart being used.

- 2 **Global Navigation Satellite System.** The Russian Global Navigation Satellite System (GLONASS) is similar to GPS in that it is a space-based navigation system which provides world wide position fixing.

The system is referenced to the Soviet Geocentric Co-ordinate System 1990 (SGS-90) and as for GPS positions must be adjusted, if necessary, to the datum of the chart being used.

- 3 **DGPS.** Differential GPS compares the position of a fixed point, referred to as the reference station, with positions obtained from a GPS receiver at that point. The resulting differences are then broadcast as corrections to suitable receivers to overcome the inherent limitations of GPS.

Within the area covered by this volume DGPS data is not available.

- 4 **Caution.** Satellite navigation systems are under the control of the owning nation which can impose selective availability or downgrade the accuracy to levels less than that available from terrestrial radio navigational systems. Therefore satellite based systems should only be utilised at the user's risk.

For full details on the above systems see *Admiralty List of Radio Signals Volume 2*.

Electronic position fixing systems

1.28

- 1 There are no electronic position fixing systems in the area covered by this pilot.

Racons

1.29

- 1 The only racon in the area covered by this pilot is at Port Louis in Mauritius. For details see *Admiralty List of Radio Signals Volume 2*.

Radio stations

1.30

- 1 For full details on all radio stations which transmit in the area covered by this volume see *Admiralty List of Radio Signals Volume 1(1)*.

Radio navigational warnings

1.31

- 1 The area covered by this volume lies within the limits of NAVAREAS VII, VIII and X, and HYDROPAC long range warning services of the World-Wide Navigational Warning Service (WWNWS).

NAVAREA VII warnings are issued by the Hydrographic Office, Republic of South Africa, and are broadcast through:

- 2 a) Cape Town for the whole of Navarea VII,
b) SafetyNET (Enhanced Group Calling International SafetyNET).

NAVAREA VIII warnings are issued by the Chief Hydrographer to the Government of India, and are broadcast through:

- a) Mumbai (Bombay) Naval Radio (VTG) for the whole of Navarea VIII, or,
3 b) Vishakhapatnam Naval Radio (VTP) for the whole of Navarea VIII,
c) By Navtex from Mauritius,
d) SafetyNET (Enhanced Group Calling International SafetyNET).

NAVAREA X warnings are issued by the Maritime Duty Officer, Australian Maritime Safety Authority (AMSA), and are broadcast through:

- 4 a) SafetyNET (Enhanced Group Calling International SafetyNET).

HYDROPAC warnings are issued by the National Imagery and Mapping Agency, USA, and broadcast through:

- a) Guam (NRV) (US Coastguard).
b) Honolulu (NMO) (US Coastguard).
5 For full details see *Admiralty List of Radio Signals Volumes 3(1), 3(2) and 5*.

Radio weather reports

METAREAS VII, VIII and X warnings/bulletins

1.32

- 1 The World Meteorological Organization (WMO) has established a global service for the broadcast of high seas weather warnings and routine weather bulletins, through the Enhanced Group Calling International SafetyNET Service. METEOROLOGICAL service AREAS (METAREAS) are identical to the 16 NAVAREAS within the World-Wide Navigational Warning Service (WWNWS).

- 2 Each METAREA has a designated National Meteorological Service responsible for issuing high seas weather warnings and bulletins. The designated authorities are not necessarily in the same country as the NAVAREA co-ordinators. Weather Warnings and routine bulletins are broadcast through:

- 3 a) National coast radio stations.
b) SafetyNET (Enhanced Group Calling International SafetyNET).

For broadcast details, including radio-facsimile broadcasts, see *Admiralty List of Radio Signals Volume 3(1), 3(2) and 5*.

Radio medical advice

1.33

- 1 Mariners may obtain medical advice by radio through the International Radio-Medical Centre (CIRM) in Rome. Medical advice may also be obtained from radio stations in India, Madagascar, Mauritius, Seychelles and South Africa. For further information, and for details of the coast radio stations, see *Admiralty List of Radio Signals Volumes 1(1) and 1(2)*.

Piracy reports

1.34

- 1 Piracy warnings are received and issued on a world wide basis by the Piracy Reporting Centre (PRC) at Kuala Lumpur in Malaysia and by the SafetyNET System; see

1.58 and *Admiralty List of Radio Signals Volumes 1(1), 1(2) and 5* for further information.

REGULATIONS

International regulations

Submarine cables

1.35

- 1 Mariners are warned that every care should be taken to avoid anchoring, trawling or other activities in the vicinity of submarine cables on account of the serious consequences which would result from fouling them. Submarine cables may contain high voltages and contact with them, or proximity to them, poses an extreme danger. If a submarine cable is fouled it should never be cut. See *The Mariner's Handbook* for information on the *International Convention for the Protection of Submarine Cables*.

Submarine pipelines

1.36

- 1 **Caution.** Mariners are advised not to anchor nor trawl in the vicinity of pipelines. Gas from a damaged oil or gas pipeline could cause an explosion, loss of a vessel's buoyancy or other serious hazard. Pipelines are not always buried and may effectively reduce the charted depth by as much as 2 metres. They may also span seabed undulations and cause fishing gear to become irrecoverably snagged, putting a vessel in severe danger. See *Admiralty Annual Notice to Mariners No 24* and *The Mariner's Handbook*.

Pollution

1.37

- 1 *The International Convention for the Prevention of Pollution from Ships 1973* was adopted by the International Conference on Marine Pollution convened by IMO in 1973. It was modified by the Protocol of 1978 relating thereto and adopted by the International Conference on Tanker Safety and Pollution Prevention convened by IMO in 1978. The convention, as modified by the protocol, is known as *MARPOL 73/78*.
- 2 The convention consists of six annexes: Annex I (Oil), Annex II (Noxious Liquid Substances in Bulk), Annex III (Harmful Substances carried at sea in Packaged Form), Annex IV (Sewage from Ships), Annex V (Garbage from Ships) are mandatory, and Annex VI (Air Pollution from Ships) which comes into force on 19th May 2005.
- 3 **Facilities for the disposal of oily waste and garbage,** where known, are described in other facilities, under the appropriate port; see also 1.152.
Anti-pollution laws are strictly enforced in areas of this volume.
For further details see *The Mariner's Handbook* and for additional national regulations see 1.40 to 1.47.

Areas to be Avoided

1.38

- 1 IMO-adopted "Areas to Avoided" have been established to prevent risk of pollution and damage to the environment, including unique wildlife, as follows:
Around Aldabra and Assomption Islands, over an area, radius 30 miles, centred on 9°36'S, 46°21'E (see 9.5).
- 2 On the Seychelles Bank; two extensive areas covering most of the bank with access channels to Victoria on Mahé (see 10.7).

National regulations

Federal Islamic Republic of Comores

1.39

- 1 **Prohibited fishing areas.** Foreign vessels which have traditionally fished the waters around the islands of Comores are permitted to do so, but only at distances of 6 miles or more from their coasts; other foreign vessels are prohibited from fishing inside territorial waters (1.64).

Democratic Republic of Madagascar

1.40

- 1 **Pollution.** Discharge of oil products into the sea is forbidden:
Within 100 miles of the coast of Madagascar W of the meridians of Tanjon' i Vohimena, the S point of the island, and of Tanjon' i Bobaomby, the N point, and;
- 2 Within 150 miles of the coast E of the same meridians.

Discharge of sewage, garbage or any other pollutant into the territorial waters of Madagascar (1.86) is prohibited.

1.41

- 1 **Prohibited fishing areas.** Except in case of emergency or distress, foreign fishing vessels are prohibited from stopping or anchoring in territorial waters off the ports of Tuléar, Mahajanga, Andoany, Tôlaïaro, Toamasina and Antsiranana; temporary anchorage can be authorized, however, in certain circumstances.

1.42

- 1 **Health regulations** include a requirement that any person entering Madagascar from Comores or Kenya, whether vaccinated against cholera or not, must report daily, for five consecutive days after arrival, to the local health authority; failure to comply with this requirement entails deportation.

Republic of Seychelles

1.43

- 1 **Pollution.** Masters of vessels calling anywhere in the Republic of Seychelles (1.97) are advised to acquaint themselves thoroughly with the Seychelles Marine Pollution Regulations 1981, obtainable through their Agents.
As environmental protection measures against pollution, Areas to be Avoided have been established around Aldabra Island and Assomption Island, and on Seychelles Bank; details are given at 9.5 and 10.8, respectively.

1.44

- 1 **Entry.** No vessel may call at any island of Seychelles Group unless permission has been obtained from the authorities at Victoria.
- 2 **Quarantine.** Pratique may be obtained by radio; see *Admiralty List of Radio Signals Volume 1(1)* for further information. Otherwise, pratique is normally only granted at Victoria, where the Port Medical Officer boards, but clearance may be given at the outer islands, by prior arrangement.
- 3 Visiting yachts are strictly controlled and may only use certain specified anchorages.

Masters of vessels, including yachts, wishing to call at any of the islands with animals or birds on board must give full details in writing, in advance of arrival, to the Chief Veterinary Officer, Department of Agriculture, PO Box 54, Mahé, Seychelles; strict control is exercised.

Territories under French administration

1.45

- 1 **Administrative areas** - Mayotte (1.75), La Réunion (1.109) and Île Amsterdam and Île Saint Paul (1.139).

Single-hulled tankers carrying heavy petroleum products are not permitted to enter, leave or anchor at ports under French jurisdiction in accordance with *EC Directive 417/2002*, which directive establishes an implementation programme depending on the age and category of the tankers.

- 2 **Quarantine** -Vessels entering French waters from a port outside the European Union should hoist, by day Flag "Q" International Code and by night, but only within port limits, a red light over a white light.

The Master of a foreign-going vessel is required to inform the Port Health Authority by radio of any case of illness suspected to be of an infectious nature, see *Admiralty List of Radio Signals Volume 1(1)*.

- 3 Quarantine regulations are strictly enforced, particularly against bubonic plague, cholera and small pox.

Republic of Mauritius

1.46

- 1 **Quarantine.** Pratique can be obtained at Port Louis where vessels are boarded by the Port Health Officer; communication with the shore anywhere in Mauritius is forbidden until pratique is granted.

See 11.256 for regulations at Rodriguez Island.

Île Amsterdam and Île Saint Paul

1.47

- 1 **Pollution.** The dumping of garbage and discharge of oily waste in territorial waters (1.140) is forbidden.

Entry. La Cale (base "Martin de Viviers") on Île Amsterdam at Roche Godon (13.20) is the port of entry for both islands.

- 2 Île Saint Paul is a protected zone for its environment and heritage and access is prohibited without permission, for which three months notice, or three days in exceptional circumstances, must be given to the District Officer (1.142).

Quarantine - see 1.45.

- 3 **Protection of wildlife.** Hunting and fishing on the islands is only permitted with the authority of the District Officer.

No animal or vegetable may be introduced into the islands without the permission of the District Officer.

SIGNALS

International signals

Madagascar

1.48

- 1 **Storm signals** agreed by the International Convention for the Safety of Life at Sea and the World Meteorological Organisation are shown at certain ports as indicated in the text, see *The Mariner's Handbook*.

DISTRESS AND RESCUE

General information

1.49

For general information concerning distress and safety, including helicopter assistance, see *Annual Summary of Admiralty Notices to Mariners* and *The Mariner's Handbook*.

Global Maritime Distress and Safety System (GMDSS) 1.50

- 1 Throughout the waters covered in this book the principal means of searching for and assisting persons in distress is via the Global Maritime Distress and Safety System (GMDSS).
- 2 The basic concept of GMDSS is that Search and Rescue (SAR) organisations ashore, as well as shipping in the immediate vicinity, will be rapidly alerted to a distress incident so that they can assist in a co-ordinated SAR operation. Within the regions covered, there are National SAR Agencies and Maritime Rescue Co-ordination Centres (MRCCs) or Rescue Co-ordination Centres (RCCs):
- 3 Within the area of this volume there are Search and Rescue Regions (SRRs) for Australia, India, Madagascar, Maldives, Mauritius, Réunion (France), Seychelles and South Africa, and small parts of the SSRs of Mozambique and Tanzania; for full details including diagrams, and a list of Digital Selective Calling (DSC) stations, see *Admiralty List of Radio Signals Volume 5*.

Ship reporting systems

Automated Mutual-assistance Vessel Rescue System (AMVER)

1.51

- 1 The Automated Mutual Assistance Vessel Rescue System (AMVER) provides world wide cover giving important aid to the development and co-ordination of Search and Rescue (SAR) efforts in many offshore areas of the world. It is operated by the United States Coast Guard, and merchant vessels of all nations making offshore voyages are encouraged to send movement reports and periodic position reports to the U.S. Coastguard AMVER Centre in Martinsburg, West Virginia.
- 2 US Maritime Administrative regulations require certain US flag vessels and foreign flag "War Risk" vessels to report and regularly update their voyages to the AMVER Centre.

Details are given in *Admiralty List of Radio Signals Volumes 1(1) and 1(2)*.

India

1.52

- 1 **The Indian Ship Position and Information Reporting System (INSPIRES)** covers, within the limits of this volume, waters N of a line joining positions:
 - (a) on the African coast in Lat 10°30'S
 - (b) 10°30'S, 55°00'E
 - (c) 30°00'S, 55°00'E
 - (d) 30°00'S, 95°00'E and thence N to the coast of Sumatra.

- 2 The system is mandatory for all Indian merchant ships over 300 gt, and other vessels within the area are encouraged to participate in the system. The purpose of the system is to provide data for SAR operations, vessel traffic management, weather forecasting and the prevention and containment of marine pollution. Participating vessels should send regular reports via selected Indian coast radio stations.

- 3 Details are given in *Admiralty List of Radio Signals Volumes 1(1) and 5*.

1.53

- 1 **INDSAR** is a voluntary ship reporting system for foreign vessels over 300 gt inaugurated in 2003 and operated by the Indian Coast Guard through the MRCC in

Mumbai (Bombay). It is supplementary to INSPIRES (1.52) and is an integral part of the Indian Maritime SAR system covering the area of their SRR.

- 2 Details, including the coverage area, are given in *Admiralty List of Radio Signals Volumes 1(1) and 5*.

Madagascar

1.54

- 1 Mariners navigating within the area bounded by latitudes 5°S and 30°S, and longitude 60°E and the coast of Africa, are asked to make daily position reports through the nearest coast radio station in Madagascar.

Details are given in *Admiralty List of Radio Signals Volume 1(1) and 5*.

South Africa

1.55

- 1 **The South African Ship Reporting System (SAFREP)** covers the waters in this volume W 45°E and S of 26°50'S, and is a voluntary system for all vessels to assist in SAR. Reports may be sent via South African coast radio stations or Inmarsat.

Full details, including coverage area, are given in *Admiralty List of Radio Signals Volume 1(1) and 5*.

Australia

1.56

- 1 **The Australian Ship Reporting System (AUSREP)** covers waters in this volume E of a line joining positions:
 - (a) 45°00'S, 75°00'E
 - (b) 6°00'S, 75°00'E
 - (c) 2°00'S, 78°00'E
- 2 AUSREP is operated by the Australian Maritime Safety Authority (AMSA) to assist in SAR, and participation is mandatory for Australian vessels, including those under demise charter to Australian companies, and vessels engaged with coastal trade, including with an external territory; other vessels are encouraged to participate. AUSREP is an integral part of the Australian Maritime SAR system. Reports may be sent via Inmarsat, the preferred method, or coast radio stations.
- 3 Full details, including coverage area, are given in *Admiralty List of Radio Signals Volumes 1 (2) and 5*.

Other services

Chagos Archipelago

1.57

- 1 A continuous listening watch is maintained at Diego Garcia for distress traffic; for details see *Admiralty List of Radio Signals Volume 5*.

PIRACY AND ARMED ROBBERY

General information

1.58

- 1 The United Kingdom Maritime and Coastguard Agency (MCA) has brought to the attention of shipowners, masters

and crews, the risk of acts of piracy on the high seas or armed robbery against ships at anchor or when underway through a State's coastal territorial waters. It has outlined the steps that should be taken to reduce the risk of such attacks, possible responses to them and the need to report attacks, both successful and unsuccessful, to the authorities of the relevant coastal State and to the ship's own maritime administration.

- 2 Many attacks involve the use of knives or firearms resulting, in some cases, in death or injury to crew members.

1.59

- 1 Attacks on vessels by armed thieves can take place in international waters as piracy or, more commonly, as armed robbery in the territorial waters of a coastal state, and there have been a recent (2002) increase of vessels being hijacked for ransom.
- 2 Ships may be attacked whilst at anchor off port or whilst underway. Ships underway are usually approached from the stern, but also the sides if the ship has a low freeboard. However, vessels with a high freeboard and travelling in excess of 17 kn have been boarded. Attacks usually take place under cover of darkness, most often between 2200 hours and 0600 hours.
- 3 For further information, including recommended precautions and reporting details, see *The Mariner's Handbook* and 'Piracy and Armed Robbery - Reports' in *Admiralty List of Radio Signals Volumes 1(1) and 1(2)*.

Incidents

1.60

- 1 In the period 2001 to 2003 a few piracy or armed robbery incidents occurred in Madagascar in Diego Suarez and offshore in the Mozambique Channel

Piracy Reporting Centre

1.61

- 1 The International Maritime Bureau (IMB) of the International Chamber of Commerce operates a Piracy Reporting Centre (PRC) at Kuala Lumpur in Malaysia. The PRC broadcasts daily warnings of pirate activity on a world wide basis, see 1.62. The services of the centre are free of charge to all vessels, irrespective of their flag. Masters are requested to report all attacks or attempted attacks to the PRC.

Recommended practices

1.62

- 1 Recommended practices, including anti-attack plans, reporting, radio procedures and responses are all outlined in detail in *Admiralty List of Radio Signals Volumes 1(1) and 1(2)* together with the telephone, telex and fax numbers and e-mail address of the Piracy Reporting Centre at Kuala Lumpur which is fully operational 24 hours a day.
- 2 The International Maritime Organization (IMO) recommends that reports concerning attacks, or suspicious movements which may lead to an attack, should be made to the Rescue Co-ordination Centre (RCC) for the area concerned (1.50). The SafetyNET (Enhanced Group Calling International SafetyNET) System may be used to issue, or receive daily warnings; for further information see *Admiralty List of Radio Signals Volume 5*.

COUNTRIES AND PORTS

COMORES

General description

1.63

- 1 The Federal Islamic Republic of Comores, known to the inhabitants as République Fédérale Islamique des Comores, comprises the islands of Grand Comore, Mohéli and Anjouan. These are the three W islands of a group of four islands which form, geographically, Comores; Ile de Mayotte (1.75) the fourth and E island is a Departmental Collectivity of France.

National limits

1.64

- 1 Territorial sea: 12 miles.
Exclusive Economic Zone: 200 miles (see 1.39 for concessions to foreign fishing vessels).
Archipelago status is claimed. For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.65

- 1 Ile de Mayotte was annexed by France in 1841, all the islands becoming French protectorates towards the end of the nineteenth century. Their subsequent history has been as follows:
- 1914 Attached to Madagascar for administrative purposes.
 - 1947 Became a French Overseas Territory.
 - 1961 Granted internal self-government.
 - 1975 Independence from France declared unilaterally, except for Mayotte, the inhabitants of which elected to remain under French jurisdiction as a Territorial Collectivity administered through La Réunion (1.111).
 - 1992 Referendum brought in a new constitution under which the president is elected as Head of State for a 5-year term, renewable once.
 - 1995 Attempted coup by mercenaries put down by French forces and the president released, but not reinstated.
 - 1997 Anjouan and Mohéli attempted to secede from the federation following a number of years marked by political disruption.
 - 2002 Mayotte became a Departmental Collectivity of France.

Government

1.66

- 1 The state is governed by a Council of Government, headed by a Prime Minister, appointed by an elected President who is the Head of State. Legislative power is vested in a 42-member Legislative Council, directly elected for 4 years in 2 rounds. There is also a 15-member Senate (5 members from each island) which is nominated for 6 years by an electoral college.
The state capital and seat of government is Moroni (3.19) on Grande Comore.

Population

1.67

- 1 The estimated population in 2000 was 706 000 excluding Mayotte. The indigenous inhabitants are a mixture of Malagasy, African, Malay and Arab races.

Languages

1.68

- 1 French and Arabic are the official languages but Comoran, an arabized dialect of Swahili, is the tongue most widely spoken.

Physical features

1.69

- 1 All the islands are mountainous and of volcanic origin (see 1.160 for volcanic activity). Grande Comore is forested. Mayotte is described in greater detail at 1.81.
Ile de Mayotte is the only island to afford safe anchorage at all seasons. The only port where ocean-going vessels can berth is Mutsamudu on Anjouan.

Flora and fauna

Flora

1.70

- 1 Coconut palms are found up to an altitude of about 400m; in windy parts of the islands there are baobab trees and thorns.

Fauna

1.71

- 1 A type of lemur is peculiar to the islands.
The coelacanth, a deep-sea fish, referred to as a "living fossil" and once thought to be extinct, is found in offshore waters.

Industry and trade

Economy

1.72

- 1 The economy is based on agriculture and fishing. Among agricultural products are perfume essence plants, vanilla, copra, cloves and coffee.

Industry

1.73

- 1 Timber for building is produced on Grande Comore; other industry is generally limited to processing of agricultural products for export but does include textiles, furniture, jewellery and soft drinks.
There is some tourism (24 000 foreign visitors in 1999).

Trade

1.74

- 1 Main exports are vanilla, cloves, essential oils, cocoa, copra and coffee. Chief imports are rice, petroleum products, cement, meat, vehicles, and iron and steel.

MAYOTTE

General description

1.75

- 1 Ile de Mayotte is the E of the Comores (1.63), of which it was a politically a part until 1975 when it elected to remain under French jurisdiction.

National limits**1.76**

- 1 Limits are the same as those for France, namely:
Territorial sea: 12 miles.
Contiguous Zone: 24 miles.
Exclusive Economic Zone: 200 miles.
For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History**1.77**

- 1 See 1.65

Government**1.78**

- 1 The island is administered by a 17 member General Council elected for a six year term, with the French Government represented by an appointed Prefect. Mayotte has one Deputy in the French National Assembly and one member in the Senate. In 2004 executive powers are to be transferred from the Prefect to the President of the General Council.

Population**1.79**

- 1 The population in 2002 was 160 265. The indigenous inhabitants are a mixture of Malagasy, African, Malay and Arab races.

Languages**1.80**

- 1 The spoken language is Shimaoré, similar to Comoran of Comores (1.68); French is the official and commercial language.

Physical features**1.81**

- 1 Mayotte comprises Ile de Mayotte, which is mountainous and of volcanic origin (1.160), surrounded by a barrier reef and a few small islands; see 3.120 for more detail.
Mayotte is the only island in the Comores to afford safe anchorage at all seasons.

Flora and fauna**1.82**

- 1 See 1.70 and 1.71.

Industry and trade**Economy****1.83**

- 1 Mayotte is the second largest producer of ylang-ylang essence, and its other chief crops are cinammon, vanilla, coconut, bananas and cassava. A lobster and shrimp fishing industry has been established.

Trade**1.84**

- 1 Main exports are ylang-ylang essential oil, vanilla and coconut and cinammon.

MADAGASCAR**General description****1.85**

- 1 The Republic of Madagascar is a sovereign state known to the inhabitants as Repoblikan'i Madagasikara.

National limits**1.86**

- 1 Territorial sea: 12 miles.
Contiguous Zone: 24 miles.
Exclusive Economic Zone: 200 miles.
A straight baseline system is used. For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History**1.87**

- 1 Madagascar had become known to the Arabs by the twelfth century. The Portuguese visited the island in the early part of the sixteenth century, but made no lengthy occupation of any part.
- 2 Subsequently, the Dutch, French and English established trading posts, settlements and colonies but most of these failed and the island remained under the sovereignty of its inhabitants until 1840, when the people of the N part placed themselves under the protection of the French against the cruel regime of the reigning queen. Differences between the French and the local government gradually became more acute and in 1894 an expeditionary force landed on the island, occupying the capital in 1895. The recent history of the island has been as follows:
- 1895 French protectorate established on 30th September.
- 1896 Island declared to be a colony of France and reigning queen exiled.
- 1946 Granted status of Overseas Territory of France.
- 1958 After a referendum, autonomous republic established within the French Community.
- 1960 Full independence declared.
- 1975 Following the assassination of the Head of State, the civilian government replaced by a military directorate. Power was then assumed by a Supreme Revolutionary Council and new constitution approved by referendum which permitted only a single political party.
- 1991 A period of 6 months political unrest heralded the start of political reform with President Ratsiraka relinquishing executive power to new prime minister, Guy Razanamasy
- 1992 New constitution approved, instituting the Third Republic.
- 1993 Albert Zafy elected first president of Third Republic with a multi-party National Assembly.

Government**1.88**

- 1 **National.** Executive power is vested in an elected President who appoints a Prime Minister, with a Council of Ministers, to assist him and receives additional guidance from the National Assembly, which has 160 seats.
The state capital and seat of government is Antananarivo, near the centre of the island.
- 2 **Local.** Each village is organized as a community called a Fokonolona, administered by a council of villagers who elect an executive committee. These communities are grouped, in successive stages, into inter-village, sub-regional, and regional councils called Fokontany, Firaiana and Fivondronana which make up each of six provinces, or Faritany, into which the country is divided.

- 3 **Ports.** The Ministry of Transport and Tourism has overall responsibility for ports, harbours and maritime affairs.

Population

1.89

- 1 The estimated population in 2001 was nearly 16 million. The population in 1999 of the capital Antananarivo was 1 432 000, and of the other main towns was Antsiranana 54 418 (1990), Fianarantsoa 99 005 (1993), Mahajanga 100 807 (1993), Toamasina 127 441 (1993) and Toliary 61 460 (1990).
- 2 The indigenous population is very complex, being of Malayo-Polynesian stock divided into 18 ethnic groups; there are also sizeable French, Chinese, Indian, Arab and Comoran communities.

Languages

1.90

- 1 The official languages are Malagasy, of Malayo-Polynesian origin, and French.

Physical features

1.91

- 1 A large part of Madagascar consists of tablelands with an average height of 300m, from which mountain ranges rise to a maximum elevation of 2880m. The coasts are generally low.
- 2 The W side of the island is irregular, broken by the estuaries and deltas of many rivers and fringed in places by islands and islets; it contains some deep, extensive and sheltered bays, especially in the NW part. The SW part is sandy and arid.
- 3 The E side is very uniform, only interrupted in the N part by Baie d'Antongil (Helodranon' Antongila) and by Baie d'Antsiranana, near the N end of the island. Except in the vicinity of the SE point of the island, and in places on the NE part, the coast is often marshy with lagoons, broken here and there by sand dunes. Inland there are wooded mountains, hills and plains, parts of which are cultivated.
- 4 There are numerous rivers, the largest of which flow W; these include Betsiboka river, the principal river of Madagascar. The river levels are usually low but some become torrents in the rainy season (1.218). Impassable rapids divide most of them into navigable reaches of only short extent.
- 5 To S of a line joining Cap Saint André (Tanjona Vilanandro) and Toamasina, about three-quarters of the island, neither coast affords good anchorage, except for Toliara; the latter is one of only a few ports where ocean-going vessels can berth alongside (see 1.146 for details).

Flora and fauna

Flora

1.92

- 1 A number of drought-resistant species of plants, peculiar to Madagascar, are found in the arid SW part of the island; they include giant cacti and dwarf baobab trees.

Fauna

1.93

- 1 Only small animals, such as certain kinds of lemur, are native to Madagascar; there is also a unique hedgehog-like

creature. The only dangerous species is the crocodile, found in rivers in warm parts of the island.

Spiny globe-fish and coffer fish are unique to Madagascar. The coelacanth (1.71) is found in offshore waters.

Industry and trade

Agriculture

1.94

- 1 Agriculture and the raising of livestock are the main occupations, the principal crops being rice, cassava, fruit and vegetables, sugar cane, coffee, groundnuts, sisal, hemp, cotton, tobacco, vanilla, pepper, cloves and perfume plants. Cattle, goats and pigs are raised.

Industry

1.95

- 1 Oil and natural gas are now being produced on a small scale (oil 37 000 tonnes and gas 2500 tonnes per year in 1997).
- Food processing and preservation is the main industry; others are automobile assembly, oil refining, rope-making and the production of plastics, glass, textiles and paper.
- Mining of salt, chromite and graphite; forestry and the manufacture of forest products, fishing and tourism are also of some importance.

Trade

1.96

- 1 Chief exports are coffee, sugar, vanilla, cloves, perfume essences, shellfish and prawns, and petroleum products.
- Main imports are consumer goods, foodstuffs, machinery and vehicles, crude oil, iron and steel, electronics, computers and accessories.

SEYCHELLES

General description

1.97

- 1 The Republic of Seychelles comprises Seychelles Group of islands, on Seychelles Bank, and outlying islands up to 600 miles SW and S; they are:
- Assumption Island.
 - Aldabra Island.
 - Astove Island.
 - Cosmoledo Group.
 - Farquhar Group.
 - Providence Group.
 - Alphonse and adjacent islands.
 - Les Amirantes.
 - Île Plate.
 - Coëtivy.
- 2

National limits

1.98

- 1 Territorial sea: 12 miles.
Contiguous Zone: 24 miles.
Exclusive Economic Zone: 200 miles.
- For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.99

- 1 The islands of Seychelles Group first appeared on a Portuguese chart of 1501; their subsequent history has been as follows:

- 1609 Visited by a British expedition of the East India Company.
- 1741 Possession taken by France and first important settlement established.
- 1756 Colonized by France and named Seychelles after the French Minister, Vicomte Moreau des Seychelles.
- 1794 Captured by the British, but subsequently changed hands several times with the French.
- 1814 Ceded to Great Britain by Treaty of Paris and incorporated as a dependency of Mauritius.
- 1903 Became a separate British colony.
- 1965 Aldabra Island, (Île) Desroches and Farquhar Group transferred to British Indian Ocean Territory (1.133) on its establishment.
- 1975 Achieved internal self-government.
- 1976 Granted status of an independent Republic within the British Commonwealth; Aldabra Island, Desroches and Farquhar Group returned to administration of the republic.
- 1977 First president deposed, the National Assembly dissolved and the Constitution suspended.
- 1979 A new Constitution, with Seychelles becoming a one-party state.
- 1991 Multiparty democratic system proposed by then-president René.
- 1993 New Constitution adopted, with a multi-party democratic system under president René.

Government

1.100

- 1 The Republic of Seychelles was a single party state but, under the Constitution adopted in 1993, multi-party politics was institutionalized. A National Assembly of 33 members (22 elected by constituencies, 11 by proportional representation) was established and the presidential mandate was set at 5 years, renewable three times.
 - 2 The legislature is an elected People's Assembly; candidates are nominated for election and the assembly is presided over by the President.
- The state capital and seat of government is Victoria on Mahé.

Population

1.101

- 1 In 1996, the population was 76 400, the majority living on Mahé while about half the other islands are uninhabited. The estimate for 2000 was 80 000. See 10.200 for population of Victoria.
- The indigenous population is a mixture of French, African and Malagasy races, but there are small Indian, Chinese, British and American communities.

Languages

1.102

- 1 Official languages are Creole, English and French, 95% of the population speaking Creole.

Physical features

1.103

- 1 Seychelles Group and the outlying islands form an archipelago of 115 islands scattered over about 40 0000 sq miles of ocean.
- Seychelles Group are granitic, hilly or mountainous with elevations up to 914 m, fringed in places by islets and rocks, and bordered by extensive coral reefs. The outlying islands are coralline and low-lying, consisting of sand cays or raised reefs; some are waterless.

Flora and fauna

Flora

1.104

- 1 The Coco-de-Mer, which produces a double nut, grows in protected government reserves on Praslin and Curieuse, two islands of Seychelles Group.

Fauna

1.105

- 1 Aldabra Island is the home of the giant land tortoise which is a protected species.
- The green sea turtle is found in waters around the group; the hunting of this species is regulated.

Industry and trade

Industry

1.106

- 1 The main industries are tourism, brewing (beer, stout and soft drinks), production and processing of coconuts and cinnamon, production of cigarettes and paints, fishing and tuna canning.

Agriculture

1.107

- 1 There is also small scale agriculture, including raising livestock and preparing dairy products.

Trade

1.108

- 1 Chief exports are fresh, frozen and tinned fish and prawns, and cinnamon bark.
- Main imports are manufactured goods, foodstuffs, beverages, tobacco, petroleum products, chemicals, machinery and transport equipment.

LA RÉUNION

General description

1.109

- 1 La Réunion is an Overseas Department of France to which are administratively attached Île Europa, Bassas da India, Île Juan de Nova, Îles Glorieuses and Île Tromelin.

National limits

1.110

- 1 Limits are the same as those for France, namely:
Territorial sea: 12 miles.
Contiguous Zone: 24 miles.
Exclusive Economic Zone: 200 miles.
- For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.111

- 1 La Réunion was discovered by the Portuguese navigator Dom Pedro Mascarenhas about the year 1507, when it was inhabited neither by man nor beast; since that date the brief history is as follows:

- 1638 La Réunion declared a French possession.
- 1664 Base established on La Réunion by the French East India Company.
- 1764 La Réunion became a French colony.
- 1810 Seized by the British.
- 1815 Restored to France under the name of Île Bourbon.
- 1847 Re-named Île de la Réunion.
- 1946 Status changed to that of an Overseas Department of France.
- 1974 Administration of island dependencies, except for Mayotte (1.75), assumed on La Réunion being designated an administrative region.
- 1976 Mayotte became a Territorial Collectivity of France, with intermediate status between an Overseas Department and an Overseas Territory; administration assumed by La Réunion on Comores becoming independent.
- 2002 Mayotte became a Departmental Collectivity of France, and thus no longer administered by La Réunion.

Government

1.112

- 1 La Réunion is administered by a General Council of 48 members, directly elected for six year terms, under a Prefect, and a Regional Council of 45 members. It is represented in the French National Assembly by five deputies, in the Senate by three senators and in the Economic and Social Council by one councillor.
- 2 Locally, the four arrondissements are subdivided into 47 cantons and communes, each being administered by an elected municipal council. France is represented by a Commissioner appointed by the French government. The capital and seat of administration is Saint-Denis.

Population

1.113

- 1 La Réunion had a population of 597 828 at the 1990 census, with a population of 728 400 in 2001; for Saint-Denis see 11.81. The indigenous population is composed of Creoles and racially mixed peoples of African descent and Indians.
- The dependent islands have no permanent inhabitants.

Languages

1.114

- 1 French is the official language of La Réunion, but Creole is widely used and some Gujarati is spoken.

Physical features

1.115

- 1 La Réunion is of volcanic formation, with many old craters, and is very mountainous, rising to over 3000 m. Most of the lower parts of the island are cultivated between remnants of original forest.

The island's rivers descend through gorges almost to the coast and are generally unnavigable; depending on the season they are either torrents or dried up, or nearly so.

The coast consists mainly of cliffs; there are no natural harbours and only one port.

Industry and trade

Economy

1.116

- 1 The economy is mainly agricultural. Sugar cane is the most important product; rum, fruit and vegetables, vanilla, perfume plants, maize, tobacco and coffee are also produced. Some livestock are raised.

Industry

1.117

- 1 Major industries are sugar processing and electricity, while rum and perfume distillation, manufacture of cigarettes, forestry, tourism, fishing and canning are of considerable importance.

Trade

1.118

- 1 The main exports are sugar, rum, molasses and perfume essences.
- Chief imports are foodstuffs and beverages, manufactured goods, machinery, vehicles, cement and petroleum products.

MAURITIUS

General description

1.119

- 1 Mauritius is a republic within the British Commonwealth and includes the dependencies of Rodriguez Island, Agalega Islands and Cargados Carados (Shoals).

National limits

1.120

- 1 Territorial sea: 12 miles.
- Exclusive economic zone: 200 miles.
- Mauritius requires prior permission of notification for the entry of foreign warships. For details and the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.121

- 1 Mauritius was known to Arab navigators by the tenth century and was probably visited by Malays in the fifteenth century. The first Europeans to discover the island were Portuguese between 1507 and 1512. The subsequent history of Mauritius has been as follows:
- 1598 Settled by the Dutch.
 - 1710 Abandoned by the Dutch.
 - 1715 Occupied by the French, who called it Île de France.
 - 1810 Occupied by the British; Crown Colony established.
 - 1814 Ceded to Great Britain by Treaty of Paris.
 - 1965 Chagos Archipelago transferred to British Indian Ocean Territory (1.133).
 - 1968 Granted independence within the British Commonwealth.
 - 1992 Became a Republic.

Government

1.122

- 1 The President is Head of State and is elected by the National Assembly. The Prime Minister, appointed by the president, is a member of the National Assembly who appears to the president best able to command the support of the majority of members of the Assembly. Other ministers are appointed by the president acting on the advice of the prime minister. The National Assembly has a five-year term. Rodriguez Island returns two of the sixty-two members of the Assembly.

Population

1.123

- 1 In 2001, the population of Mauritius, Rodriguez Island and Saint Brandon was 1 205 677. The capital, Port Louis, had a population of 146 761 in 2000.
Most of the population (68%) are of immigrant Indian (Hindu) descent the remainder consisting of European, African or mixed ancestry, Moslems and Chinese.

Languages

1.124

- 1 English is the official language, although French is widely used, and Creole and Bhojpuri are vernacular languages.

Physical features

1.125

- 1 Mauritius is of volcanic formation and mountainous, with elevations over 800 m. The lower slopes are mostly cultivated, with small areas of forest at higher levels; the coastal zone is for the most part covered with tall hardwood trees. There are many streams and rivers, generally flowing through deep ravines but none is navigable for more than a short distance; depending on the season they are little more than brooks becoming torrents during heavy rains. The coastline is irregular and mostly fringed with coral reefs but affords a number of natural harbours.

1.126

- 1 Rodriguez Island is of volcanic formation and hilly, rising to nearly 400 m; its coasts are surrounded by coral reefs with few harbours.
Agalega Islands are low and fringed by reefs.
Cargados Carados are low islets and reefs, on a bank.

Fauna

1.127

- 1 The only indigenous mammal is a fruit-eating bat found on Mauritius; otherwise the original fauna is now almost extinct except for some insects, reptiles, shellfish and a few birds, none of which is dangerous to humans.

Industry and trade: Mauritius

Economy

1.128

- 1 The economy of Mauritius is one of the strongest in Africa and is based mainly on agriculture, tourism and manufacturing with the raising of livestock, fishing and forestry also being carried on. Offshore business, Freeport and financial services are becoming increasingly important.

Agriculture

1.129

- 1 The main crops are sugar and its derivatives, fruits, vegetables, flowers, tea and tobacco.

Industry

1.130

- 1 Manufactured products include textiles and clothing, electronic goods, watches, clocks, toys and games.

Trade

1.131

- 1 Main exports from Mauritius are sugar, textiles and clothing, canned tuna, watches, clocks, jewellery, optical goods, toys, games and cut flowers. Rodriguez Island exports cattle and onions.
Chief imports are foodstuffs and beverages, oil products, machinery and transport goods, textiles and manufactured goods and livestock.

Rodriguez Island

1.132

- 1 Rodriguez Island produces salt and onions; livestock are raised and fishing is carried on.

BRITISH INDIAN OCEAN TERRITORY

General description

1.133

- 1 The British Indian Ocean Territory is a United Kingdom dependent territory comprising the islands of Chagos Archipelago; for details, see chapter 12.

National limits

1.134

- 1 Territorial sea: 3 miles.
Exclusive Fisheries Zone: 200 miles (see charts 4703 and 4707 for N limit of zone).
For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.135

- 1 The territory was established in 1965 when it comprised the islands of Chagos Archipelago, formerly a dependency of Mauritius, and Aldabra Island, Farquhar Group and Desroches, all former dependencies of the Seychelles. In 1975, following the granting of independence to the Seychelles, all the islands, except those of Chagos Archipelago, were returned to the Republic of Seychelles.

Government

1.136

- 1 The Commissioner, British Indian Ocean Territory, Mahé, Seychelles, represents the British government. He is represented in Chagos Archipelago by a Royal Naval Liaison Officer (RNLO) stationed on Diego Garcia, the largest island of the archipelago. The RNLO is responsible to the Commissioner for all matters of civil administration, including customs, immigration and fishery protection; he also acts as the British Representative with United States Navy personnel on the island (see below).

Population

1.137

- 1 Chagos Archipelago is presently uninhabited, except for personnel operating a United States Navy Support Facility and a naval radio station on Diego Garcia.

Physical features

1.138

- 1 The most striking physical feature of the territory is the general atoll character of the islands, reefs and banks of the archipelago. All the islands are low-lying, and some are

subject to alteration; most are covered with tall coconut palms and bushes.

FRENCH SOUTHERN AND ANTARCTIC TERRITORIES

General description

1.139

- 1 The French Southern and Antarctic Territories, or Terres Australes et Antarctiques Françaises (TAAF), comprise a number of islands and a part of Antarctica which are Overseas Territories of France; of these, only Île Saint Paul and Île Amsterdam lie in the area covered by this volume.

National limits

1.140

- 1 Territorial sea: 12 miles.
For the latest information see *Annual Summary of Admiralty Notices to Mariners*.

History

1.141

- 1 Île Amsterdam was discovered in 1522 by the survivors of Magellan's voyage round the world under the Spanish flag, by Juan Sebastián de Elcano, the Basque navigator. Subsequently, both islands were visited on a number of occasions, but remained uninhabited and unclaimed until 1843 when they were annexed by France; possession of the islands was confirmed in 1893.
2 In 1949, Base Martin de Vivies was established on Amsterdam Island as a scientific research station.

Government

1.142

- 1 The headquarters of the territory is located in Paris; the islands are administered by a Territorial Commander (Chef de Territoire), assisted by a Consultative Council and a Scientific Council, through a District Officer (Chef du District) who resides on Île Amsterdam.

Population

1.143

- 1 The islands are uninhabited except for personnel manning a meteorological and radio station on Île Amsterdam.

Physical features

1.144

- 1 Both islands are of recent volcanic origin with a fairly well-developed vegetation; Île Saint Paul is moderately high and Île Amsterdam is high. There are no harbours.

Fauna

1.145

- 1 Île Saint Paul is the home of a large colony of rockhopper penguins.
The spiny lobster abounds in waters around the islands, and is fished commercially.

PRINCIPAL PORTS, HARBOURS AND ANCHORAGES

Comores and adjacent islands

1.146

Place and position

Remarks

Grande Comore

Moroni (3.19)
(11°42'S, 43°14'E)

Poor anchorage off small commercial port

Mohéli

Fomboni (3.67)
(12°17'S, 43°44'E)

Anchorage off small commercial port; affected by heavy swell in summer

Anjouan

Mutsamudu (3.95)
(12°10'S, 44°24'E)

Principal commercial port of Comores; alongside berths

Mouillage d'Ouani (3.105)
(12°09'S, 44°24'E)

Anchorage off small oil terminal pier

Mouillage de Bambao
(3.112) (12°11'S, 44°31'E)

Anchorage off small commercial port; affected by heavy swell

Mayotte

Dzaoudzi (3.173)
(12°47'S, 45°15'E)
Baie de Longoni (3.178)
(12°43'S, 45°09'E)

Secure anchorage off small port, tanker discharge buoy.

Developing commercial port with berths and good sheltered anchorage in lagoon

Madagascar

West coast

Tuléar (4.39)
(23°21'S, 43°40'E)

Small commercial port

Morombe (4.102)
(21°45'S, 43°21'E)

Sheltered anchorage off small commercial port

Morondava (4.160)
(20°17'S, 44°17'E)

Anchorage off small commercial port; affected by heavy swell

Nosy Lava (4.230)
(18°35'S, 43°56'E)

Sheltered anchorage

Nosy Maroantaly (4.230)
(18°25'S, 43°55'E)

Good sheltered anchorage

Maintirano (4.233)
(18°04'S, 44°01'E)

Anchorage off small commercial port; affected by swell

Chesterfield Isle (4.277)
(16°20'S, 43°58'E)

Moderate anchorage

Baie de Baly (5.33)
(16°02'S, 45°19'E)

Sheltered anchorage

Nosy Makamby (5.48)
(15°43'S, 45°54'E)

Moderate anchorage

Majunga (5.50)
(15°44'S, 46°18'E)

Anchorage off small commercial and fishing port

Baie de Bombetoka (5.88)
(15°50'S, 46°16'E)

Good anchorage

Baie de Mahajamba
(5.111) (15°11'S, 47°00'E)

Sheltered anchorages off villages

Baie de Narendry (5.123) (14°47'S, 47°33'E)	Well-sheltered anchorage
Analalava (5.129) (14°38'S, 47°45'E)	Anchorage off small commercial port
Baie de Sahamalaza (5.174) (14°06'S, 48°00'E)	Sheltered anchorage in extensive bay
Baie d'Ampasindava (6.34) (13°40'S, 48°15'E)	Anchorage off W shore of extensive bay
Anse du Cratère (6.42). (13°24'S, 48°13'E)	Small tanker port
Hell-Ville (6.46) (13°24'S, 48°17'E)	Anchorage and moorings off small commercial and fishing port
Port Saint-Louis (6.101) (13°05'S, 48°50'E)	Exposed anchorage off small commercial river port
Nosy Mitsio — E side (6.132) (12°53'S, 48°38'E)	Anchorage sheltered from NW winds
Nosy Hara (6.170) (12°15'S, 49°01'E)	Good anchorages
Baie Andranomaimbo (6.172) (12°11'S, 49°07'E)	Anchorage in several smaller bays which, together, form this extensive bay

East coast

Tolagnora (7.27) (25°02'S, 47°00'E)	Anchorage off minor commercial port
Manakara (7.94) (22°08'S, 48°01'E)	Anchorage off small commercial port
Mananjary (7.116) (21°14'S, 48°21'E)	Anchorage off small commercial port
Tamatave (Toamasina) (7.158) (18°10'S, 49°26'E)	Principal commercial port of Madagascar
Canal de Saint-Marie - East side (7.225) (17°06'S, 49°45'E to 16°43'S, 49°58'E)	Fairly secure anchorages
Baie de Tintingue (7.227) (16°48'S, 49°48'E)	Sheltered anchorage
Ambodifototra (7.231) (17°00'S, 49°51'E)	Anchorage off small commercial port

Baie d'Antongil

Maroantsetra (8.32) (15°26'S, 49°45'E)	Anchorage off small commercial port

North-east coast

Antalaha (8.64) (14°54'S, 50°17'E)	Exposed anchorage off small commercial port
Sambava (8.78) (14°16'S, 50°12'E)	Exposed anchorage off small commercial port
Vohémar (8.94) (13°21'S, 50°00'E)	Small commercial port
Baie de Diego Suarez (8.144) (12°15'S, 49°19'E)	Numerous sheltered anchorages in extensive bay
Port de la Nièvre (8.170) (12°16'S, 49°17'E)	Commercial port and naval base

Seychelles Group and outlying islands**Les Amirantes**

Desroches (10.47) (5°41'S, 53°40'E)	Good anchorage off settlement; sheltered from SE

Seychelles Group

Praslin (10.137) (4°17'S, 55°42'E)	Good anchorage, sheltered from South-east Trade Wind
Victoria (10.199) (4°37'S, 55°28'E)	Commercial and fishing port

Islands east of Madagascar**La Réunion**

Baie de Saint-Paul (11.29) (20°59'S, 55°16'E)	Only good roadstead off La Réunion
Port Réunion (11.32) (20°56'S, 55°17'E)	Commercial and fishing port and naval base

Mauritius

Port Louis (11.131) (20°09'S, 57°29'E)	Commercial and fishing port
Grand Port (11.191) (20°22'S, 57°46'E)	Extensive well-protected anchorage

Rodriguez Island

Port Mathurin (11.267) (19°41'S, 63°25'E)	Small commercial port

Chagos Archipelago

Diego Garcia (12.59) (7°14'S, 72°23'E)	United States Navy Support Facility

Southern islands**Île Saint Paul**

North-east side (13.14) (38°43'S, 77°33'E)	Anchorage sheltered from NW

Île Amsterdam

Mouillage de Gonio (13.29) (37°48'S, 77°34'E)	Anchorage off meteorological station

PORT SERVICES — SUMMARY**Docking facilities****1.147**

Majunga. Slip for vessels up to 300 tonnes (5.79).
Hell-Ville. Slip for vessels up to 200 tonnes (6.67).
Tamatave. Slip for vessels up to about 200 tonnes (7.187).

Port de la Nièvre. Dry dock; length of bottom 196 m, breadth of bottom 25 m, depth on sill 11.7 m (8.202).

Victoria. Slipways for vessels of up to 300 gt (10.242).

Port Réunion. Slip for vessels up to 500 tonnes of maximum length 34 m and draught 3.5 m (11.69).

Port Louis. Dry dock; suitable for vessels of length 105 m, breadth 17 m and draught 5.2 m (11.165).

Other facilities**Salvage services****1.148****Mauritius**

Port Louis (11.150)

Compass adjustment**1.149***/* **Madagascar**

Port de la Nièvre (8.203)

Deratting**1.150***/* Deratting and deratting exemption certificates:**Madagascar**

Tamatave (7.188)

Seychelles

Assumption Island (9.29)

Baie Sainte Anne, Praslin (10.174)

Victoria (10.243)

Mauritius

Port Louis (11.166)

1.151*/* Deratting exemption certificates only:**Madagascar**

Majunga (5.80)

Hell-Ville (6.68)

Port de la Nièvre (8.203)

La Réunion

Port Réunion (11.70)

Oily waste reception**1.152***/* There are no facilities for the reception of oily waste reported within the area of this volume.

NATURAL CONDITIONS

MARITIME TOPOGRAPHY

Seabed

Charts 4070, 4071, 4072, 4073

General remarks

1.153

- 1 Stable crustal structures are a predominant feature of the bed of the Indian Ocean.

In the S part of the ocean described in this volume there is very little continental shelf; the 200 m depth contour only extends any appreciable distance from the W and NW coasts of Madagascar. Relatively steep escarpments form most of the continental slope, descending into depths from 400 to 800 m.

- 2 The bed of the remaining, greater part of the area is divided by a system of mountainous ridges, described below, into three segments; lesser ridges, plateaux, rises, and chains of seamounts sub-divide these segments into basins. Near land masses, where there are thick deposits of sediments, the bottoms of these basins are smooth, forming abyssal plains; in the central part of the ocean, where sediments are thin and dispersed, they are rough and uneven, forming conical abyssal hills and seamounts.

Nature of the seabed

1.154

- 1 Land-derived sediments predominate on the continental shelf; the chalky remains of marine organisms are found on the continental slopes and basin bottoms to depths as great as 4300 m, with red clays in deeper parts.

Principal features

Deepes

1.155

- 1 Within the area covered by this volume the Indian Ocean attains depths over 5000 m in a number of places. On the W side are:
 - 2 Mozambique Basin and Madagascar Basin, SW and SE, respectively of Madagascar.
 - Mascarene Basin between Madagascar and La Réunion (21°05'S, 55°30'E).
 - Amirante Trench (chart 4702) between Providence Island (9°12'S, 51°02'E) and Alphonse (167 miles NE).
 - Somali Basin, W of Seychelles Group (4°30'S, 55°30'E).
- 3 In the central part is Crozet Basin, W of Île Saint Paul (38°43'S, 77°33'E), and on the E side are:
 - Mid-Indian Ocean Basin, SSE of Great Chagos Bank (6°15'S, 72°00'E).
 - Vema Trench, which is over 6000 m deep, and lies SW of Great Chagos Bank.
 - Chagos Trench, E of Great Chagos Bank.

Ridges and plateaux

1.156

- 1 Madagascar Ridge extends S from Madagascar; Farquhar Ridge (Chart 4702), on which lies Farquhar Group (10°10'S, 51°10'E) and Providence Group (50 miles N), extends NE from Madagascar.

- 2 Mascarene Plateau extends between Mauritius (20°17'S, 57°35'E) and Seychelles Group (about 850 miles N).

- 3 The central part of the area described is dominated by a number of ridges which extend SW, SE and N from approximate position 25°S, 70°E; these are, respectively, Southwest Indian Ridge, Southeast Indian Ridge, on which lie Île Saint Paul and Île Amsterdam, and Central Indian Ridge. Rodriguez Ridge, on which the island of Rodriguez Island is situated, extends W from Central Indian Ridge in about lat 19°30'S.

- 4 Ninety East Ridge extends N along the E side of the area described from approximate position 35°S, 87°E.

Shoals and banks

1.157

- 1 Walters Shoals (33°12'S, 43°55'E) lie on Madagascar Ridge; the sea breaks on these shoals.
- 2 Soudan Bank, Nazareth Bank, Saya de Malha Bank and the shoals and islets of Cargados Carajos lie on Mascarene Plateau, in that order from S to N.

Seamounts

1.158

- 1 A number of seamounts lie in the area and are listed below, their positions being best seen on the charts;
 - La Pérouse Seamount (19°45'S, 54°10'E), with the least charted depth of 54 m over it.
 - Afanasiy Nikitin Seamount (3°00'S, 83°10'E).
 - Alix Seamount (17°30'S, 61°20'E).
- 2
 - Bardin Seamount (13°55'S, 53°40'E).
 - Fred Seamount (6°15'S, 54°25'E).
 - Hydra Seamount (11°00'S, 50°35'E).
 - Jaguar Seamount (21°55'S, 39°27'E).
 - Kurchatov Seamount (5°25'S, 68°27'E).
 - Wormley Seamount (13°45'S, 57°55'E).

Other features

1.159

- 1
 - Asquith Rise (Wilkes Rise) (8°45'S, 47°10'E).
 - Discovery Fracture Zone (43°30'S, 42°30'E).
 - Gallieni Fracture Zone (37°30'S, 52°00'E).
 - Indomed Fracture Zone (40°00'S, 46°30'E).
 - Melville Bank (38°29'S, 46°46'E).
 - Novara Knoll (43°00'S, 74°30'E).
 - Madingley Rise (3°00'S, 59°38'E).

Volcanic activity

1.160

- 1 Volcanoes with high peaks are widespread on ocean basin floors; the seamounts are volcanic.
 - On land, Le Kartala, a volcano on Grande Comore (11°40'S, 43°20'E), erupted in 1918, and appears to be active.
- 2 Piton de la Fournaise, a volcano in the SE part of La Réunion (21°05'S, 55°30'E), erupted in 1902 and shows signs of continued activity. There are some hot mineral springs on the island.
 - On Île Saint Paul and Île Amsterdam, both of which are of recent volcanic origin, there are some small warm brackish water basins.

Seismic activity

1.161

- 1 Slight earthquakes are frequent on La Réunion.
 - Earthquake shocks are felt at times on Diego Garcia (7°16'S, 72°22'E).

CURRENTS, TIDAL STREAMS AND FLOW

Currents

General information

1.162

- 1 In most of the sea area covered by this volume, the currents are associated with the high pressure system described at 1.192, and circulate counter-clockwise.
- 2 The N part of the circulation is formed by the W-going South Equatorial Current, and the S part by the E-going Southern Ocean Current. Currents setting SW off the coasts of Madagascar and Africa form the W part of the circulation, while to the E of the area the circulation is completed by the N-going West Australian Current.
- 3 In the extreme N part of the area the currents are seasonal, their direction being determined by the monsoon systems of the North Indian Ocean, described in *Ocean Passages for the World*.

Currents diagrams

1.163

- 1 In the currents diagrams (1.163.1 to 1.163.4) arrows indicate predominant direction, average rate and constancy, which are defined as follows:
- 2 **Predominant direction** is the mean direction within a continuous 90° sector containing the highest proportion of observations from all sectors.
- 3 **Average rate** is the rate, to the nearest ¼ kn, of the highest 50% in predominant sectors as indicated by the figures on the diagrams. It is emphasised that rates above or below those shown may be experienced.
- 4 **Constancy**, as indicated by the thickness of the arrows, is a measure of its persistence; e.g. low constancy implies marked variability in rate and, particularly, direction.

Equatorial Counter-current

1.164

- 1 The Equatorial Counter-current, in the area covered by this volume, is a seasonal E-going current which occupies almost all the N-most part from about December to April. The N limit of the current lies between 1° and 3°S, the S limit between 6° and 8°S and the W limit between 50° and 55°E. In the early and late stages of the current its constancy is moderate or even high with rates of 1½ to 2 kn; a rate of 4 kn has been observed (January 1974). From January to March constancy is moderate to low with rates of 1 to 1½ kn.

Monsoon currents

1.165

- 1 The NE Monsoon current sets W from about December to April, its S limit being the N limit of the Equatorial Counter-current. It is of mainly moderate, occasionally high, constancy with an average rate of about 1½ kn, although rates as much as 4 kn have sometimes been experienced.
- 2 About April, a transition of the currents occurs. The influence of the E-going Equatorial Counter-current is felt farther N and the W-going NE Monsoon current is replaced by the SW Monsoon current, which sets E or SE. The S limit of this current becomes established about July along a line joining positions on the Equator in longitude 50°E and between 6° and 8°S in longitude 90°E. The SW Monsoon Current is of moderate or high constancy in its early and late stages with an average rate of about 1¾ kn, while from June to September its constancy is moderate or low, with a rate of about 1¼ kn; the maximum rate experienced

is about 4 kn. During December the pattern of NE Monsoon current and Equatorial Counter-current is re-established.

South Equatorial Current

1.166

- 1 The N limit of this W-going current coincides with the S limit of the Equatorial Counter-current or SW Monsoon current, according to season; its S limit is the N limit of the Southern Ocean Current, described below. This limit lies between approximate positions 35°S, 40°E and 25°S, 90°E in February, and from 35°S, 40°E to 22°S, 90°E in August. Constancy is mainly moderate N of about 15° to 20°S, but low farther S; average rates are about 1 kn in the N part and ¾ kn in the S part of the current.

1.167

- 1 On approaching Madagascar the current divides into two branches between about 14° and 18°S. One branch is diverted N and then W round the N end of the island, the other branch S and then W round the S end. Both branches are variable in constancy and average rates are about 1¼ kn. The rate of the N branch is greater and increases towards N during the South-east Trade Wind season (1.198); the rate of the S branch increases towards S.
- 2 Less than about 500 miles from the coast of Madagascar and SE of the S point of the island currents setting between E and N are often experienced.

1.168

- 1 On passing the S point the S branch of the current divides again. One part turns erratically N to the W of Madagascar; the other part continues WSW to join the current systems off the SE coast of Africa or, at times, retroflects S and E to join the Southern Ocean Current. Over the 25 years period from 1961 to 1985 the maximum rate experienced in this area was 4 kn, the current setting in any direction.

Southern Ocean Current

1.169

- 1 The Southern Ocean Current sets mainly E or NE, its N limit coinciding with the S limit of the South Equatorial Current. To N of about 40°S constancy is mainly low with almost as many W or SW sets as E or NE sets; farther S constancy is mainly moderate. The average rate of the N part is about ¾ kn and of the S part 1¼ kn.

Currents in Mozambique Channel

1.170

- 1 On rounding the N end of Madagascar the N branch of the South Equatorial Current fans out to form a fairly constant current with a rate of 1 to 2 kn which sets SW along the edge of an extensive bank off the NW coast of the island; the currents on the bank are described later, with the description of the NW coast.
- 2 Farther to seaward, Mozambique Channel can be divided into two zones as far as the currents are concerned. Although the boundary between these zones corresponds closely with the W limit of the area covered by this volume it may, at times, be found farther E, within the area, particularly from June to August. To W of the boundary lies the SW-going Mozambique Current which is of moderate, occasionally high, constancy with an average rate of 1½ kn, although there are instances of rates as much as 4 kn having been experienced. To E of the boundary the current is very variable, but sets predominantly NNE. The boundary can be very sharply defined and considerable differences in rate and direction of current may be experienced over short distances. Around

the islands in the channel the currents are strong and irregular.

- 3 Little is known of the currents less than about 100 miles from the coast of Madagascar; such information as is available is given later in the text with the descriptions of coastal and offshore waters.

Tidal streams

Madagascar

1.171

- 1 The coasts of Madagascar being, in general, steep-to there is little impediment to the free movement of water so the tidal streams are weak; however, where there are narrow channels through reefs offshore and in the entrances to deep bays the streams are strong.

Other islands

1.172

- 1 Strong tidal streams are also to be found in the passages through the reefs surrounding the other islands of the Indian Ocean described in this volume; details are given at the appropriate place in the text.

SEA LEVEL AND TIDES

Sea level

1.173

- 1 At La Réunion, variations in sea level caused by rollers (1.4) affect the height of tide.

Tides

1.174

- 1 In that part of the Indian Ocean covered by this volume the tide is generally of a regular semi-diurnal nature; this is especially the case at Comores, the W coast of Madagascar, Chagos Archipelago and Île Saint Paul.
- 2 In Seychelles Group and at La Réunion and Mauritius there is some diurnal inequality of heights of the two high waters.
- 3 The largest tides occur on the W coast of Madagascar between Tuléar and Nosy Be; at Majunga the mean spring range is 3.8 m. There is little rise and fall on the E coast of the island; at Tolagnora tidal movements are difficult to observe.
- 4 At La Réunion, the mean range is only about 0.3 m.

SEA AND SWELL

Sea conditions

1.175

- 1 **Sea waves.** In the South-east Trade Wind belt (1.198) moderate seas are usual at all seasons with waves 1 to 2 m high; occasionally when the wind freshens, especially from June to September, seas can become rough but waves rarely exceed 3 to 4 m. Calm seas are unusual except in sheltered areas.
- 2 Farther S in the sub-tropical high pressure belt (1.192), slight or calm seas are common during the lengthy spells of light variable winds; but troughs of low pressure and associated fresh winds (1.198) bring interludes of moderate to rough conditions.

- 3 To the S of 30°S frequent strong winds and gales raise very heavy seas often exceeding 3 to 4 m; waves well over 12 m high can be expected in this area especially in winter.

Swell conditions

1.176

- 1 **Swell waves.** Apart from tropical storms and cyclones the principal generators of swell waves are the South-east Trade Wind, the generally W winds of the Roaring Forties (1.201) and, to a lesser degree in equatorial waters, the NE Monsoon of the N hemisphere and its extension into the S hemisphere, the NW Monsoon (1.199). Although swell waves and sea waves generated locally are usually present simultaneously, swells are generally much longer in length and period. Swell can cause uncomfortable conditions in an otherwise calm and smooth sea.
- 2 From the Equator to 20° to 25°S swell is predominantly SE throughout the year; generated by the South-east Trade Wind, wave height averages 1 to 2 m but very occasionally reaches 3 to 4 m. Heights tend to be lowest farther N; swells are heaviest in winter, and lowest in summer.
- 3 The NE Monsoon of the N hemisphere raises moderate swells which reach equatorial regions during the S hemisphere summer (about December to March); the NW Monsoon which blows S of the Equator at the same season raises low, occasionally moderate NW swells as far S as 10° to 15°S. Associated N to NE swells affect the N part of Mozambique Channel.
- 4 To the S of 30°S swell waves from SW to S are an almost permanent feature raised by the strong winds of the Roaring Forties. Swells are often heavy and commonly exceed 6 m in height; wave lengths are usually average (100 to 200 m) but long swells are not infrequent. In winter (from about June to August) SW swells extend as far N as 20° to 25°S and affect the S Madagascar coasts. Associated S swells, usually light or moderate, reach the S parts of Mozambique Channel.

Tropical disturbances

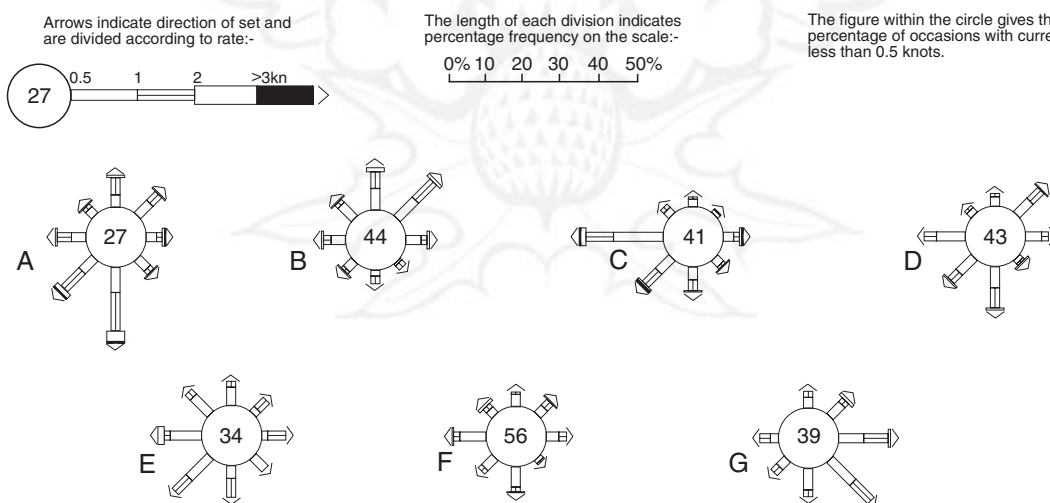
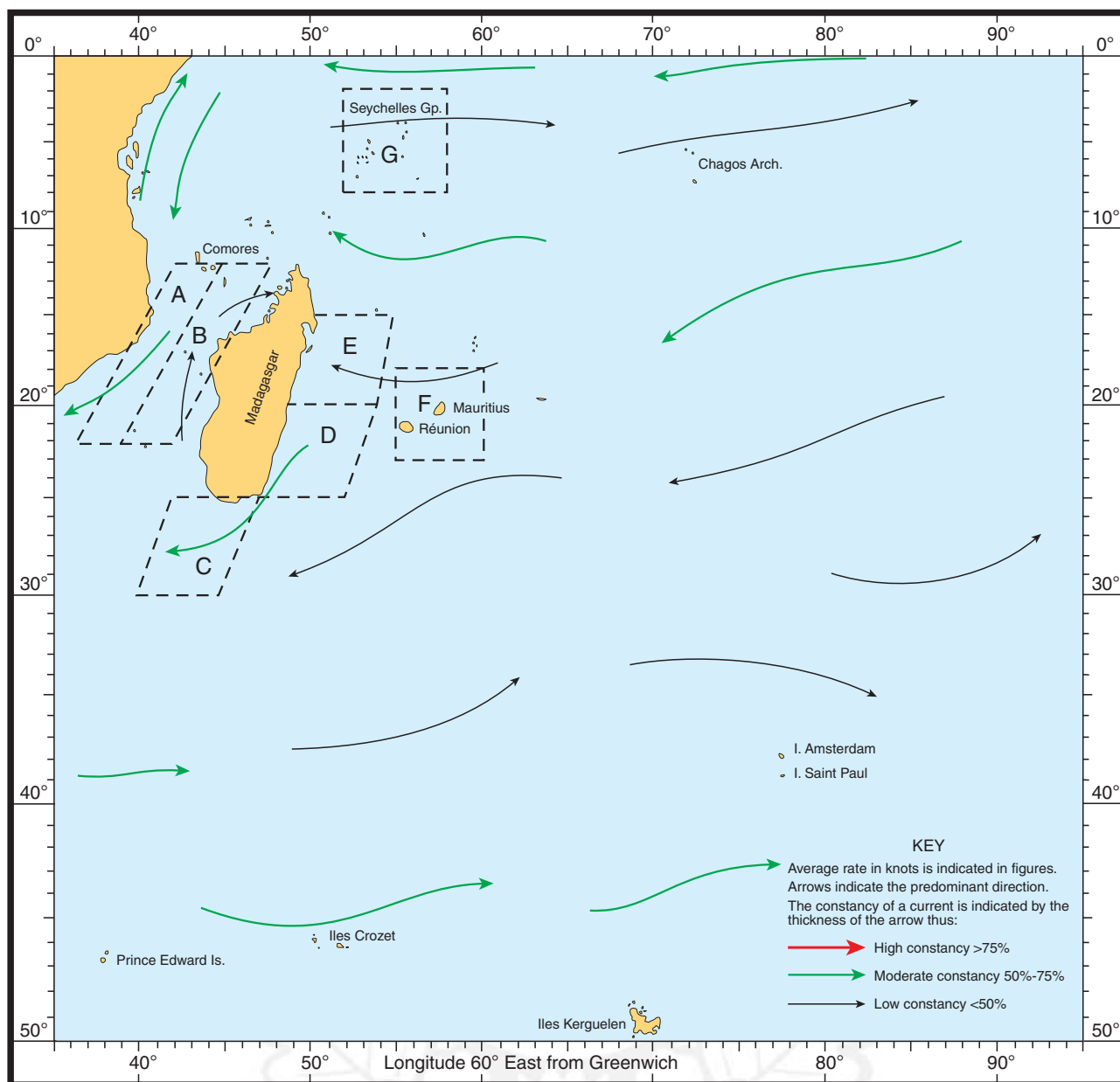
1.177

- 1 **Sea and swell waves.** Mountainous and confused seas are raised by the violent winds associated with the storms described at 1.209. Near the centre of a storm groups of large waves moving in different directions have very irregular wave heights and can occasionally combine together to produce an exceptionally high wave in excess of 30 m.
- 2 Swell waves travel radially outwards from the storm circulation with the highest swells moving ahead of the storm roughly in the same direction as the storm track. This swell may be an early indication of an approaching or distant storm and also give some indication of the approximate bearing of the storm centre.
- 3 When a storm approaches land abnormally high tides may be caused; with the addition of heavy swells and later, very high seas, severe flooding can occur in low-lying areas. Occasionally an exceptionally high wave or wall of water may race in from the sea with catastrophic consequences.

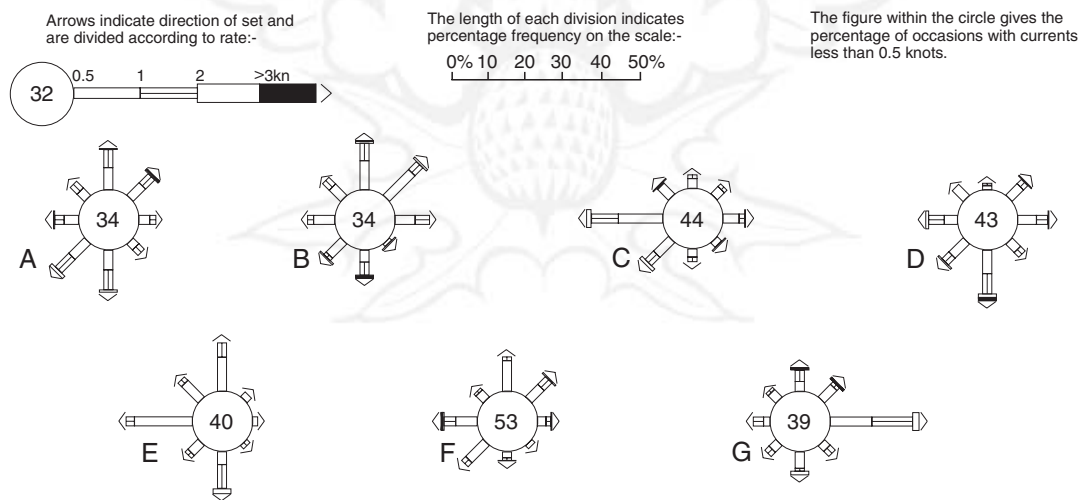
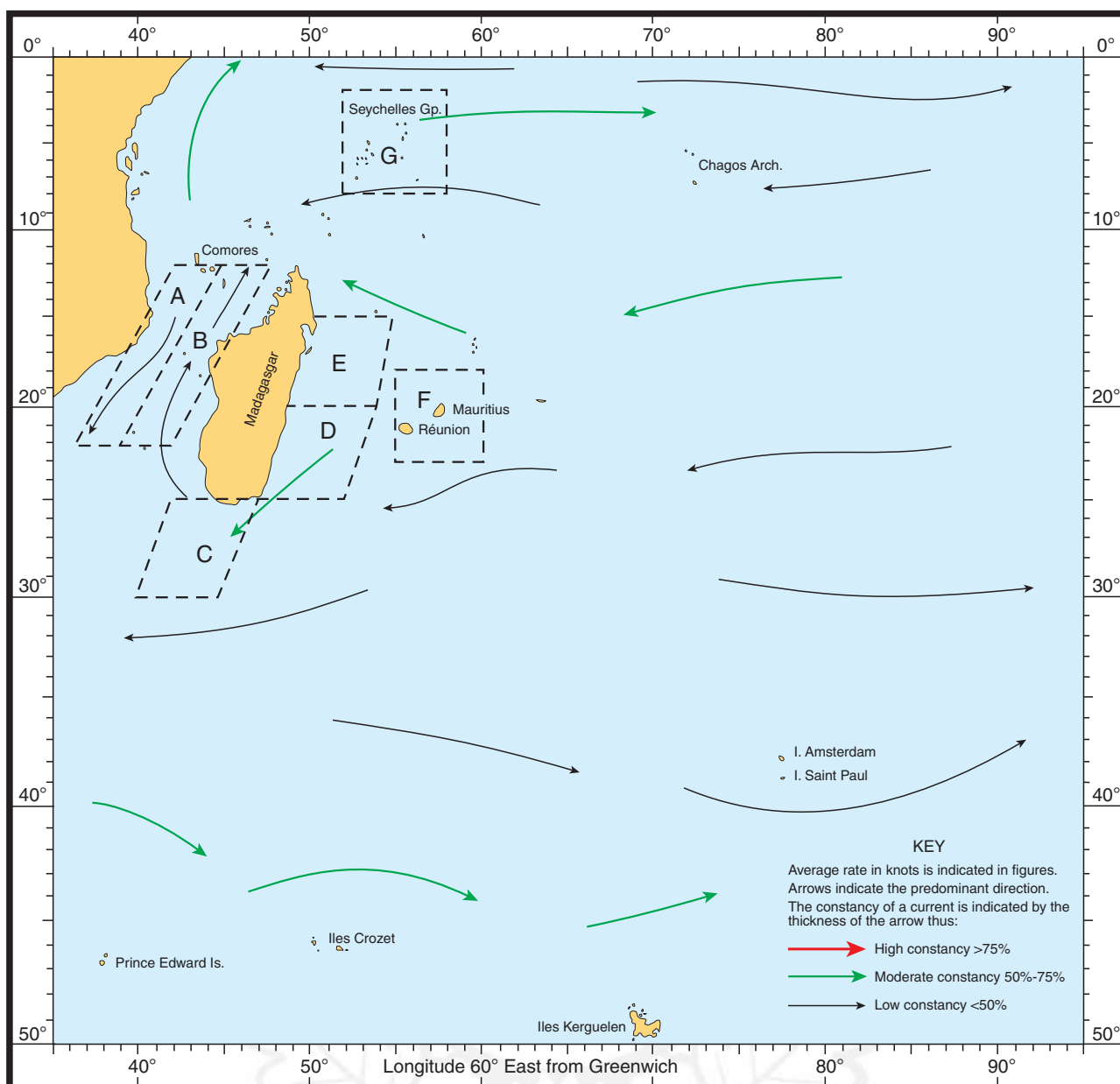
Abnormal waves

1.178

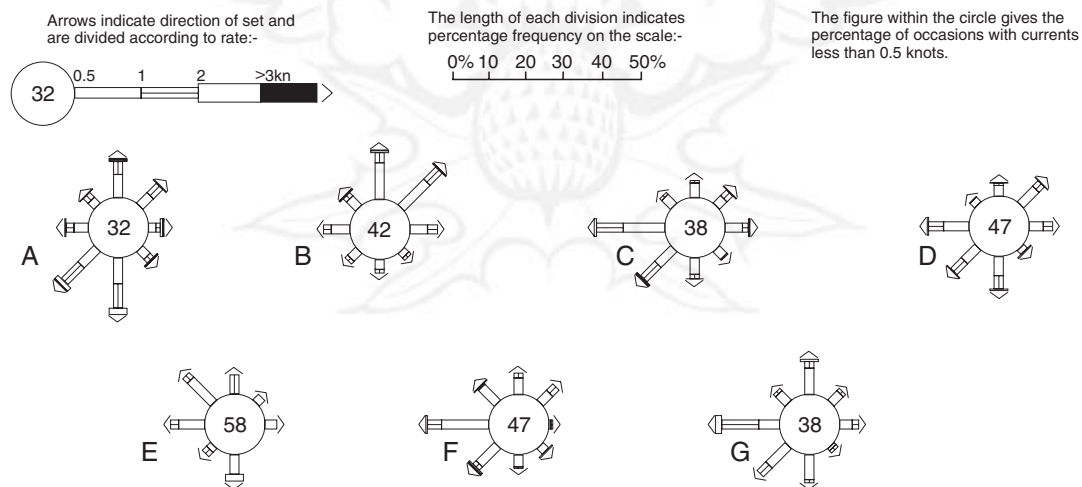
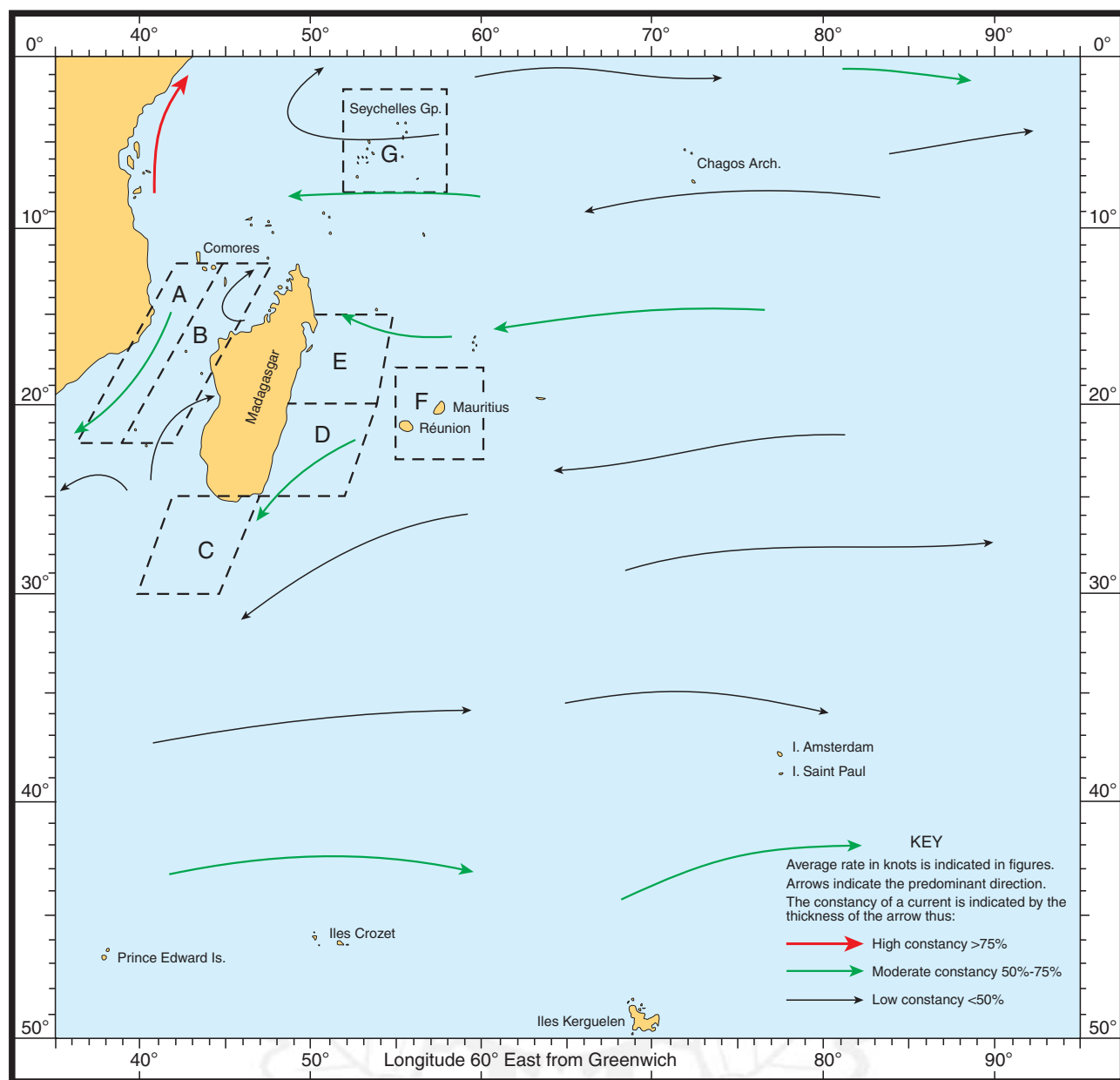
- 1 **Rollers** described in *The Mariner's Handbook* affect La Réunion, Mauritius and Rodriguez Island. See 1.4 for further information.



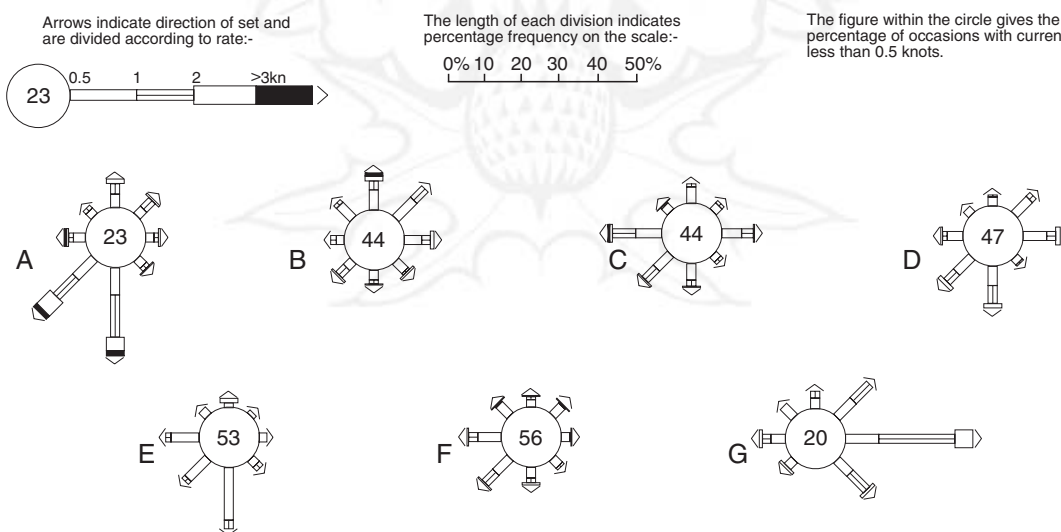
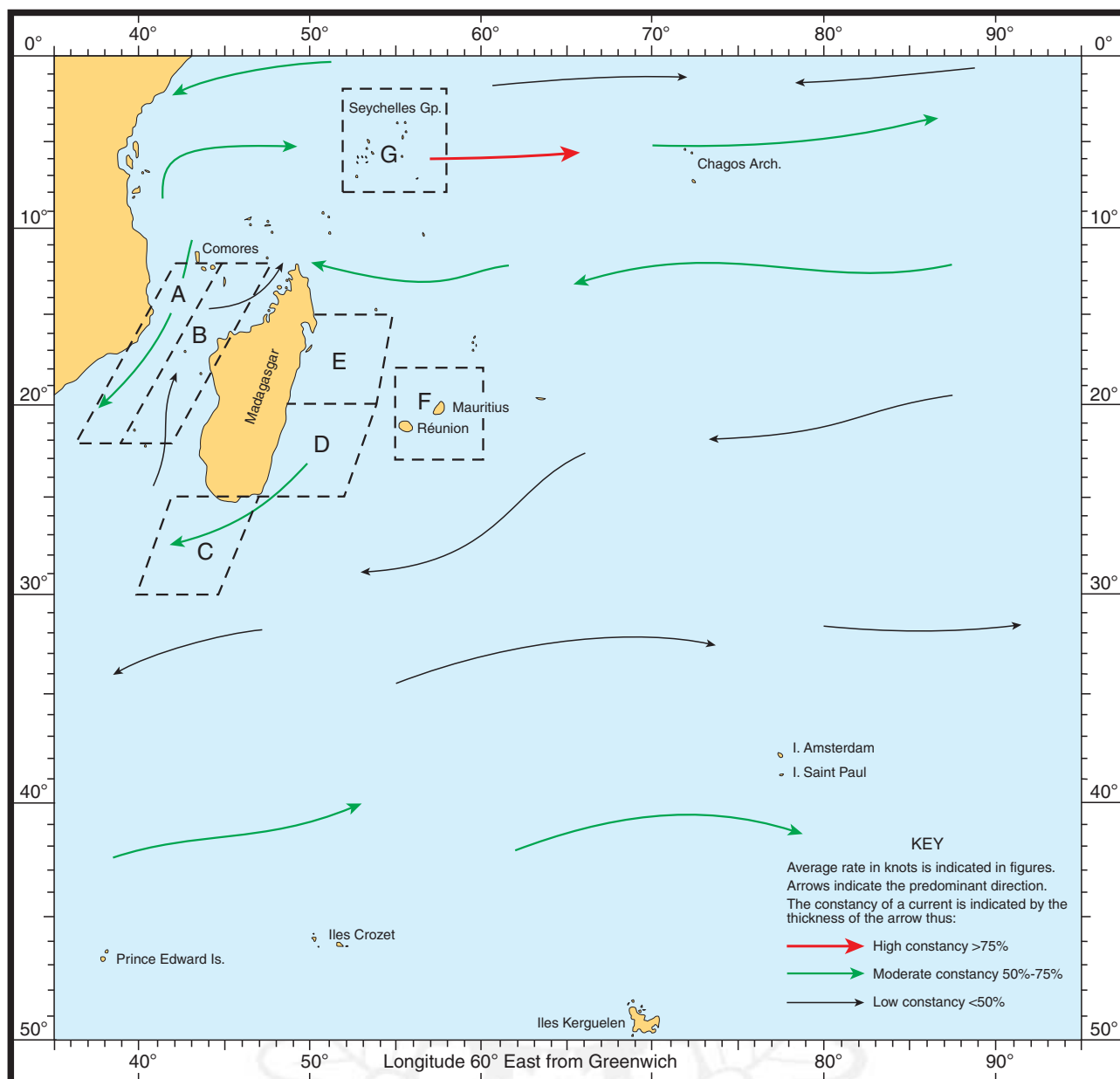
Predominant currents and current distribution FEBRUARY (1.163.1)



Predominant currents and current distribution APRIL (1.163.2)



Predominant currents and current distribution AUGUST (1.163.3)



SEA WATER CHARACTERISTICS

Salinity

1.179

- 1 For an explanation of salinity as applied to seawater, see *The Mariner's Handbook*.
- 2 The sea surface salinity remains stable throughout the year and varies between 34.0 and 35.5 across the region covered by this volume. A zone of less saline water, from 34.0 to 35.0, extends across the region, between latitudes 5° and 20°S. The W edge of this zone varies; in February it lies in longitude 40°E, off the E coast of Africa, and in August in 50°E, off the E coast of Madagascar.
- 3 To the N of this zone, in the equatorial region, from the Equator to 5°S, salinity decreases to the E, from 35.5 to 34.0.
- 4 To S of the zone, at latitude 20°S, salinity remains constant across the region but increases with latitude from 35.0 to 35.5 between 20° and 30°S; it then decreases again to 35.0 at 40°S, the Isohalines running E-W across the region.

Density

1.180

- 1 For an explanation of density as applied to seawater, see *The Mariner's Handbook*.
- 2 The sea surface density varies across the region covered by this volume. In the S of the region the values remain constant at 1.0265 g/cm³ throughout the year. However, the values vary seasonally in the NE of the region.
- 3 A zone of low density 1.0215 g/cm³ covers a large part of the NE of the region in summer (February), but recedes to the NE in winter (August). Also in winter a small zone of low density, less than 1.0220 g/cm³, occurs off the NW coast of Madagascar.
- 4 The isopycnals are E-W in the S of the region but curve around the low-density zone in the NE to run NW in the NW of the region.

Sea surface temperature

1.181

- 1 Diagrams 1.181.1 and 1.181.2 show the mean monthly sea surface temperature distribution for February and August which are respectively the months when maximum and minimum sea temperatures are usually reached.
- 2 The distribution pattern changes little through the year and in equatorial waters sea surface temperature varies only 1° to 2°C seasonally. To S of about 5°S sea temperature falls fairly steadily from February to August by about 4° to 5°C. Thereafter values increase again fairly steadily, towards the February maximum.
- 3 Near the Equator sea temperature is usually within 1° to 2°C of the monthly mean value. Farther S variability increases and in the S of the region deviations from the mean of 3° to 4°C have been noted.

ICE CONDITIONS

Ice

Icebergs

1.182

- 1 Formed in the Antarctic, these may enter the S part of the region covered by this volume, driven NE by prevailing W winds and the predominantly E or NE-going Southern Ocean Current. They may be met as far N as 35°S at almost any time of the year, but mainly from July to November. Growlers, described in *The Mariner's*

Handbook, may be encountered well N of the limit of icebergs.

Drift ice

1.183

- 1 Unknown in the area.

CLIMATE AND WEATHER

General information

1.184

- 1 The following information should be read in conjunction with *The Mariner's Handbook* and *Ocean Passages for the World*.

General conditions

1.185

- 1 **Variation** in general conditions of climate and weather with latitude is a marked feature of the extensive region covered by this book.
- 2 In summer, from December to March, the N part of the region, as far as about 15°S at its greatest extent, is affected by hot and humid conditions associated with the Intertropical Convergence Zone (ITCZ) and the NW Monsoon which move seasonally (1.196 and 1.199).
- 3 To S of the ITCZ the South-east Trade Wind blows throughout the year in an extensive belt the width of which varies with movement of the ITCZ. Conditions in this belt are generally warm and pleasant with well-broken cloud and sunshine predominating, but scattered showers may occur especially in the N. The wind brings rain to the windward sides of the larger mountainous islands (1.218 and 1.219); by contrast, leeward coasts and slopes enjoy clearer skies, fine weather and higher temperatures.
- 4 To S of the South-east Trade Wind belt the region is dominated by a sub-tropical high pressure belt in which weather conditions are generally good (1.192).
- 5 In the S part of the region, S of the sub-tropical high pressure belt, there is a zone of strong W winds, cloud and rain (1.201).

Visibility

1.186

- 1 Visibility is generally good throughout the region although it can deteriorate rapidly in heavy rain when visibility may fall below fog limits. Fog itself is rare at sea.

Cyclones

1.187

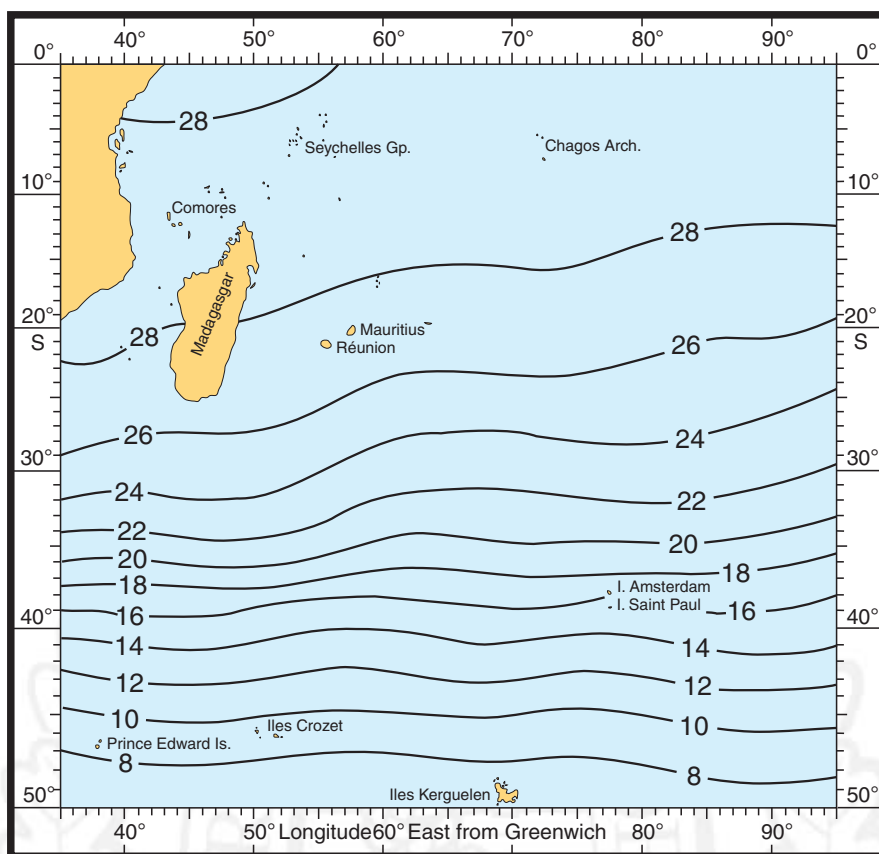
- 1 Cyclones affect parts of the region. See 1.209 for further information.

Pressure

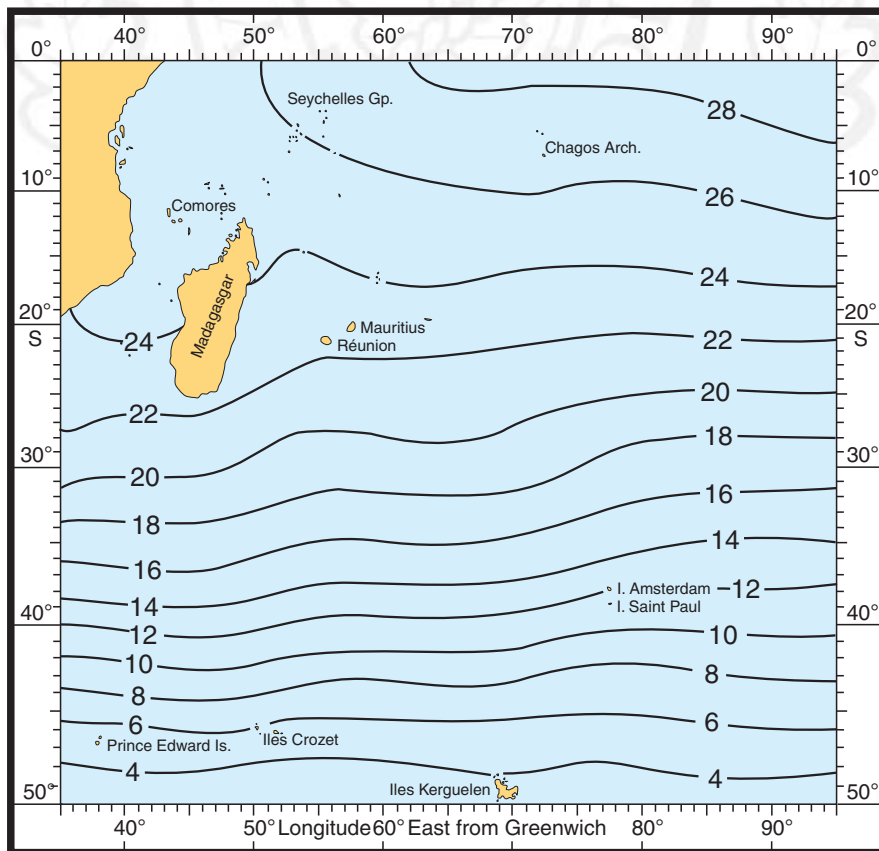
Average distribution

1.188

- 1 Average distribution of pressure at MSL for February and August is given in diagrams 1.188.1 and 1.188.2. These are representative of the pressure patterns during summer (December to February) and winter (June to August).
- 2 At all seasons the dominant feature is the sub-tropical high pressure belt (1.192).
- 3 The equatorial trough of low pressure and associated ITCZ (1.196) lies S of the Equator from about November to April. It marks the confluence of the South-east Trade Wind and the N or NW airstream which crosses the Equator as an extension of the NE Monsoon of the N part of the Indian Ocean.



Mean sea surface temperature (C) FEBRUARY (1.181.1)



Mean sea surface temperature (C) AUGUST (1.181.2)

- 4 To the S of the sub-tropical high pressure belt pressure decreases as latitude increases towards a zone of major low pressure systems in the Southern Ocean (1.193).

Variability 1.189

- 1 It is emphasised that the pressure distributions described are the averages of changing day to day values. Short term variations may be appreciable especially in the extreme S where pressure systems move across the area frequently.
- 2 To the N of about 20°S pressures seldom differ very much from average values; when significant falls in pressure are observed they may indicate the proximity of a tropical storm or cyclone (1.191).

Diurnal variation 1.190

- 1 Diurnal variation of pressure is well marked in the N part of the region and to a lesser extent farther S. Daily pressure maxima occur at about 1000 and 2200 local time with minima about 0400 and 1600; the amplitude of the oscillation is about 3 hPa near the Equator, decreasing to 2 hPa in latitude 40°S.
- 2 When disturbances occur, significant falls or rises in mean pressure can be masked by the diurnal variation; it is thus important to take account of the latter when comparing successive barometer readings. The table below gives the hourly amplitude of the oscillation which will enable computation of a mean pressure value; changes in the mean pressure value will indicate the average pressure tendency.

Correction (in hPa) to be applied to the barometer reading to allow for diurnal variation

Local time	Latitude belt	
	0°–10°S	10°–20°S
0001	-0.7	-0.4
0100	-0.2	0.0
0200	+0.2	+0.4
0300	+0.6	+0.7
0400	+0.7	+0.7
0500	+0.5	+0.4
0600	+0.1	0.0
0700	-0.5	-0.5
0800	-1.0	-1.0
0900	-1.3	-1.2
1000	-1.3	-1.2
1100	-1.1	-0.9
1200	-0.5	-0.3
1300	+0.2	+0.3
1400	+0.9	+0.9
1500	+1.4	+1.3
1600	+1.6	+1.4
1700	+1.5	+1.2
1800	+1.1	+0.8
1900	+0.5	+0.2
2000	-0.1	-0.3
2100	-0.7	-0.7
2200	-0.9	-0.9
2300	-0.9	-0.7

- 3 The above corrections should not be applied to pressure values entered in the weather log or transmitted in weather reports.

Abnormal falls 1.191

- 1 In the zone between the Equator and 25°S, the existence, or impending development of a tropical depression, may be indicated if the barometric pressure after correction for diurnal variation shows a fall of more than 3 hPa in 24 hours or a value 5 hPa or more below the appropriate monthly average. Such depressions are liable to intensify rapidly into violent tropical storms or cyclones. Although weather satellites enable development and movement of storms to be monitored closely it is emphasised that it remains important to check mean pressure regularly as it may provide the earliest indication of an approaching or developing storm.

Anticyclones

Sub-tropical high pressure belt 1.192

- 1 This system dominates the zone between 20° and 40°S; the axis of the zone is farthest N at 30°S in winter and moves about 5° farther S in summer. Within this belt there are no quasi-permanent anticyclonic centres such as are found in other sub-tropical oceans; the high pressure system here consists of a series of mobile anticyclones which move E in a rather irregular succession at roughly weekly intervals. Speed of movement varies but is usually about 5° to 8° of longitude in 24 hours; occasionally the system becomes stationary for a week or more.
- 2 The strongest anticyclones, with central pressures of 1040 hPa or more, develop in winter and usually reach their peak intensity E of 55°E; strong winds may be experienced on the N and S sides of these systems.
- 3 Weather in the high pressure belt is generally fine but the troughs between successive anticyclones may bring occasional incursions of cooler air from the S with frontal bands of cloud and rain.

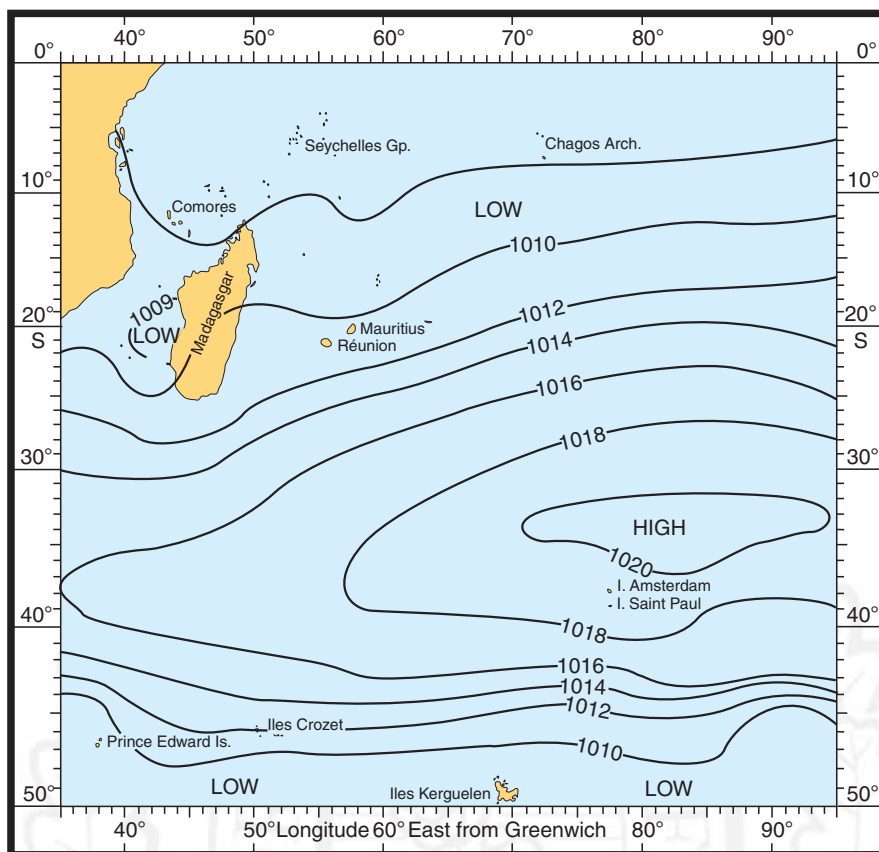
Depressions

Major frontal depressions 1.193

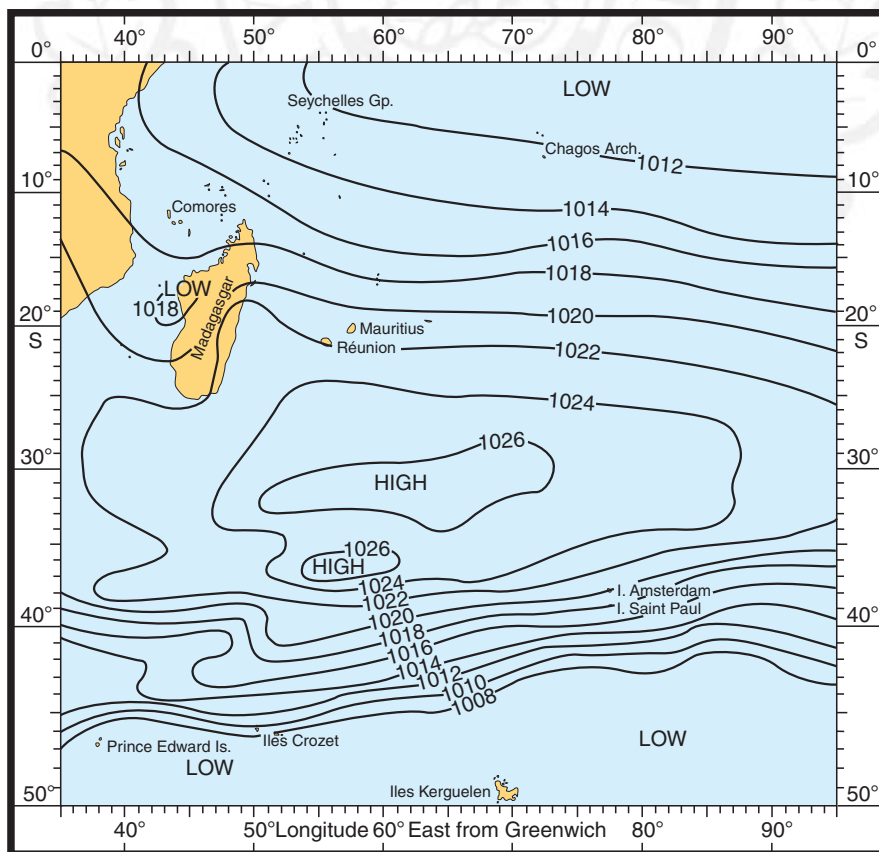
- 1 Major frontal depressions of the Southern Ocean move E in frequent succession but their paths are generally S of 45°S. Associated frontal troughs of low pressure extending N from these depressions sweep E or NE across the S parts of the region and are particularly active in winter (July to September).

Small depressions 1.194

- 1 These occasionally develop S of La Réunion, Mauritius and Rodriguez Island in summer when the high pressure belt weakens. These depressions may develop in association with trailing low pressure troughs extending NW from depressions farther S. Periods of disturbed weather may affect the islands with humid conditions and heavy showers developing by afternoon but clearing at night. A warning sign of the onset of this type of weather is said to be a deep blue appearance of mountain ridges and distant features. As pressure rises behind the disturbance and the South-east Trade Wind returns, its strength may increase to force 6–7 with rain, drizzle and very low cloud on exposed coasts. This weather is especially unpleasant if it occurs in April or May.



Average barometric pressure at mean sea level (hPa) FEBRUARY (1.188.1)



Average barometric pressure at mean sea level (hPa) AUGUST (1.188.2)

Fronts

Cold fronts

1.195

- 1 Cold fronts bringing cool air are a common feature of the region. Frontal troughs are usually associated with, and trailing NW from, the major depressions moving E to the S of 50°S. They advance E or NE and may reach as far N as 15°–20°S in winter but in summer rarely progress farther than 25°S.
- 2 Frontal belts may be very well marked with large cumulus cloud, squalls and rain especially over the more mountainous islands, but fronts become progressively weaker and of diminishing significance as they move towards the tropics.

The Intertropical Convergence Zone (ITCZ)

1.196

- 1 This zone, also known as the Doldrums, is active from November to April. This zone marks the boundary between the South-east Trade Wind and the NE Monsoon winds (1.199) of the N part of the Indian Ocean which back to N or NW as they cross the Equator.
- 2 The ITCZ moves S of the Equator in October. It extends farthest S in late January to about 10° to 12°S in mid ocean, thus covering Comores, the N end of Madagascar, Seychelles Group and Chagos Archipelago. The zone moves N to the vicinity of the Equator once more in April or May.
- 3 Although not strictly a front the ITCZ does have some frontal characteristics. Its features are light variable winds with extensive cloud and areas or belts of massive cumulo-nimbus, heavy thundery showers and squalls. Activity varies greatly from one locality to another and from day to day, being diffuse and insignificant in some parts and very well marked in others. Movement is erratic and inconsistent, often with a tendency for cloud and associated weather to disperse in one locality and re-develop some distance away.
- 4 Disturbances frequently originate in the vicinity of the ITCZ. They generally move slowly W and dissipate after a short period of initial development, but a few intensify to become tropical storms or cyclones.

Winds

1.197

- 1 Wind roses showing the frequency of winds of various directions and speeds for February, May, August and November are given in diagrams 1.197.1 to 1.197.4.
- 2 There are four well-defined wind “regimes” in this region which are described below. They broadly correspond to bands of latitude but there is some migration of the régimes N and S corresponding to the seasonal movement of the equatorial trough and the sub-tropical high pressure belt.

South-east Trade Winds

1.198

- 1 These diverge from the N flank of the sub-tropical high pressure belt. The wind blows predominantly from SE or ESE with remarkable persistence and steadiness, in a zone which, in summer, usually lies between about 30° and 10°S when it converges on the ITCZ; in winter the zone extends farther N to the Equator. It thus covers La Réunion, Mauritius and Rodriguez Island throughout the year and, from April to November, Seychelles Group and Chagos Archipelago, where the wind is sometimes called the SE Monsoon.

- 2 Average wind speed is about 15 kn over the open sea for much of the year; the wind is steadiest and strongest from May to September at about 15 to 20 kn when fresher winds of 20 to 25 kn are common and on occasions reach gale force especially in the E of the region. The Trade Wind is weakest in mid-summer at about 10–15kn, its speed decreasing on approaching the ITCZ.

- 3 The wind is occasionally disrupted by E moving troughs of low pressure; the small depressions (1.194) which occasionally develop to the S of Mauritius and La Réunion in summer can give rise to a period of strong winds up to force 7 as the South-east Trade Wind becomes re-established. At Rodriguez Island the wind may back to NE for a few days during disturbed weather in summer.

The NW Monsoon

1.199

- 1 Sometimes called the “Cross Monsoon”, this is formed as the equatorial trough of low pressure migrates S of the Equator from late October to May; the NE Monsoon of the N hemisphere is then drawn across the Equator backing to N or NW as it does so. From December to March a rather weak and fitful NW flow extends from the Equator to about 10°–15°S where it fades on approaching the ITCZ. Comores, the N part of Madagascar, Seychelles Group and Chagos Archipelago are all affected by the monsoon when hot, humid weather prevails and frequent heavy thundery rains are usual.

Light or moderate variable winds

1.200

- 1 These are generally found within the sub-tropical high pressure belt and extend over about 10° of latitude; in August they are found between 25°S and 35°S migrating slowly to between 30° and 40°S in February. Again the relatively peaceful conditions are occasionally disturbed by E moving troughs which give spells of stronger, shifting winds.

The Westerlies

1.201

- 1 These blow on the S flank of the sub-tropical high pressure belt S of about 35°S in winter, and 40°S in summer. This is the wind régime widely known as the Roaring Forties; throughout the year winds blow persistently from a general W direction but shift frequently and sometimes suddenly between SW and NW as troughs move E through the region. Strong winds are common and gales are frequent; July to October is a particularly stormy period in the S reaches of this region.

Coastal waters

1.202

- 1 Within about 20 miles of the land, winds blowing over the open sea may be considerably modified by topographical influences and land and sea breeze effects. *The Mariner's Handbook* gives details.
- 2 The climatic tables at the end of this chapter give statistical information for the incidence of winds at a number of coastal and island stations.
- 3 Small low-lying islands have little influence on general wind flow and any slight local variations extend only a short distance from the shore, but larger and mountainous islands create significant modifications which extend well out to sea.
- 4 A notable example is Madagascar, the mountainous interior of which causes major distortion of the surface wind flow. This is particularly so in winter when the South-east Trade Wind, approaching the E coast, divides

into two branches at about 18°S; N of this division winds blow from SE increasing in strength as they approach Cap d' Ambre. The S branch blows from NE in the coastal waters of SE Madagascar and veers to SE or SW when W of Cap Sainte Marie. The W coast of Madagascar is in the lee of the island mountain range and here the winds are light and more variable in direction. In summer when the South-east Trade Wind belt moves S, the SE flow affecting the NE coast of Madagascar becomes more ESE and is much weakened; at times it is replaced by the N to NW winds of the cross monsoon, and these winds also extend well down the W coast of Madagascar.

5 A similar effect though on a smaller scale is evident at La Réunion where the South-east Trade Wind again divides into two branches which blow along the NE coast and along the S and SW coasts of the island. The NW coast from Pointe des Aigrettes to Cap Bernard lies in the lee of the mountainous interior and often has light variable breezes.

Land and sea breeze

1.203

1 These effects are important throughout the year in tropical and sub-tropical latitudes N of 35°S. In coastal areas the sea breeze blows onshore from mid-morning, freshening until mid-afternoon, when it may reach 15 to 20 kn, and dies soon after sunset. Land breezes arise in the late evening and are usually considerably weaker than the sea breeze; where the land slopes steeply down to the coast, however, the land breeze may be re-inforced by downslope effects and in this case squalls can be a hazard in coastal waters. The land breeze fades soon after dawn.

2 Land and sea breezes are often obscured by moderate or fresh prevailing winds such as the South-east Trade Wind, and a common effect is the introduction of modifying components which re-inforce or oppose the general wind pattern or cause a change in wind direction. Thus in La Réunion and Mauritius the South-east Trade Wind often freshens by day and falls light at night. Other localities experience a regular daily cycle of change in wind direction.

3 The land and sea breeze cycle is most noticeable in generally calm or light wind conditions such as are found on the leeward coasts of the larger islands. On the W coast of Madagascar the sea breeze regularly reaches 10 to 15 kn; fresh land breezes are a common feature of the early morning, especially where the coast is hilly and steep, whilst sudden unexpected squalls can be an occasional hazard.

Gales

1.204

1 Diagrams 1.204.1 to 1.204.4 show the incidence of strong winds of force 7 or greater in February, May, August and November.

2 Winds of gale force, storm force and hurricane force occur in the circulation of tropical storms and cyclones which occasionally strike most tropical and sub-tropical parts of this region S of about 4°S.

Winds north of 30°S

1.205

1 These seldom blow with gale force, except when associated with tropical storms. The South-east Trade Wind may sometimes freshen to force 7 over the open ocean,

especially from June to September and generally E of 55°E, but wind strength rarely reaches force 8.

Winds south of 30°S

1.206

1 These frequently blow with gale force, except in mid-summer, and can reach force 11 or 12. This is a stormy part of the region and gale frequency increases markedly with higher latitude; incidence of gales of force 8 or more may exceed 30% between 30° and 40°S from June to September. In mid-summer the belt of strongest winds moves farther S but the S part of the region is still windy S of 40°S and the incidence of gales approaches 20% in the extreme S.

Squalls

1.207

1 Squalls which can be very violent may be associated with severe thunderstorms; they are most frequent in coastal areas of the larger islands and are especially common around N Madagascar from December to March.

2 Squalls may develop in the South-east Trade Wind airstream and in the NW Monsoon, especially in the vicinity of the ITCZ.

Waterspouts

1.208

1 These are occasionally seen and are most likely in March and April and least likely in September and December. They are an indication of violent convection in the atmosphere and are thus to be expected in the vicinity of the ITCZ; squally conditions are often encountered near waterspouts and they should not be approached.

Cyclones, tropical storms, tropical depressions

1.209

1 The depressions most likely to be encountered in tropical regions are variously known as tropical depressions, tropical revolving storms or tropical cyclones. They usually originate as minor disturbances between 4° and 15°S in the vicinity of the ITCZ and a few of them may intensify to become extremely violent and dangerous storms with hurricane force winds, very heavy rain, mountainous seas and abnormally high tides. A general description with signs of approach and ways of avoiding them is given in *The Mariner's Handbook*.

Classification

1.210

1 It is customary to distinguish between the stages of intensity of a tropical depression according to the strength of the wind in the circulation as follows:

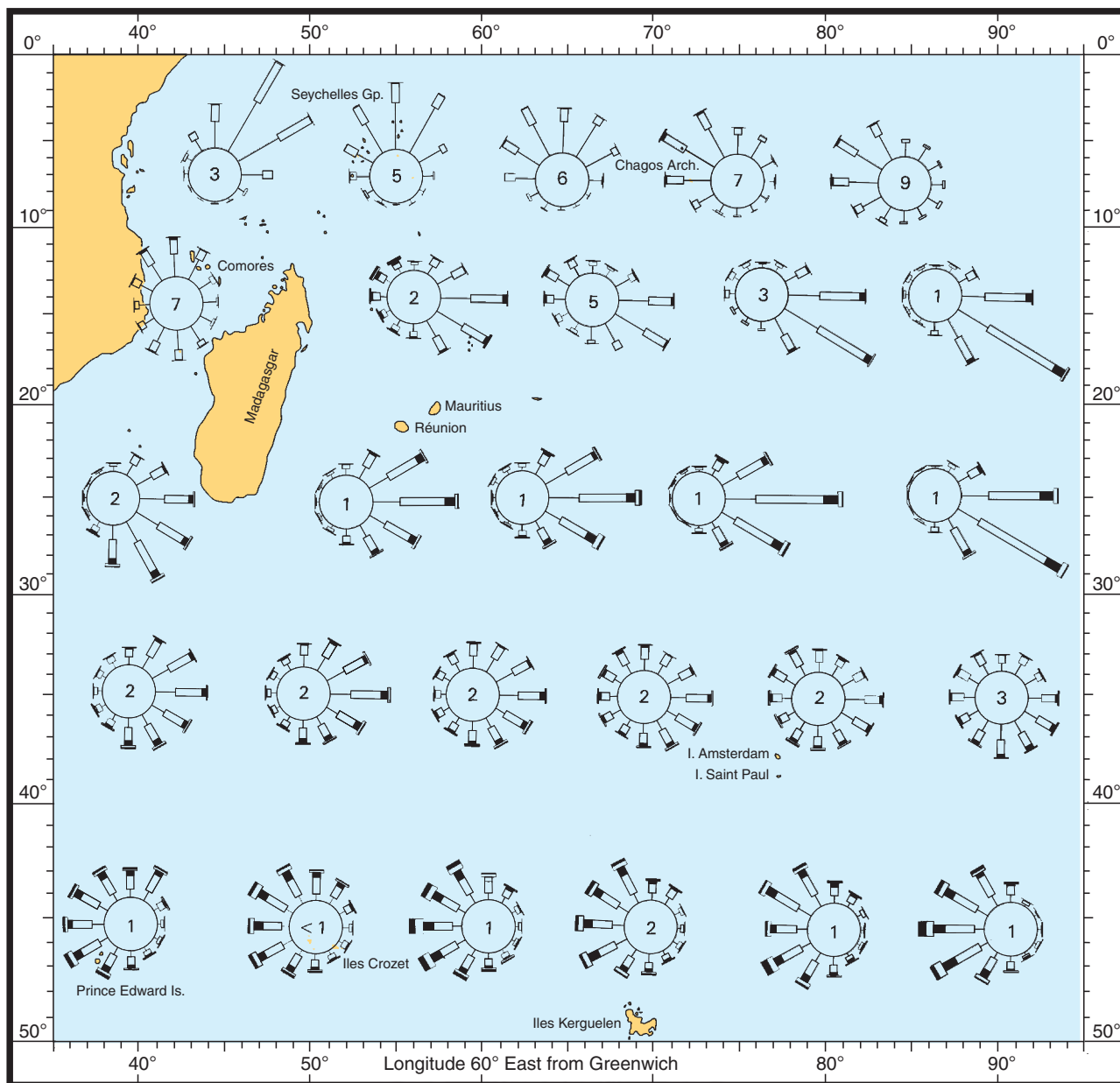
2 Tropical depression: winds up to force 7.

Tropical storm: winds force 8 to 11.

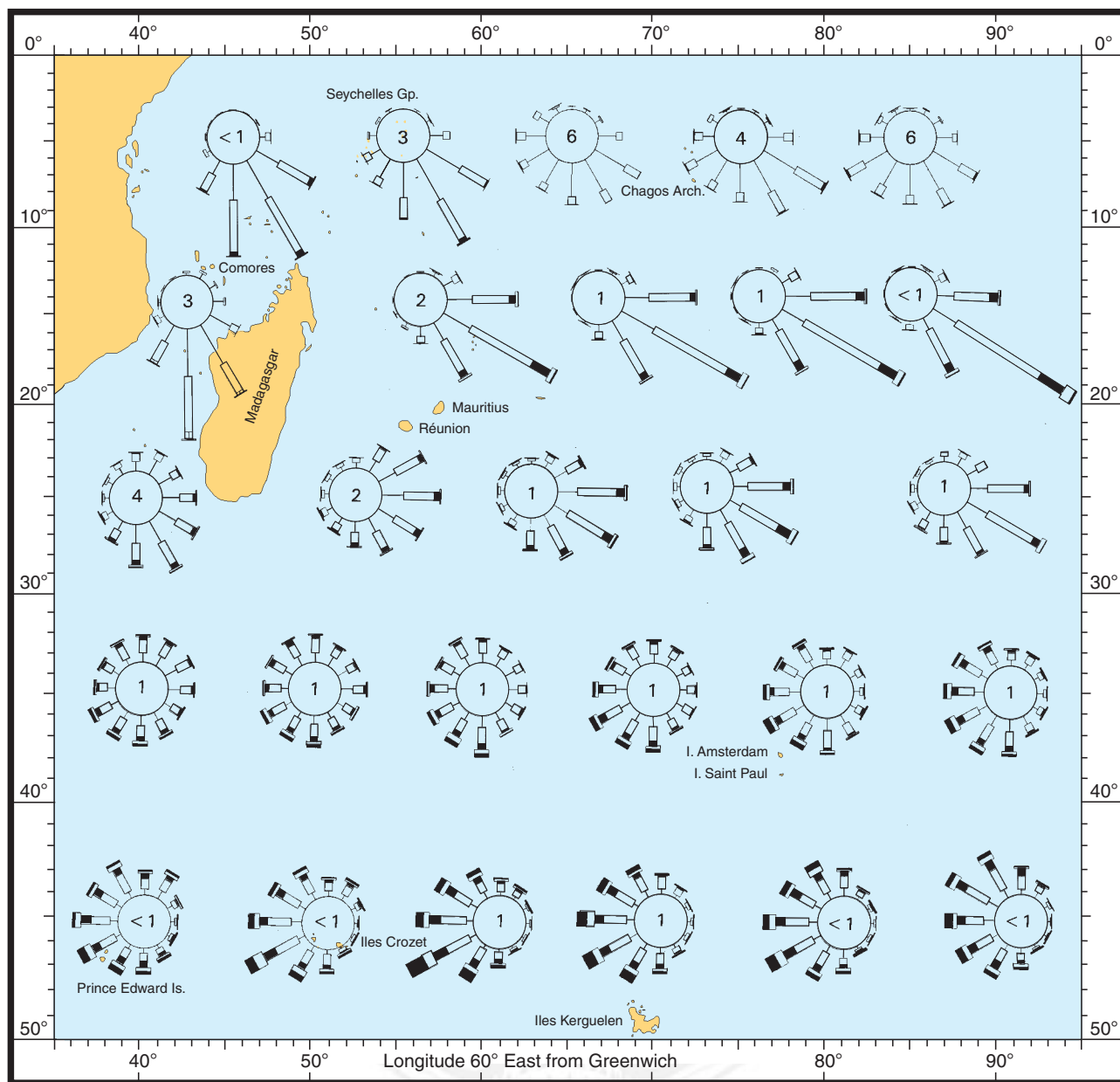
Cyclone: winds force 12 (also known as hurricane or typhoon in other parts of the world).

3 In the region covered by this book the terms used in warning messages to describe storms at different stages of intensity vary from one country to another. Thus a tropical storm (winds force 8 to 11) may be described as a "moderate", "strong" or "severe" depression in warnings issued from Mauritius or La Réunion. But all authorities use "cyclone" or "intense cyclone" for a storm with hurricane force 12 winds.

4 "Super-cyclone" is a term sometimes used to describe a storm with winds exceeding 130kn which can occasionally develop.



Wind distribution FEBRUARY (1.197.1)



EXPLANATION. The frequency of wind from any direction is given according to the scale:

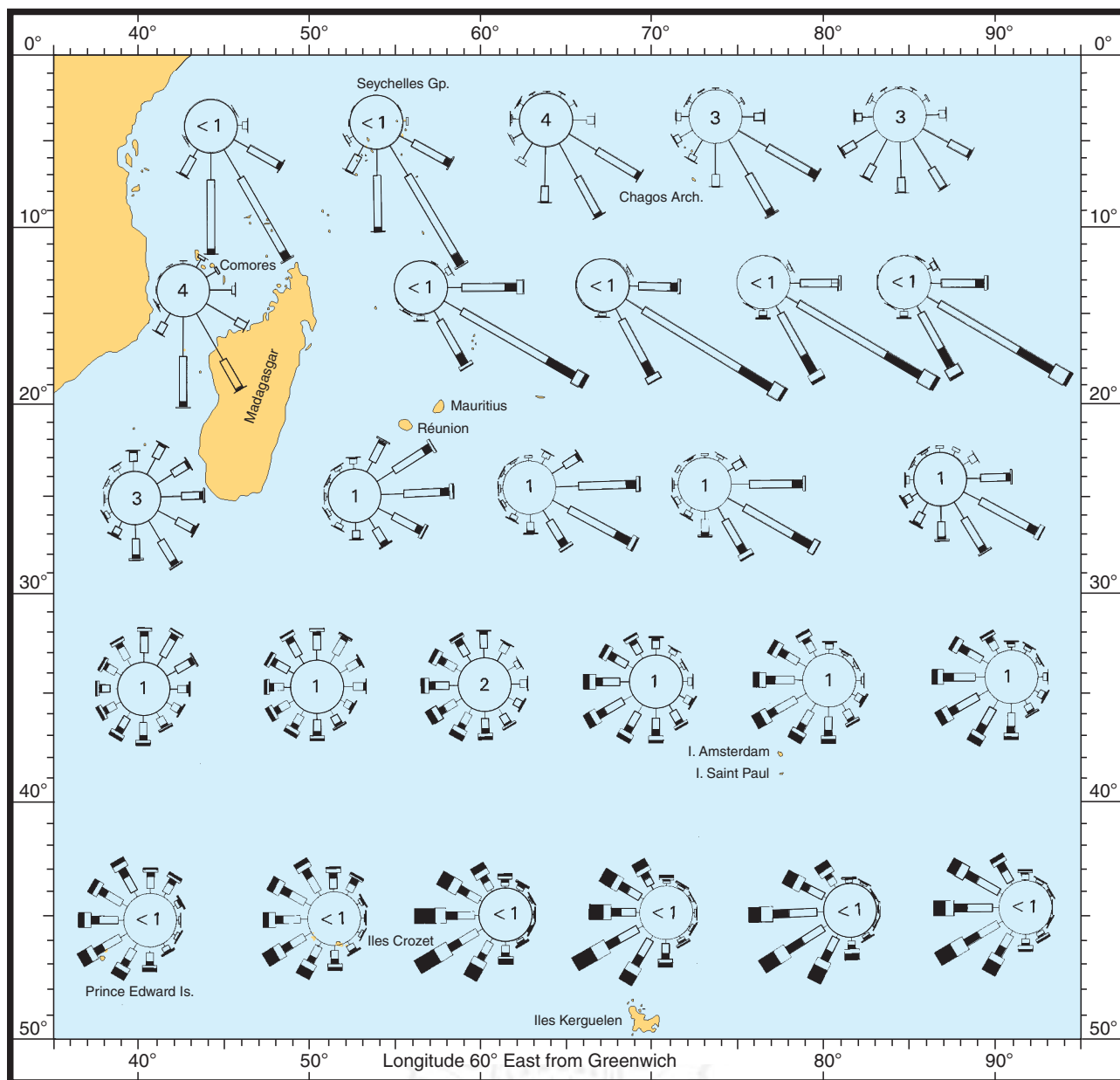
0% 10 20 30 40 50%

This scale is further subdivided to indicate the frequency of winds of different Beaufort force according to the legend:

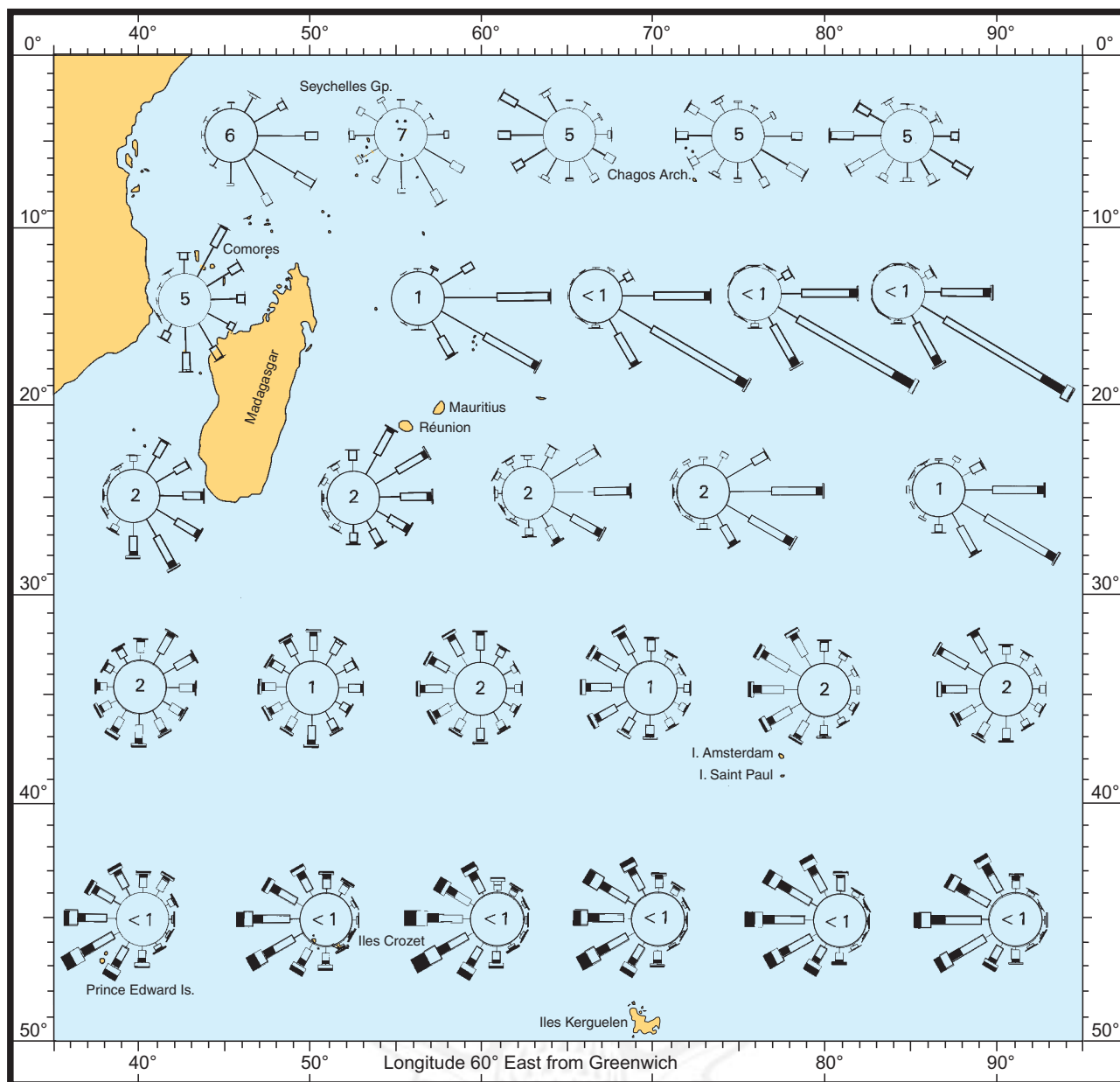


Wind direction is towards the circle centre. The figure within the circle gives the percentage of calms.

Wind distribution MAY (1.197.2)



Wind distribution AUGUST (1.197.3)



EXPLANATION. The frequency of wind from any direction is given according to the scale:

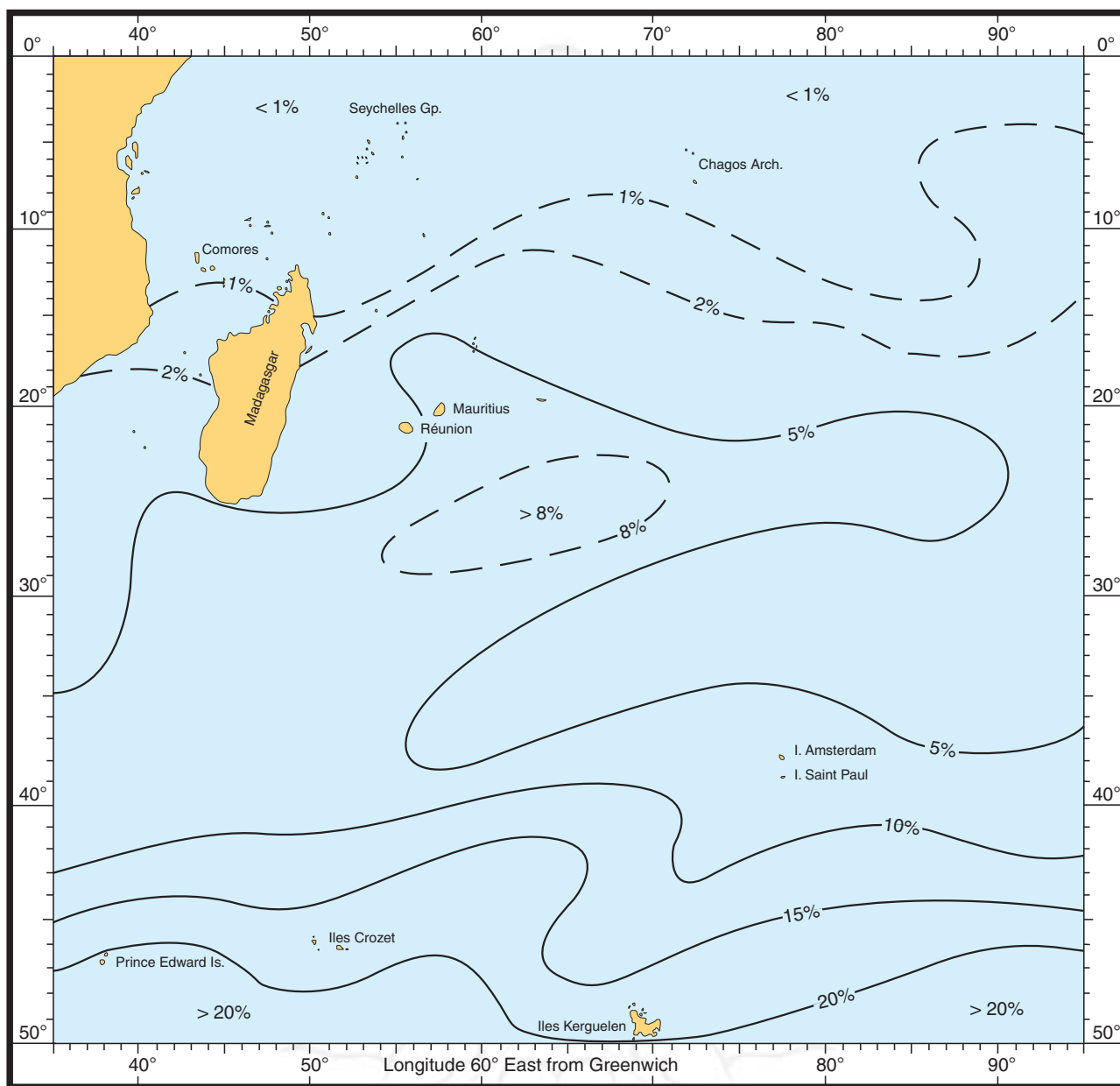
0% 10 20 30 40 50%

This scale is further subdivided to indicate the frequency of winds of different Beaufort force according to the legend:

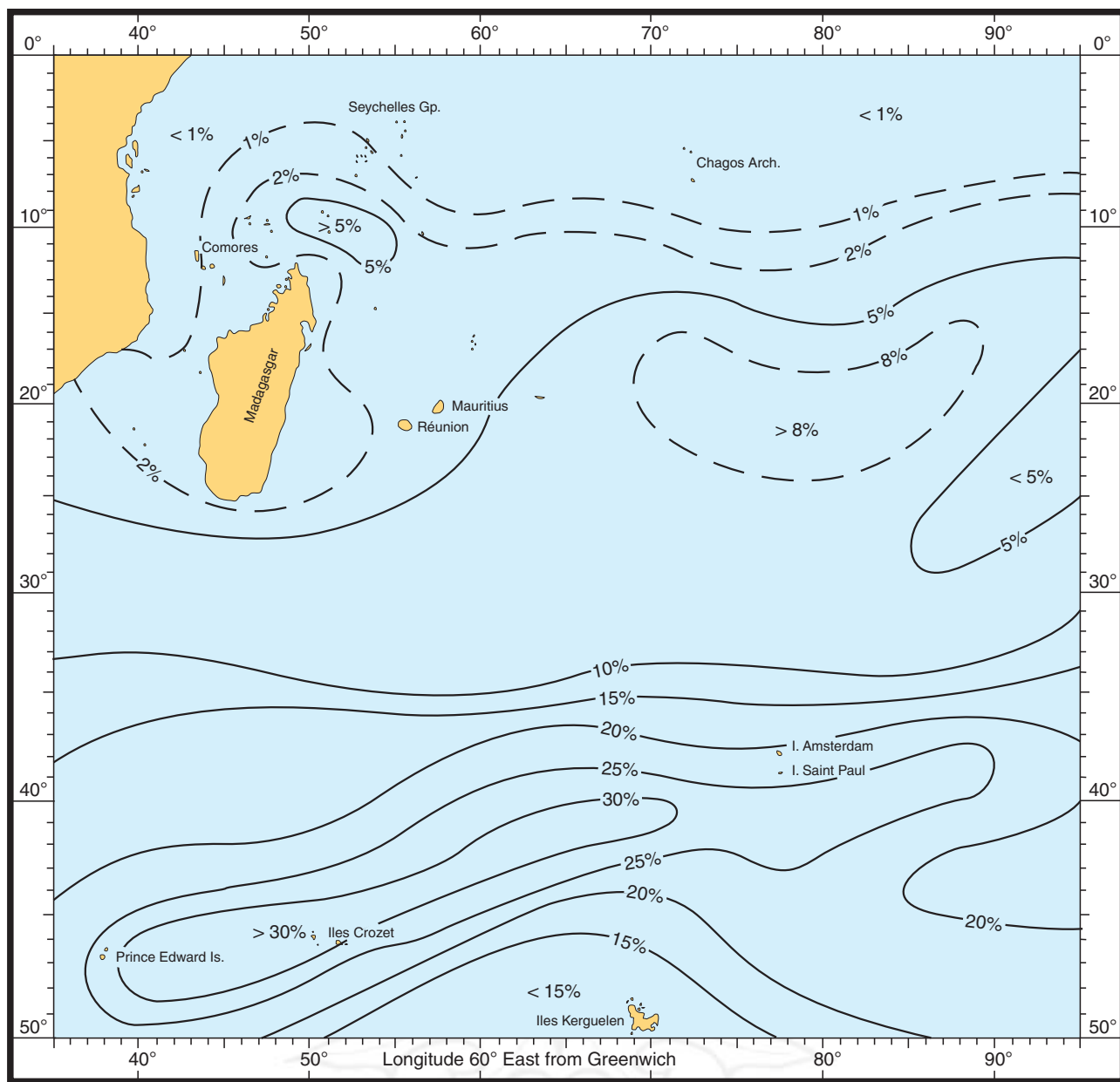


Wind direction is towards the circle centre. The figure within the circle gives the percentage of calms.

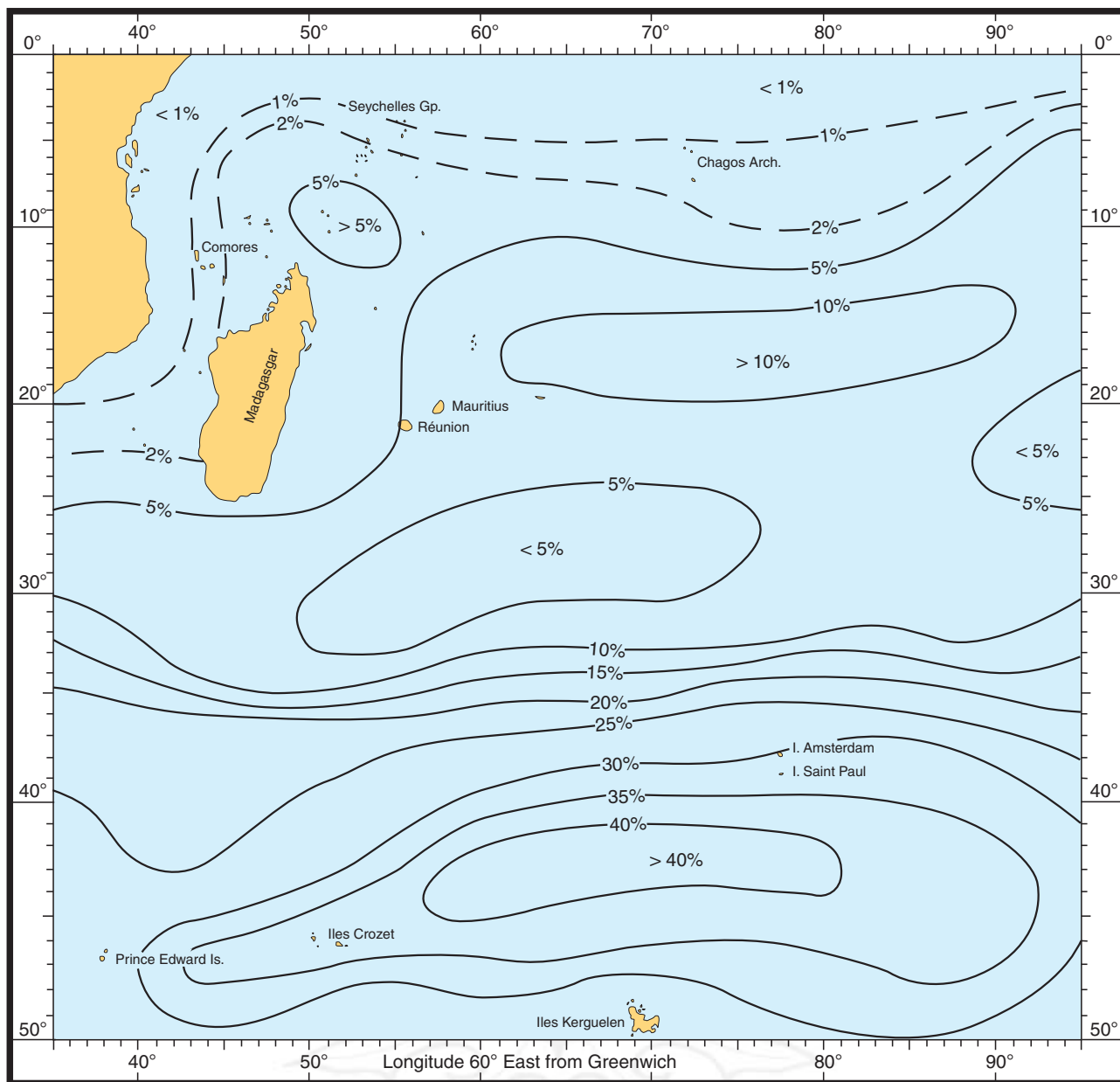
Wind distribution NOVEMBER (1.197.4)

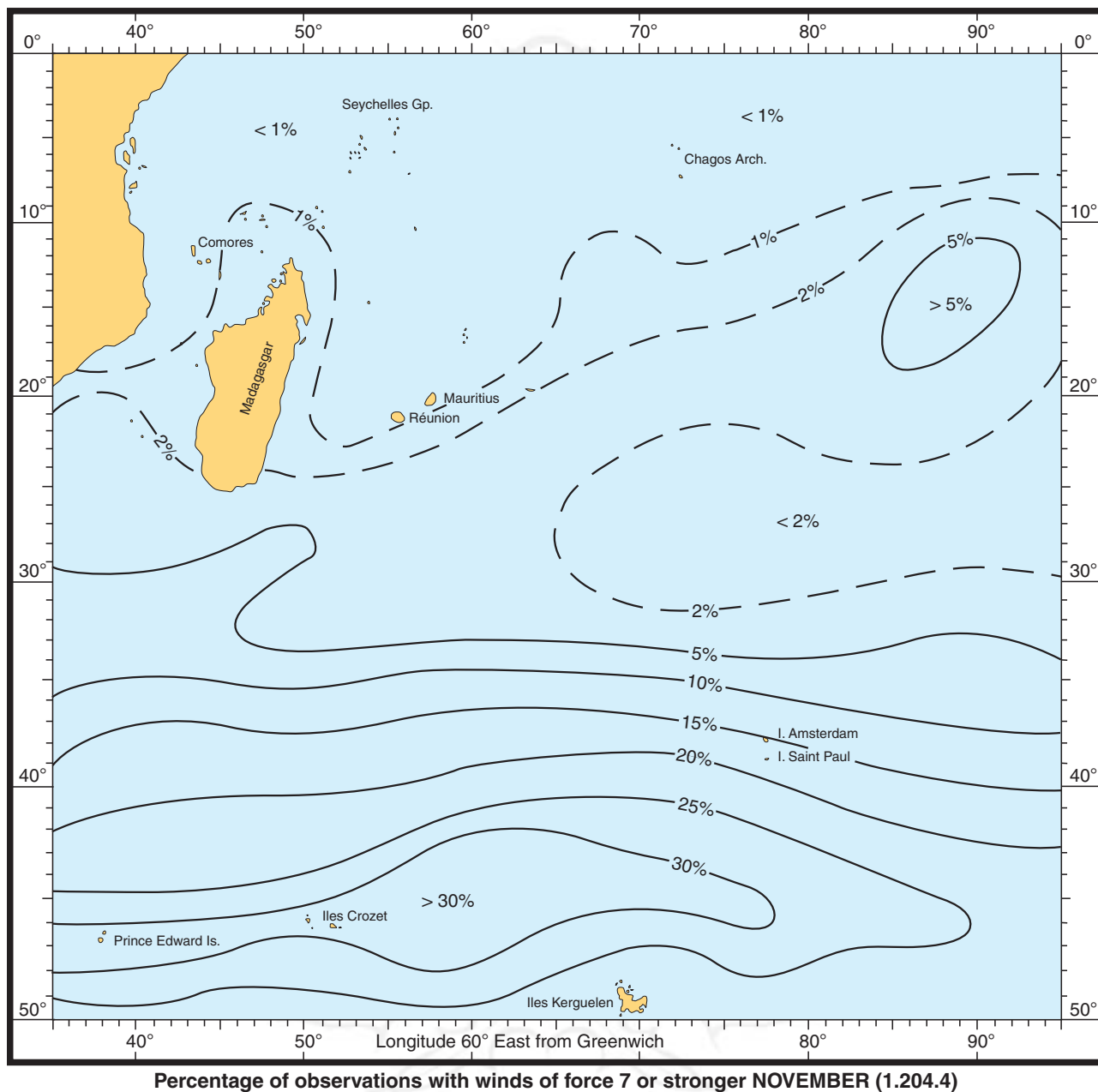


Percentage of observations with winds of force 7 or stronger FEBRUARY (1.204.1)



Percentage of observations with winds of force 7 or stronger MAY (1.204.2)





Occurrence

1.211

- 1 Storms may affect any part of the region from about 4° to 30°S; they may reach higher latitudes but they then become progressively extra-tropical in character, though still large and dangerous depressions. No month may be regarded as entirely free from possible storm development, but the period when occurrence is most likely extends from November to April with maximum frequency from December to March. The following table gives the average monthly frequency of tropical storms and cyclones in the SW part of the Indian Ocean. The table is a useful guide; however, storm frequency varies greatly from year to year and the number of storms in any one month may differ significantly from these average figures.

Average occurrence of tropical storms and cyclones in the SW Indian Ocean

Month	Tropical storms	Cyclones
January	3–4 per year	1–2 per year
February	3–4 per year	1 per year
March	2–3 per year	1 per year
April	1 per year	1 every 2–3 years
May	1 every 5 years	Rare
June, July, August, September	Rare	Rare
October	1 every 3 years	Rare
November	1 every 2–3 years	Rare
December	1–2 per year	1 every 2 years
Annually	11 per year	4 per year

Movement

1.212

- 1 The movement of storms initially is nearly always in a SW to W direction at speeds of about 10 to 15 kn; most subsequently change direction (re-curve) tracking S or SE and increase their speed as they do so. Recurvature tends to take place near 20°S early in the season and 15°S in later months. Some storms follow extremely erratic tracks and may change direction unexpectedly.
- 2 A few storms reach the Mozambique Channel before re-curving and may cross Madagascar. To the N of the channel, in the vicinity of Comores, storms can be very violent though still small in extent. An occasional storm continues W to the African coast; this is most likely early or late in the season.
- 3 Cyclones rarely affect Seychelles Group or Chagos Archipelago but Mauritius, La Réunion and Rodriguez Island are very vulnerable and are likely to be struck by storms as they re-curve. The occurrence of cyclones over the various islands is, however, variable. An individual location may not be affected for several years and then two or more storms may strike within a year or even a month.
- 4 Diagram 1.212 shows some typical cyclone tracks.

Cloud

North of 30°S

1.213

- 1 Over the open sea very well broken cumulus cloud is usual in the South-east Trade Wind airstream. Amounts

average 3 to 5 oktas and cloud base is remarkably uniform, typically at about 550 to 600m. Isolated large cumulus or cumulo-nimbus cloud may develop especially on approaching the ITCZ where giant cumulo-nimbus and extensive layers of upper cloud are a common feature.

- 2 Occasional disturbances in the South-east Trade Wind zone give rise to cloud masses or lines which cause overcast or cloudy conditions for one or even several days, but skies may clear at night.
- 3 Over the larger islands, coasts and slopes exposed to prevailing winds have large amounts of cloud and rain whilst leeward coasts often have almost clear skies. The W coast of Madagascar frequently has no more than 2 or 3 oktas when the Trade Wind is giving very cloudy and wet conditions on the E coast.
- 4 During the NW Monsoon large amounts of cloud and large cumulus and cumulo-nimbus with associated thundery downpours are a common feature. From December to March cloudy skies with 5 to 6 oktas are usual on the N and NW coasts of Madagascar and these conditions spread down the W coast of the island. Comores, Seychelles Group and Chagos Archipelago are similarly affected.
- 5 There is often a marked diurnal variation of cloud over islands; cumulus cloud develops by day and disperses at night. The towering daytime cumulus tops can be useful for identifying the position of a distant low-lying island.

The sub-tropical belt of high pressure

1.214

- 1 This is a zone with generally fine conditions and clear skies. Occasionally troughs of low pressure bring belts of cloud, often with large cumulus, but the frontal cloud becomes more diffuse as the system moves to lower latitude.

South of 30°S

1.215

- 1 Here, in the belt of W winds, E moving frontal troughs bring frequent and extensive cloud systems giving overcast or cloudy conditions. In the cooler air behind each system there are large amounts of usually well broken cumulus or cumulo-nimbus cloud. *The Mariner's Handbook* describes the cloud conditions associated with frontal depressions.

Precipitation

Island stations

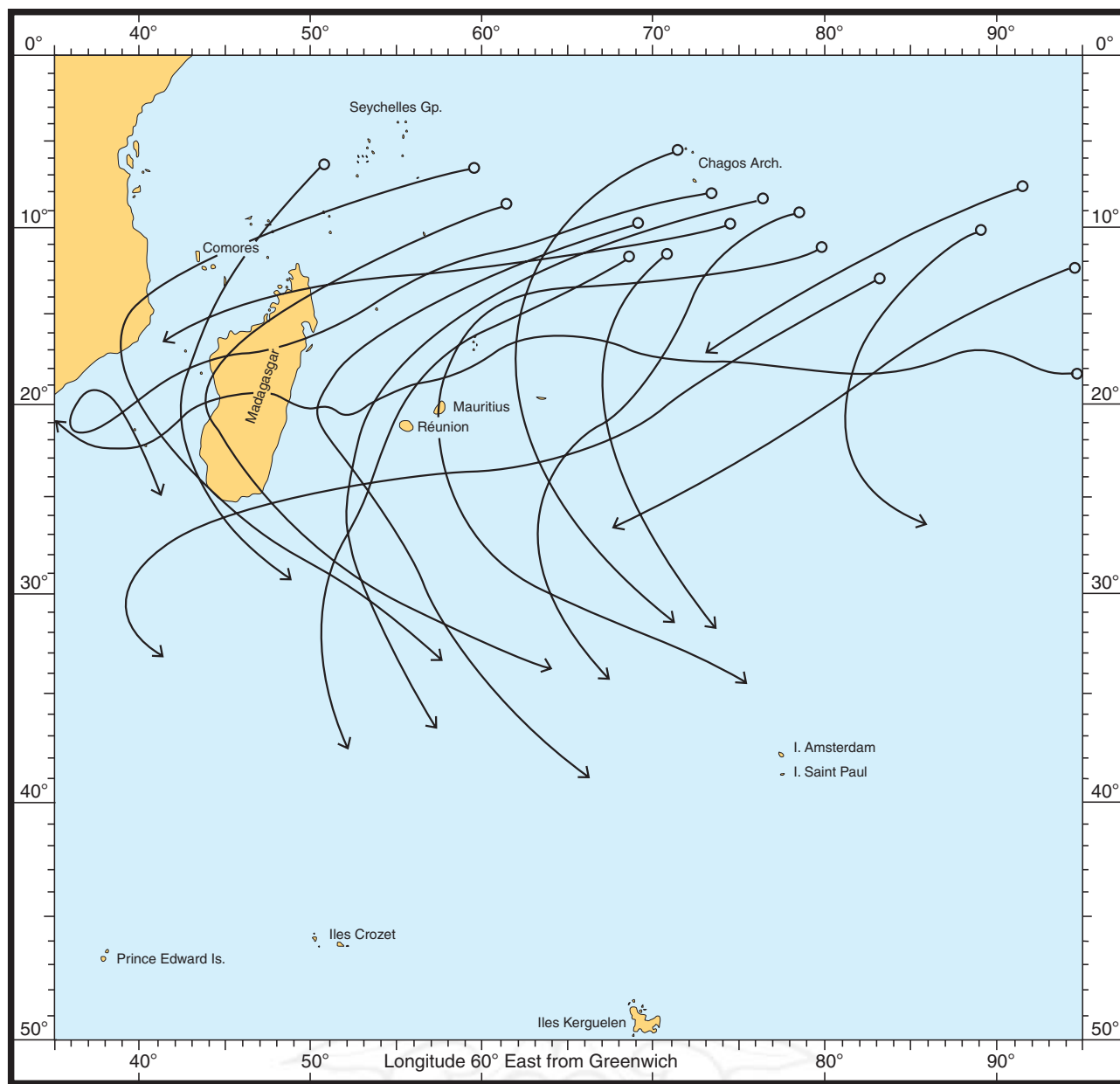
1.216

- 1 Islands in the region mostly have abundant rainfall but annual amounts and the times of year when wettest or driest weather can be expected vary appreciably and depend largely on the degree of exposure to prevailing winds and the proximity of high ground. Windward slopes and coasts may receive particularly heavy rainfall but localities on leeward coasts or in the lee of high ground may at the same time enjoy much drier clearer weather.

The NW Monsoon and ITCZ

1.217

- 1 These bring a well-marked period of heavy rains from about November to April. Thundery downpours occur in N Madagascar and in the Comores, Seychelles Group and Chagos Archipelago; at other times of year rain falls on these islands as a result of the South-east Trade Wind blowing onshore. There is thus no dry season as such but greatest falls occur in the summer months.



Typical cyclone tracks (1.212)

Madagascar

1.218

- 1 The moist South-east Trade Wind brings a plentiful rainfall to the E coast and especially to the central parts; annual amounts up to 3000 or 4000 mm are recorded with the wettest period from January to July. The NE and SE coasts are less exposed but still receive appreciable rain and the N end of the island has its heaviest rains during spells of the NW Monsoon in summer.
- 2 The W coast of Madagascar is well sheltered from the South-east Trade Wind. From May to October there is little rain; but from November to April the NW Monsoon brings a wet season which extends as far S as about 15° to 20°S. The amounts received are less and the rainy period somewhat shorter with higher latitude.
- 3 The SW coast of Madagascar is sheltered from most rain producing influences; only a little rain falls in these parts, mostly between November and April.

La Réunion, Mauritius and Rodriguez Island

1.219

- 1 These are covered by the South-east Trade Wind belt throughout the year. Rain can be expected at all seasons with heaviest falls in the cyclone season from November to March, and the driest period from about June to October. Rainfall varies greatly from year to year and from coast to coast.
- 2 On the E coast of La Réunion, Saint-Benoit has an annual average fall of 3900 mm; on the more sheltered SW coast Saint-Pierre has an annual average of about 1000 mm.
- 3 At Mauritius the annual mean rainfall is 2300 mm on the S coast and 900 mm on the W coast but in a dry year recorded falls may be less than 900 mm on the S coast and as low as 400 mm on the W coast.
- 4 Rainfall tends to be most common in the afternoon but when the South-east Trade Wind is well established it often occurs at night.

Cyclones

1.220

- 1 These bring extremely heavy rain and the storms of this region are notorious for the torrential downpours that often accompany them. On La Réunion falls of 1319 mm in 12 hours (1964) and 1840 mm in 24 hours (1952) have been recorded.

The sub-tropical belt of high pressure

1.221

- 1 This is a zone of low rainfall; some rain can, however, be expected from frontal troughs moving through the area most frequently in winter.
- 2 To the S of 35°S fronts associated with E-moving depressions bring frequent and often heavy rain. Rain can be expected at all seasons; during the winter months it may occasionally fall as snow or sleet near the S border of the region.

Fog and visibility

Sea fog

1.222

- 1 This is rarely encountered over the open sea N of 30°S and visibility is generally good although there is usually some deterioration in areas affected by the NW Monsoon. Severe reductions in visibility sometimes below fog limits can occur in heavy rain.
- 2 Farther S the incidence of fog increases with latitude, where warm moist air is drawn S over cooler seas by

depressions of the Southern Ocean. Although information is very sparse, about 5% of observations report fog at about 40°S.

Radiation fog

1.223

- 1 Radiation fog or mist can develop in the early morning in low-lying coastal areas and valleys and drift offshore to affect coastal waters; some localities on the W and N coasts of Madagascar are occasionally affected. This type of fog generally disperses shortly after sunrise.

Air temperature

Open sea

1.224

- 1 Air temperatures over the open sea are largely controlled by sea surface temperatures (1.181) and there is commonly little difference between the two; the air temperature is usually about 1°C lower than the sea temperature, and possibly rather more in winter.
- 2 Highest temperatures through the year generally occur in equatorial parts of the region with daily average maximum values about 28° to 31°C and daily minima of 24° to 26°C; there is little seasonal change. Farther S the seasonal variation increases somewhat with highest values from about January to March and lowest from July to September. In latitude 20°S summer temperatures average about 27°C and at 40°S about 15° to 16°C; winter values are about 4° to 5°C cooler.

1.225

- 1 Heating and cooling of the larger islands produces greater seasonal and diurnal variability but onshore prevailing winds have a moderating effect and result in more modest maximum and minimum temperatures than those often experienced well inland.
- 2 From November to April the E coast of Madagascar and the coastal areas of islands in the South-east Trade Wind belt, including La Réunion and Mauritius, generally have daily maximum temperatures of 29° to 31°C falling to about 22° to 24°C at night. In the cooler winter months highest daily values average 24° to 26°C and lowest are about 17° to 19°C. Extreme summer maximum temperatures can reach 35° to 36°C and winter minima extremes are about 10° to 15°C.
- 3 The W and NW coasts of Madagascar and the islands of Comores are somewhat warmer. In the hot NW Monsoon season daily temperatures rise on average to 31° to 33°C and fall at night to 22° to 24°C. In the winter months day temperatures are only slightly lower than summer values at about 28° to 32°C but at night they fall to about 15° to 19°C. Extreme temperatures have summer maximum values of 38° to 40°C and winter minima of 13° to 15°C, but in the extreme SW part of Madagascar winter temperatures can fall to as low as 6° to 7°C.
- 4 The climatic tables at the end of this chapter give statistical temperature information for a number of coastal and island stations.

Relative humidity

1.226

- 1 The airstreams affecting the region cover long distances over the sea and humidity is moderately high at all times of year. Relative humidity is dependent on air temperature and maximum daily values of humidity normally occur around dawn when air temperature is lowest; humidity is usually lowest in the afternoon at the time of maximum temperature.

Open sea N of 30°S**1.227**

- 1 highest average humidities are experienced in the equatorial zone in midsummer during the period of the NW Monsoon; values exceed 85% as far as about 15°S. Farther S mean humidity decreases with higher latitude and at 30°S is about 70% to 80%.

- 2 In mid-winter (July) humidities are slightly lower in the equatorial zone with values of about 80% to 85% but S of 20°S there is little seasonal change. Diurnal variation at sea is small.

South of 30°S**1.228**

- 1 Detailed information is sparse but in general humidity varies little seasonally with highest values in summer and lowest in spring. Diurnal variability is also slight with early morning average values of about 80% to 90%, falling by afternoon by some 3% to 8%. Incidence of high humidity of 95% to 100% increases with latitude.

Island humidity**1.229**

- 1 This is to a large extent influenced by the degree of exposure to onshore prevailing winds. On the E and W coasts of Madagascar average daytime humidity varies little

throughout the year; mean values are about 80% on the exposed E coast and 70% to 75% on the more sheltered W coast. On the N and NW coasts affected by the NW Monsoon, however, high humidities are recorded in the summer with values of 95% to 100% in the early morning.

- 2 In the islands of the South-east Trade Wind belt, including La Réunion, Mauritius and Rodriguez Island average humidities vary from about 90% in the early morning to 65–70% in the afternoon; values are significantly lower in the lee of high ground.

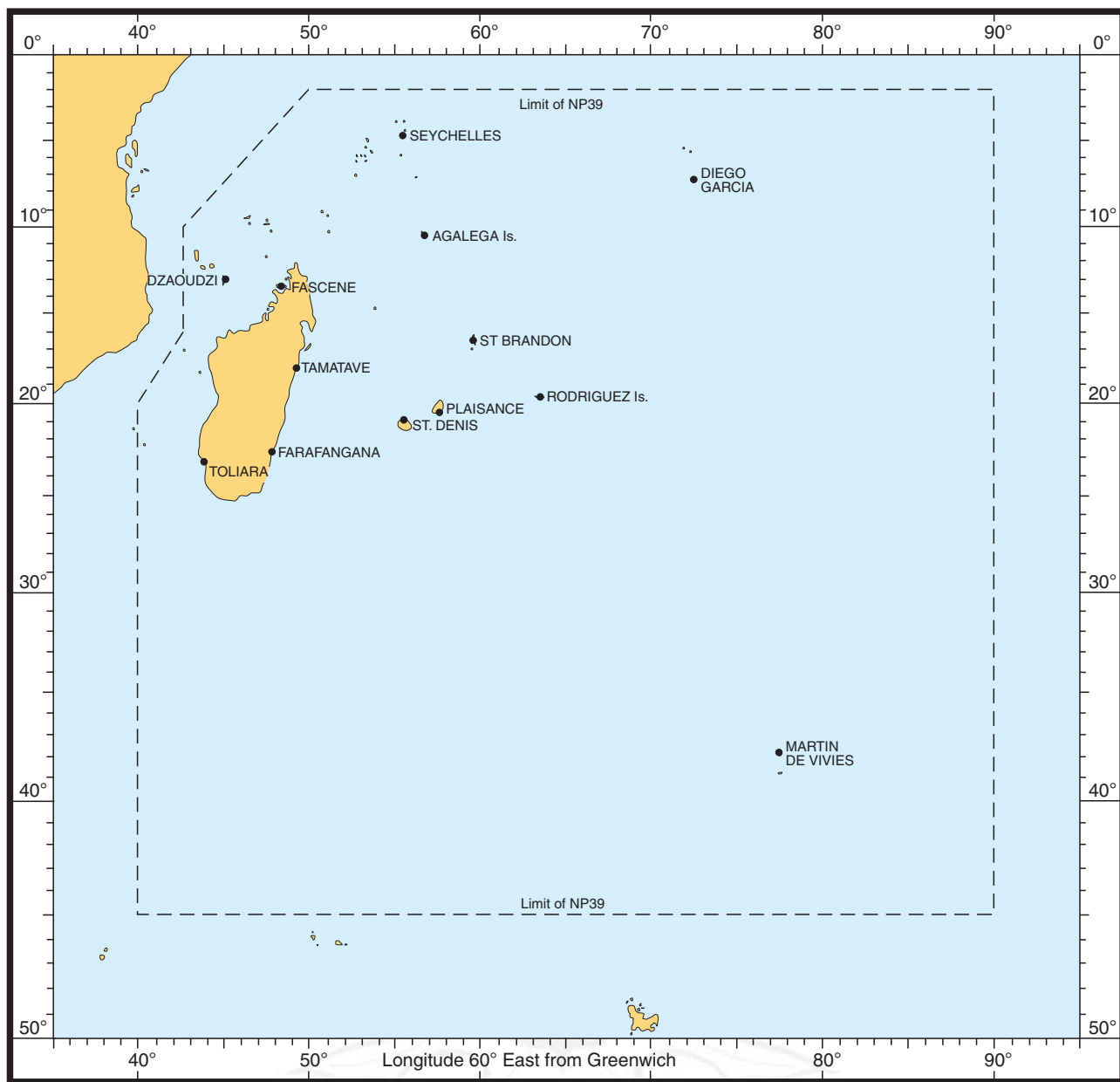
Climatic tables**1.230**

- 1 The tables which follow give data for a number of coastal and island stations for which regular observations are available over a considerable number of years.

- 2 These data refer to the specific location of the observing station and may not necessarily represent conditions to be expected at sea or in the approaches to ports in the vicinity. Topography has an important influence on local weather conditions; variations can occur within a short distance.

1.231

- 1 **Differences** between conditions at sea and land stations can be considerable. Further information is given in *The Mariner's Handbook*.



Location of climatic stations (1.232)

1.233

WMO No 67005

DZAOUDZI/PAMANZI (COMOROS) (12° 48' S, 45° 17' E) Height above MSL – 7 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0600	1500	0600	1500	Average fall	No. of days with 0.1 mm or more	0900										1500										0600	1500	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																			Knots							
February	1010	30	25	32	23	90	78	6	6	273	16	29	11	7	5	6	11	8	17	6	30	8	6	5	8	8	10	21	3	3	8	⊕	⊕	10		
March	1010	31	25	32	23	90	77	6	6	224	15	26	6	4	4	4	9	13	26	10	22	8	6	3	7	5	17	29	1	5	9	⊕	⊕	9		
April	1010	31	25	32	23	90	76	5	6	168	15	12	13	11	9	15	16	8	7	10	14	13	14	14	15	11	7	9	3	3	6	0	⊕	7		
May	1012	31	25	32	23	88	72	4	5	79	10	2	5	6	21	36	16	6	2	6	4	6	10	21	40	9	4	4	2	5	6	0	⊕	5		
June	1014	30	24	31	21	83	69	4	4	34	4	2	2	3	26	50	12	2	1	4	3	3	6	24	55	7	⊕	1	2	7	8	0	⊕	1		
July	1016	29	23	30	20	80	67	3	4	14	4	⊕	⊕	1	23	59	14	1	1	1	1	1	4	22	64	8	⊕	1	⊕	9	9	0	⊕	⊕		
August	1017	28	22	28	18	80	68	4	3	13	3	0	1	2	36	54	6	1	⊕	1	⊕	2	4	38	49	4	⊕	1	1	11	9	0	⊕	0		
September	1017	28	21	29	19	84	68	4	3	9	3	1	1	5	25	51	12	4	1	2	1	2	7	36	45	6	⊕	⊕	1	8	8	⊕	⊕	0		
October	1016	28	21	29	19	88	68	4	3	22	4	2	4	9	16	40	17	4	3	6	5	7	14	27	36	3	2	4	2	4	7	⊕	⊕	⊕		
November	1015	29	23	30	21	88	70	4	4	48	7	8	16	19	11	20	12	5	6	4	11	15	18	18	23	4	2	9	1	4	7	0	⊕	1		
December	1013	30	24	31	22	87	72	4	5	73	8	20	25	17	6	10	7	4	9	2	24	22	18	8	10	4	2	10	2	4	7	⊕	⊕	3		
January	1012	31	25	32	23	89	75	5	5	171	12	26	15	14	5	9	9	5	11	5	23	16	15	9	7	7	12	3	3	7	⊕	1	8			
Means	1013	30	24	33*	18§	86	72	4	4	—	—	11	8	8	15	29	12	5	7	5	12	9	10	19	30	6	4	8	2	5	8	—	—	—		
Totals	—	—	—	—	—	—	—	—	—	1128	101	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	⊕	1	44		
Extreme values	—	—	—	36†	13‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.234

WMO No 67161

TOLIARA (23° 23' S, 43° 44' E) Height above MSL – 8 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0600	1500	0600	1500	Average fall	No. of days with 1 mm or more	0900										1500										0600	1500	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																										
February	1010	33	23	37	20	87	70	4	5	95	6	12	13	11	9	8	9	11	11	16	4	1	2	4	11	29	38	9	3	2	12	1	⊕	14		
March	1009	33	23	36	20	88	69	3	4	89	6	13	15	17	14	11	5	5	5	15	3	2	1	2	12	32	40	8	1	3	12	⊕	0	10		
April	1011	33	22	36	18	88	68	2	3	36	3	12	15	14	16	12	5	4	4	18	1	⊕	1	4	12	40	36	7	⊕	2	12	⊕	⊕	7		
May	1013	32	20	36	16	86	66	2	3	18	2	7	13	17	18	14	3	2	4	23	⊕	1	1	5	11	36	34	10	1	2	11	⊕	⊕	2		
June	1016	30	18	34	13	87	66	1	2	16	2	5	15	21	18	14	4	2	1	21	1	1	1	4	15	39	33	8	⊕	2	10	⊕	⊕	1		
July	1019	28	15	32	12	86	62	1	2	15	2	4	14	21	16	17	4	2	1	22	1	⊕	1	5	16	37	31	8	1	3	10	⊕	⊕	⊕		
August	1020	28	15	32	10	84	60	1	2	6	1	6	16	20	17	18	3	1	1	17	1	1	2	6	18	35	32	5	1	3	10	⊕	⊕	⊕		
September	1019	28	15	33	11	82	63	1	1	6	1	6	16	20	15	19	3	1	1	19	0	1	2	3	14	39	34	7	1	4	12	⊕	⊕	⊕		
October	1017	29	17	34	13	83	67	1	1	8	1	7	10	10	19	18	7	4	5	20	1	1	0	2	11	39	39	6	1	3	14	⊕	⊕	⊕		
November	1015	30	19	35	15	86	69	2	3	12	1	6	7	7	9	18	16	15	11	11	1	⊕	0	2	12	34	40	10	1	2	14	1	0	3		
December	1013	31	21	35	18	84	69	2	3	22	2	8	4	5	6	17	20	21	7	12	1	⊕	1	1	11	43	37	5	1	2	14	⊕	⊕	4		
Means	1012	32	22	35	20	87	71	3	4	97	5	6	7	7	10	9	16	22	10	14	3	2	1	1	11	37	38	7	1	2	14	1	⊕	8		
Totals	1014	31	19	38*	10§	86	67	2	3	—	—	8	12	14	14	15	8	7	5	17	1	1	1	3	13	36	36	8	1	2	12	—	—	—		
Extreme values	—	—	—	—	—	—	—	—	—	420	32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	⊕	49		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year
§ Mean of lowest each year

† Highest recorded temperature
‡ Lowest recorded temperature

⊕ Rare
⊖ All observations

1.235

WMO No 67012

FASCENE (NOSY BÉ) (13° 19' S, 48° 19' E) Height above MSL – 9 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0600	1500	0600	1500	Average fall	No. of days with 1 mm or more	0900										1500										0600	1500	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																				Knots						
February	1011	32	23	34	21	98	72	6	6	519	21	7	7	14	11	6	6	9	3	39	14	8	6	4	1	6	25	25	12	<1	5	⊕	1	8		
March	1010	32	23	34	22	98	73	6	6	436	20	6	7	5	9	5	9	6	9	45	12	8	5	3	1	11	22	27	10	1	5	0	⊕	8		
April	1011	34	23	34	22	99	69	5	5	295	18	3	9	18	7	8	5	6	1	43	19	10	8	4	4	7	15	24	11	<1	4	0	⊕	8		
May	1012	33	23	34	21	99	65	4	3	157	12	1	17	20	9	7	2	1	1	42	19	12	10	5	1	5	10	20	18	<1	3	0	⊕	4		
June	1014	32	21	34	17	99	62	3	3	61	6	5	17	20	5	2	2	2	1	46	16	12	5	3	⊕	8	15	14	28	<1	2	0	⊕	⊕		
July	1016	31	19	33	17	99	59	3	3	44	6	3	12	14	10	6	4	1	2	49	15	11	9	4	2	5	17	17	20	<1	3	0	1	0		
August	1017	31	18	32	15	98	56	3	3	37	5	4	13	16	8	8	3	2	1	45	10	8	5	2	5	8	24	23	15	1	4	⊕	⊕	0		
September	1017	31	18	33	15	98	54	3	2	36	5	7	13	23	11	7	5	2	2	31	16	6	6	4	4	6	25	30	4	<1	5	0	⊕	0		
October	1016	32	19	34	17	96	52	4	2	39	6	9	26	29	12	5	1	2	3	14	19	12	5	4	2	3	20	34	3	1	6	⊕	⊕	0		
November	1015	33	21	34	18	91	53	4	2	85	7	14	22	30	16	1	3	2	2	10	19	10	6	63	1	6	24	27	4	1	6	0	⊕	1		
December	1013	33	22	35	19	92	58	5	3	148	13	9	19	35	14	3	2	4	6	8	12	6	3	2	6	11	23	34	5	1	6	0	⊕	3		
Means	1014	32	21	36*	15§	97	61	4	3	—	—	6	14	20	10	5	4	4	3	34	16	9	6	3	3	7	20	25	11	1	4	—	—	—		
Totals	—	—	—	—	—	—	—	—	—	2229	137	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	⊕	1	40		
Extreme values	—	—	—	39†	12‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.236

WMO No 67157

FARAFANGANA (22° 48' S, 47° 50' E) Height above MSL – 6 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0600	1500	0600	1500	Average fall	No. of days with 0.1 mm or more	0900										1500										0600	1500	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																										
February	1012	29	23	32	21	94	80	6	5	307	19	10	26	9	4	5	3	1	2	40	8	33	32	11	7	1	1	3	6	2	8	⊕	0	4		
March	1011	29	23	32	22	94	79	6	5	267	18	6	10	9	6	11	9	3	3	44	2	23	25	16	16	3	⊕	2	13	2	7	⊕	⊕	3		
April	1014	29	23	31	20	93	78	6	5	390	23	7	9	6	5	6	8	2	2	55	6	27	25	14	12	2	1	⊕	12	1	6	⊕	1	3		
May	1016	27	21	30	18	94	78	5	4	247	18	7	8	3	3	9	9	4	3	55	4	25	26	14	14	3	1	2	12	1	6	⊕	⊕	2		
June	1018	26	19	28	16	96	77	5	4	170	16	5	5	2	1	7	10	4	4	63	4	30	17	13	9	⊕	⊕	⊕	25	1	5	⊕	1	1		
July	1021	25	17	28	13	94	74	5	4	164	16	4	1	1	3	7	11	6	3	65	5	29	12	12	17	3	⊕	0	22	1	5	⊕	1	0		
August	1023	24	16	26	13	94	75	5	4	173	18	3	3	4	3	8	7	3	4	66	6	34	17	8	13	⊕	1	⊕	20	1	5	⊕	⊕	⊕		
September	1023	24	17	26	14	94	77	5	3	141	16	17	6	2	2	5	8	2	6	54	9	40	21	11	6	1	⊕	1	10	1	7	⊕	2	⊕		
October	1021	25	18	26	14	92	76	5	3	94	14	23	24	4	4	8	5	1	4	28	7	52	15	8	10	3	1	⊕	4	1	10	⊕	⊕	⊕		
November	1018	26	20	27	15	92	80	5	3	84	13	24	38	8	3	6	5	⊕	5	10	11	55	15	5	8	3	⊕	2	1	2	12	1	0	2		
December	1016	27	21	29	18	92	79	5	4	174	15	13	46	8	2	8	4	2	2	16	10	55	16	5	7	2	⊕	1	3	2	10	⊕	0	1		
Means	1014	28	22	30	20	94	80	5	4	252	18	11	38	10	4	6	4	2	2	23	6	48	21	9	6	3	4	1	2	1	10	0	1	4		
Totals	1017	27	20	33*	12§	94	78	5	4	—	—	11	18	6	3	7	7	2	3	43	6	38	20	11	10	2	1	1	11	1	8	—	—	—		
Extreme values	—	—	—	—	—	—	—	—	—	2463	204	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	6	20	
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year
§ Mean of lowest each year

† Highest recorded temperature
‡ Lowest recorded temperature

⊕ Rare
⊖ All observations

1.237

WMO No 67095

TAMATAVE (18° 07' S, 49° 24' E) Height above MSL – 6 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																		Mean wind speed		Number of days with																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0600	1500	0600	1500	Average fall	No. of days with 1 mm or more	0900									1500									0600	1500	Gale	Fog	Thunder																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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* Mean of highest each year
§ Mean of lowest each year

† Highest recorded temperature
‡ Lowest recorded temperature

⊕ Rare
⊖ All observations

1.238

WMO No 63980

SEYCHELLES AIRPORT (04° 40' S, 55° 31' E) Height above MSL – 3 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 1 mm or more	0700										1300										0700	1300	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																										
February	1011	30	25	32	23	87	76	5	6	379	17	3	1	1	1	5	8	40	28	12	29	13	6	2	0	1	13	35	1	4	9	⊕	⊕	4		
March	1011	31	25	33	24	86	72	5	5	262	11	6	2	1	2	6	10	38	24	12	45	15	4	2	1	3	5	25	0	5	9	1	⊕	3		
April	1011	31	25	33	24	87	71	5	5	162	11	4	3	3	5	13	12	33	14	13	29	20	15	8	1	2	5	20	0	4	8	⊕	⊕	3		
May	1010	32	26	33	24	87	72	4	5	177	14	1	1	2	13	22	17	15	9	20	11	15	19	29	3	2	7	15	0	3	8	⊕	1	3		
June	1011	31	26	32	24	85	74	5	5	124	11	1	1	2	42	33	8	6	2	6	4	5	15	52	13	3	3	5	0	7	10	0	1	2		
July	1012	29	25	31	23	82	74	6	6	63	10	0	1	1	61	32	4	1	1	1	1	2	1	74	17	2	2	2	0	10	12	⊕	1	1		
August	1013	28	24	29	23	83	75	6	6	80	10	0	1	0	66	30	2	0	1	1	1	0	1	83	13	1	1	1	0	11	13	1	⊕	⊕		
September	1013	29	24	30	23	82	73	6	6	97	10	1	0	0	66	30	2	0	0	1	1	1	1	87	11	0	0	⊕	0	12	15	1	⊕	⊕		
October	1013	29	25	30	23	82	73	5	5	121	11	1	0	2	65	31	1	0	1	1	⊕	1	4	83	10	1	⊕	⊕	0	11	13	⊕	⊕	1		
November	1012	30	25	31	23	83	72	5	5	206	12	3	1	5	44	27	8	3	6	4	5	5	9	62	7	1	6	6	1	7	11	⊕	⊕	2		
December	1012	30	24	32	23	86	72	5	5	215	14	3	1	5	20	21	12	15	13	10	11	11	16	26	4	5	17	10	0	4	8	⊕	⊕	2		
Means	1012	30	25	33*	22§	85	73	5	5	—	—	2	1	2	33	22	8	14	10	8	13	8	9	43	7	2	6	12	⊕	7	10	—	—	—		
Totals	—	—	—	—	—	—	—	—	—	2172	149	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	3	24		
Extreme values	—	—	—	†	‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.239

WMO No 61980

SAINT DENIS/GILLOT REUNION (20° 53' S, 55° 31' E) Height above MSL – 25 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 0.1 mm or more	0700										1300										0700	1300	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm		1	2	20	48	23	3	1	1	1	6	14	63	11	0	0	1	6	⊕	9	14	⊕	⊕	2		
February	1012	30	23	32	21	76	70	5	5	263	19	2	1	15	46	28	3	1	2	2	6	14	49	18	2	1	2	8	⊕	8	13	⊕	1	3		
March	1011	30	23	32	20	81	72	5	5	216	17	1	⊕	14	44	37	2	1	⊕	⊕	6	13	53	20	1	1	1	4	0	8	14	0	⊕	2		
April	1013	29	22	31	19	79	68	4	5	160	13	0	0	14	46	35	3	⊕	⊕	1	7	12	48	26	1	⊕	1	6	0	8	14	⊕	⊕	1		
May	1015	28	20	29	18	76	66	4	4	81	14	0	⊕	10	46	40	4	0	0	⊕	5	13	53	23	1	⊕	1	4	0	8	14	⊕	⊕	⊕		
June	1017	26	19	28	16	74	62	4	4	75	14	0	⊕	8	48	40	3	0	0	1	6	12	56	19	2	⊕	1	4	1	8	14	⊕	⊕	⊕		
July	1019	25	18	27	15	73	61	4	4	70	17	0	0	14	51	31	3	⊕	0	⊕	1	8	58	30	1	0	⊕	2	0	9	16	0	⊕	⊕		
August	1021	26	18	27	15	73	61	4	4	49	16	0	⊕	12	55	27	4	⊕	0	1	2	10	62	24	1	0	⊕	2	0	9	16	⊕	⊕	⊕		
September	1022	26	18	28	15	72	61	4	4	47	14	⊕	0	11	56	28	3	0	0	1	6	15	61	15	1	⊕	⊕	2	0	8	16	⊕	0	0		
October	1021	27	19	29	17	71	62	4	4	44	12	0	⊕	17	56	20	4	⊕	0	2	3	12	71	9	1	0	1	4	⊕	9	15	⊕	⊕	0		
November	1019	28	20	30	17	70	64	4	5	95	13	0	1	25	58	11	2	1	0	2	4	20	60	9	2	⊕	1	5	⊕	9	15	⊕	⊕	⊕		
December	1017	29	22	31	19	74	68	5	5	151	16	⊕	1	23	48	19	3	1	1	4	7	18	55	10	1	0	2	6	⊕	8	13	⊕	⊕	3		
Means	1015	28	20	33*	14§	75	65	4	4	—	—	1	1	15	50	28	3	1	⊕	1	5	14	57	18	1	⊕	1	4	⊕	8	—	—	—			
Totals	—	—	—	—	—	—	—	—	—	1541	183	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	⊕	1	11			
Extreme values	—	—	—	35†	12‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.240

WMO No 61990

PLAISANCE (MAURITIUS) (20° 26' S, 57° 40' E) Height above MSL – 57 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 1 mm or more	0700										1300										0700	1300	Gale	Fog	Thunder																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.241

WMO No 61988

RODRIGUEZ ISLAND (19° 41' S, 63° 25' E) Height above MSL – 59 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 1 mm or more	0700										1300										0700	1300	Gale	Fog	Thunder																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.242

WMO No 61974

AGALEGA ISLAND (10° 26' S, 56° 45' E) Height above MSL – 3 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																		Mean wind speed		Number of days with			
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 1 mm or more	0700										1300								0700	1300	Gale	Fog	Thunder	
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm						
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm																									
February	1010	31	24	33	22	89	76	5	5	280	17	3	2	11	13	3	6	19	9	35	5	6	18	13	5	11	19	12	10	5	7	⊕	⊕	4	
March	1010	31	24	33	24	90	76	6	6	241	15	3	3	4	2	4	10	25	13	37	6	5	9	4	6	13	26	23	9	5	8	⊕	⊕	5	
April	1010	32	24	33	22	91	75	5	5	169	15	4	4	17	11	3	5	13	7	37	9	11	26	11	7	6	12	12	6	4	7	⊕	⊕	3	
May	1012	30	24	32	22	85	73	5	4	114	13	⊕	1	27	57	8	1	1	0	6	1	2	36	51	8	1	1	1	1	9	11	⊕	⊕	1	
June	1013	29	23	30	21	82	72	5	5	86	12	0	0	21	73	3	⊕	0	0	3	0	1	25	69	5	1	0	0	0	10	12	⊕	⊕	0	
July	1014	28	22	29	20	82	72	5	5	101	15	0	⊕	17	80	3	0	0	0	1	0	0	21	75	4	0	0	0	0	11	13	⊕	⊕	⊕	
August	1015	28	22	29	20	81	70	5	5	63	12	⊕	1	18	78	3	0	0	0	1	0	1	23	75	2	0	0	0	0	11	13	⊕	⊕	0	
September	1014	29	23	30	20	81	69	5	4	57	10	⊕	0	19	76	4	0	0	0	⊕	⊕	⊕	25	72	3	0	0	0	0	10	13	⊕	⊕	0	
October	1013	30	23	31	21	82	69	5	4	79	9	1	⊕	22	71	5	0	0	0	2	⊕	2	33	59	4	1	0	⊕	0	10	12	⊕	⊕	⊕	
November	1012	31	23	32	21	82	70	4	4	125	13	⊕	1	20	68	6	⊕	0	0	5	0	2	33	56	5	2	1	0	2	8	10	⊕	⊕	1	
December	1011	31	24	33	21	86	72	5	5	190	15	1	3	28	33	3	3	5	3	19	3	7	42	25	3	5	6	6	3	6	8	⊕	⊕	2	
Means	1012	30	23	34*	19§	85	72	5	5	—	—	1	2	19	50	4	2	5	3	14	2	4	28	46	5	3	5	4	3	8	10	—	—	—	
Totals	—	—	—	—	—	—	—	—	—	1653	159	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	⊕	⊕	18	
Extreme values	—	—	—	37†	16‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years observations	17	17				17		17		30		17										17								17		17	17	17	

* Mean of highest each year
§ Mean of lowest each year

† Highest recorded temperature
‡ Lowest recorded temperature

⊕ Rare
⊖ All observations

1.243

WMO No 61986

ST. BRANDON (CARGADOS CARAJOS) (16° 27' S, 59° 37' E) Height above MSL – 4 m

Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0700	1300	0700	1300	Average fall	No. of days with 1 mm or more	0700										1300										0700	1300	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm		5	20	44	21	2	1	2	3	2	6	20	44	18	3	2	2	3	1	Knots		1	⊕	2		
February	1009	31	26	33	23	85	75	5	5	171	13	5	16	35	17	4	3	5	8	7	9	19	32	18	3	3	5	10	2	10	10	1	⊕	1		
March	1011	31	26	33	24	84	75	5	5	133	13	3	13	46	25	5	1	2	3	3	4	14	49	20	4	1	4	3	1	10	10	⊕	⊕	1		
April	1012	30	25	32	23	84	76	5	4	96	11	2	7	49	32	5	1	1	1	2	2	10	53	25	5	1	1	1	3	12	11	⊕	⊕	1		
May	1015	28	24	30	22	81	75	4	4	67	9	⊕	5	50	43	2	0	0	0	⊕	1	5	49	43	2	0	0	⊕	1	14	14	⊕	⊕	⊕		
June	1016	26	23	28	21	80	75	4	4	54	10	⊕	3	48	47	2	0	0	0	0	0	4	44	48	2	⊕	⊕	0	⊕	14	14	1	⊕	0		
July	1018	25	22	27	18	81	76	5	4	59	11	1	4	45	48	2	0	0	0	⊕	⊕	4	45	48	3	0	0	0	0	16	16	1	⊕	⊕		
August	1018	25	21	26	19	80	75	5	4	51	11	⊕	4	53	43	⊕	0	0	0	0	0	2	53	43	1	⊕	0	0	⊕	17	16	1	0	⊕		
September	1018	25	22	27	19	81	74	5	4	29	7	0	2	60	34	3	⊕	⊕	⊕	1	0	4	54	40	2	⊕	⊕	0	⊕	15	15	1	0	0		
October	1016	27	22	28	20	81	74	4	4	30	8	⊕	3	63	34	⊕	0	0	0	⊕	1	5	63	30	2	0	0	0	1	14	14	1	⊕	⊕		
November	1015	28	23	30	21	81	73	4	4	27	5	⊕	6	56	35	2	⊕	0	0	1	1	9	57	31	2	1	0	0	0	13	12	⊕	⊕	⊕		
December	1013	30	25	31	22	82	73	4	4	71	8	1	13	62	17	⊕	1	⊕	0	5	2	17	59	16	2	0	1	1	3	11	11	⊕	⊕	1		
Means	1014	28	24	34*	17§	82	75	5	4	—	—	1	8	51	33	2	1	1	1	2	2	9	50	32	3	1	1	1	1	13	13	—	—	—		
Totals	—	—	—	—	—	—	—	—	—	949	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	⊕	6		
Extreme values	—	—	—	39†	10‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.244

WMO No 61967

DIEGO GARCIA (07° 18' S, 72° 24' E) Height above MSL – 3 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																				Mean wind speed		Number of days with		
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0800	1400	0800	1400	Average fall	No. of days with 0.25 mm or more	0800										1400										0800	1400	Gale	Fog	Thunder
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	hPa	°C	°C	°C	°C	%	%	Oktas		mm		9	2	3	4	6	14	29	30	3	5	2	2	3	6	17	36	26	3	Knots		2	1	2		
February	1010	30	25	33	23	81	74	6	6	277	18	11	1	3	4	6	13	27	33	4	13	6	4	2	4	12	35	24	⊕	11	13	3	1	3		
March	1010	31	26	33	23	78	71	5	5	198	18	7	3	12	10	8	12	18	25	6	5	6	10	6	8	15	30	19	1	8	10	1	⊕	2		
April	1010	31	26	33	24	77	70	5	5	206	17	5	6	19	19	9	6	17	11	9	5	9	17	17	10	12	20	9	1	8	10	1	1	2		
May	1010	30	26	33	22	78	71	5	5	145	14	2	6	21	45	14	3	4	3	3	4	7	22	38	19	5	5	1	⊕	9	11	1	⊕	1		
June	1011	29	25	31	23	80	72	6	6	137	14	3	2	27	60	5	1	1	1	1	1	3	28	53	8	3	1	1	0	12	14	1	⊕	1		
July	1012	29	24	30	22	78	70	6	6	147	16	1	2	22	63	9	1	⊕	1	1	1	3	22	59	12	⊕	1	⊕	1	13	15	1	⊕	1		
August	1012	29	24	30	22	78	70	6	6	107	14	1	⊕	16	76	5	1	0	0	1	0	1	18	70	10	2	0	0	0	14	16	3	⊕	⊕		
September	1012	29	24	31	23	78	71	6	6	249	16	2	2	12	68	11	2	2	1	⊕	3	3	17	58	12	4	2	2	0	14	15	1	⊕	1		
October	1011	29	24	32	22	79	74	6	6	269	20	3	4	17	45	15	8	4	3	2	1	5	14	44	18	6	7	3	1	12	13	1	0	2		
November	1011	30	24	33	23	79	72	6	6	231	19	5	6	12	22	22	10	12	10	2	5	4	12	18	25	13	14	9	⊕	10	12	1	⊕	2		
December	1011	30	25	32	22	79	72	6	6	282	21	5	4	15	21	9	11	19	13	3	7	5	15	14	11	14	20	15	⊕	9	10	⊕	0	2		
Means	1011	30	25	34*	20§	79	72	6	6	–	–	4	3	15	36	10	7	11	11	3	4	5	15	32	12	8	14	9	1	11	13	–	–	–		
Totals	–	–	–	–	–	–	–	–	–	2601	209	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16	3	19		
Extreme values	–	–	–	37†	16‡	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
No. of years observations	17	17				17		17		30		17										17										17		17	17	17

* Mean of highest each year

§ Mean of lowest each year

† Highest recorded temperature

‡ Lowest recorded temperature

⊕ Rare

⊖ All observations

1.245

WMO No 61996

MARTIN DE VIVIES (ÎLES AMSTERDAM) (37° 50' S, 77° 34' E) Height above MSL – 29 m
Climatic Table compiled from 17 to 30 years observations, 1960 to 1999

Month	Average pressure at MSL	Temperatures				Average humidity		Average cloud cover		Precipitation		Wind distribution – Percentage of observations from																		Mean wind speed		Number of days with				
		Mean daily max.	Mean daily min.	Mean highest in each month	Mean lowest in each month	0500	1400	0500	1400	Average fall	No. of days with mm or more	0800										1400								0500	1400	Gale	Fog	Thunder		
												N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
	hPa	°C	°C	°C	°C	%	%	Oktas		mm																										
January	1019	21	15	23	10	86	75	6	6	96	—	13	3	3	11	10	11	24	25	1	13	7	5	11	6	9	24	25	0	10	13	⊕	1	⊕		
February	1020	21	15	24	11	85	72	6	6	78	—	9	5	6	14	12	12	22	20	1	11	7	9	11	10	10	23	20	0	10	13	⊕	1	⊕		
March	1021	19	15	22	11	84	74	6	6	82	—	13	6	8	13	12	14	15	19	2	15	8	8	14	8	11	15	20	0	11	13	⊕	1	⊕		
April	1021	18	13	21	9	83	76	5	6	102	—	8	3	5	8	16	19	23	17	1	11	3	7	14	10	11	22	23	0	12	14	⊕	1	⊕		
May	1018	16	12	20	7	84	79	5	6	110	—	9	3	3	8	12	17	24	24	1	11	4	3	8	10	11	27	26	0	15	16	1	⊕	⊕		
June	1016	15	11	17	6	84	80	5	6	113	—	6	1	1	2	11	17	34	27	⊕	10	2	2	3	6	17	36	24	0	17	18	2	1	⊕		
July	1020	14	10	16	5	82	78	5	6	104	—	5	1	0	3	11	24	31	25	0	7	1	1	2	7	19	37	27	0	17	19	2	⊕	⊕		
August	1020	14	10	16	4	83	77	5	6	95	—	6	1	1	3	9	20	34	27	⊕	5	1	2	4	7	17	37	28	0	17	18	3	⊕	⊕		
September	1019	14	10	16	5	84	77	6	6	83	—	9	2	1	4	7	17	34	27	⊕	7	1	1	4	6	16	33	32	0	17	18	3	1	0		
October	1020	15	10	17	6	84	77	6	6	85	—	6	3	2	5	8	18	34	25	⊕	7	3	2	5	7	13	35	28	0	14	16	1	1	⊕		
November	1018	16	11	19	7	84	75	6	6	90	—	9	5	2	6	7	14	30	26	⊕	9	5	3	7	5	13	31	27	0	13	15	1	1	⊕		
December	1019	19	13	22	7	87	76	6	6	81	—	11	3	6	8	4	13	30	24	⊕	12	5	7	6	5	10	28	27	⊕	12	14	1	2	⊕		
Means	1019	17	12	25*	4§	86	76	6	6	—	—	9	3	3	7	10	16	28	24	⊕	10	4	4	7	7	13	29	26	⊕	14	16	—	—	—		
Totals	—	—	—	—	—	—	—	—	—	1119	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	10	⊕		
Extreme values	—	—	—	31†	–1‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of years observations	17	17				17		17		30		17										17								17		17	17	17		

* Mean of highest each year
§ Mean of lowest each year

† Highest recorded temperature
‡ Lowest recorded temperature

⊕ Rare
⊖ All observations

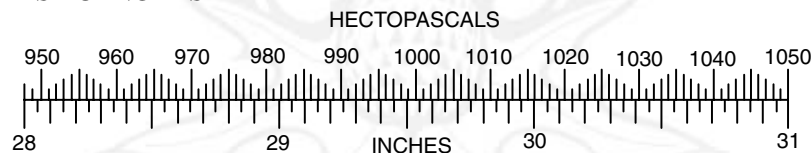
1.246

METEOROLOGICAL CONVERSION TABLE AND SCALES**Fahrenheit to Celsius****°Fahrenheit**

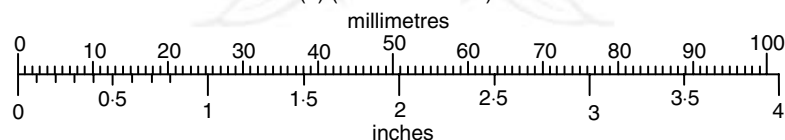
	0	1	2	3	4	5	6	7	8	9
°F	Degrees Celsius									
-100	-73.3	-73.9	-74.4	-75.0	-75.6	-76.1	-76.7	-77.2	-77.8	-78.3
-90	-67.8	-68.3	-68.9	-69.4	-70.0	-70.6	-71.1	-71.7	-72.2	-72.8
-80	-62.2	-62.8	-63.3	-63.9	-64.4	-65.0	-65.6	-66.1	-66.7	-67.2
-70	-56.7	-57.2	-57.8	-58.3	-58.9	-59.4	-60.0	-60.6	-61.1	-61.7
-60	-51.1	-51.7	-52.2	-52.8	-53.3	-53.9	-54.4	-55.0	-55.6	-56.1
-50	-45.6	-46.1	-46.7	-47.2	-47.8	-48.3	-48.9	-49.4	-50.0	-50.6
-40	-40.0	-40.6	-41.1	-41.7	-42.2	-42.8	-43.3	-43.9	-44.4	-45.0
-30	-34.4	-35.0	-35.6	-36.1	-36.7	-37.2	-37.8	-38.3	-38.9	-39.4
-20	-28.9	-29.4	-30.0	-30.6	-31.1	-31.7	-32.2	-32.8	-33.3	-33.9
-10	-23.3	-23.9	-24.4	-25.0	-25.6	-26.1	-26.7	-27.2	-27.8	-28.3
-0	-17.8	-18.3	-18.9	-19.4	-20.0	-20.6	-21.1	-21.7	-22.2	-22.8
+0	-17.8	-17.2	-16.7	-16.1	-15.6	-15.0	-14.4	-13.9	-13.3	-12.8
10	-12.2	-11.7	-11.1	-10.6	-10.0	-9.4	-8.9	-8.3	-7.8	-7.2
20	-6.7	-6.1	-5.6	-5.0	-4.4	-3.9	-3.3	-2.8	-2.2	-1.7
30	-1.1	-0.6	0	+0.6	+1.1	+1.7	+2.2	+2.8	+3.3	+3.9
40	+4.4	+5.0	+5.6	6.1	6.7	7.2	7.8	8.3	8.9	9.4
50	10.0	10.6	11.1	11.7	12.2	12.8	13.3	13.9	14.4	15.0
60	15.6	16.1	16.7	17.2	17.8	18.3	18.9	19.4	20.0	20.6
70	21.1	21.7	22.2	22.8	23.3	23.9	24.4	25.0	25.6	26.1
80	26.7	27.2	27.8	28.3	28.9	29.4	30.0	30.6	31.1	31.7
90	32.2	32.8	33.3	33.9	34.4	35.0	35.6	36.1	36.7	37.2
100	37.8	38.3	38.9	39.4	40.0	40.6	41.1	41.7	42.2	42.8
110	43.3	43.9	44.4	45.0	45.6	46.1	46.7	47.2	47.8	48.3
120	48.9	49.4	50.0	50.6	51.1	51.7	52.2	52.8	53.3	53.9

Celsius to Fahrenheit**°Celsius**

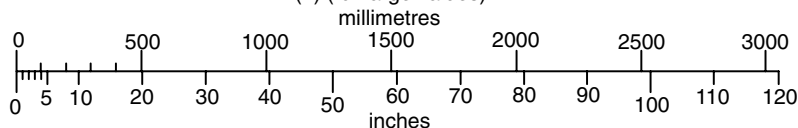
	0	1	2	3	4	5	6	7	8	9
°C	Degrees Fahrenheit									
-70	-94.0	-95.8	-97.6	-99.4	-101.2	-103.0	-104.8	-106.6	-108.4	-110.2
-60	-76.0	-77.8	-79.6	-81.4	-83.2	-85.0	-86.8	-88.6	-90.4	-92.2
-50	-58.0	-59.8	-61.6	-63.4	-65.2	-67.0	-68.8	-70.6	-72.4	-74.2
-40	-40.0	-41.8	-43.6	-45.4	-47.2	-49.0	-50.8	-52.6	-54.4	-56.2
-30	-22.0	-23.8	-25.6	-27.4	-29.2	-31.0	-32.8	-34.6	-36.4	-38.2
-20	-4.0	-5.8	-7.6	-9.4	-11.2	-13.0	-14.8	-16.6	-18.4	-20.2
-10	+14.0	+12.2	+10.4	+8.6	+6.8	+5.0	+3.2	+1.4	-0.4	-2.2
-0	32.0	30.2	28.4	26.6	24.8	23.0	21.2	19.4	+17.6	+15.8
+0	32.0	33.8	35.6	37.4	39.2	41.0	42.8	44.6	46.4	48.2
10	50.0	51.8	53.6	55.4	57.2	59.0	60.8	62.6	64.4	66.2
20	68.0	69.8	71.6	73.4	75.2	77.0	78.8	80.6	82.4	84.2
30	86.0	87.8	89.6	91.4	93.2	95.0	96.8	98.6	100.4	102.2
40	104.0	105.8	107.6	109.4	111.2	113.0	114.8	116.6	118.4	120.2
50	122.0	123.8	125.6	127.4	129.2	131.0	132.8	134.6	136.4	138.2

HECTOPASCALS TO INCHES**MILLIMETRES TO INCHES**

(1) (for small values)

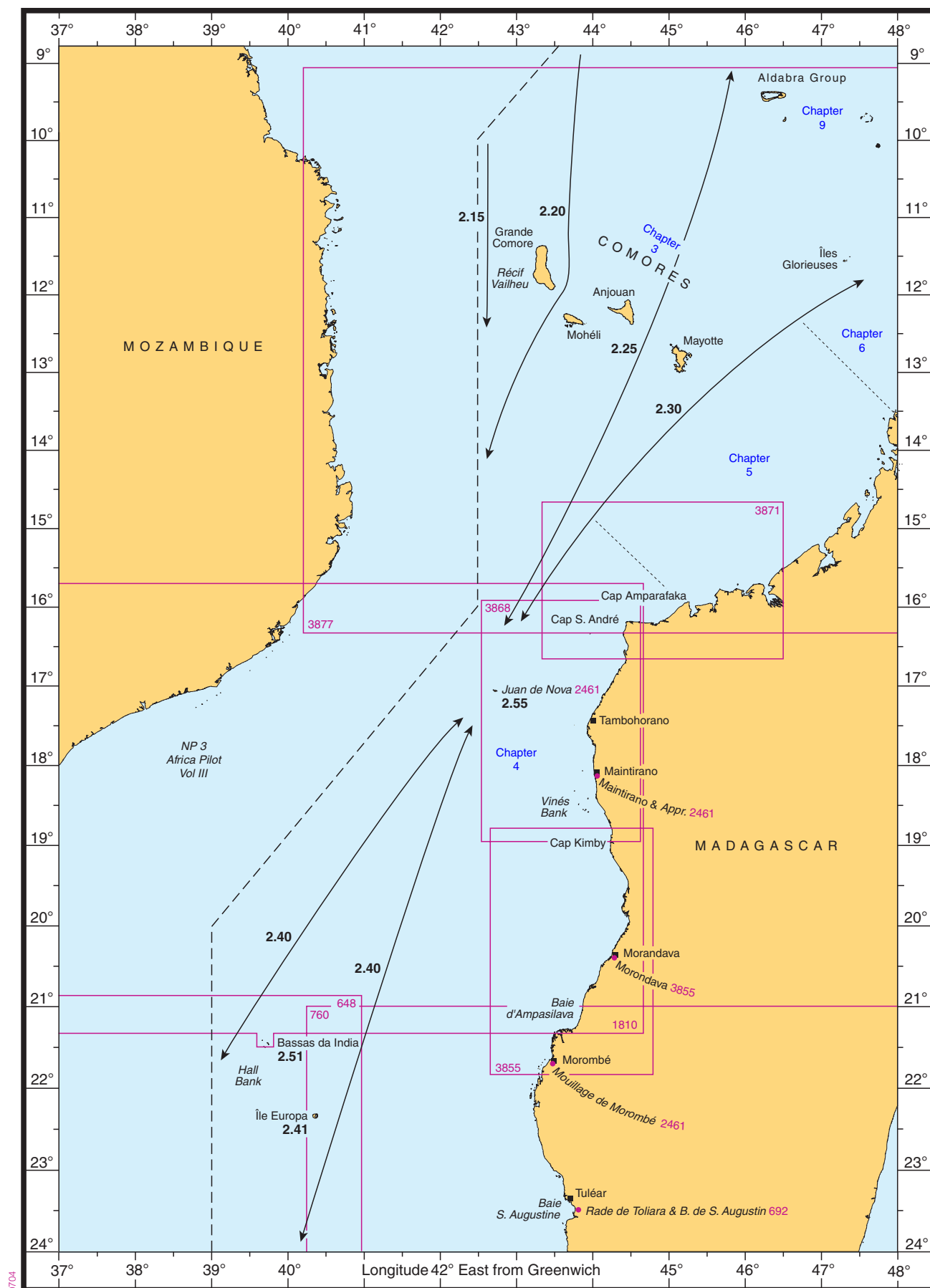


(2) (for large values)





Chapter 2 - Central and Eastern parts of Mozambique Channel



CHAPTER 2

CENTRAL AND EASTERN PARTS OF MOZAMBIQUE CHANNEL

GENERAL INFORMATION

*Chart 4701***Scope of the chapter****2.1**

- 1 In this chapter are described the sea passages and routes in the vicinity of the islands and dangers in the central and E parts of Mozambique Channel, between Île Europa (22°20'S, 40°21'E) and the islands of Comores, at the N end of Mozambique Channel. A number of ocean routes pass through Mozambique Channel and these are also described.

- 2 The islands of Comores and surrounding waters are described at Chapter 3, the coastal waters on the W side of Madagascar are described in Chapters 4 to 6.

The chapter is arranged as follows:

Through routes (2.9).

South-east part of Mozambique Channel (2.35).

Positions**2.2**

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions on some charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation. See notes on relevant charts.

Offshore fishing**2.3**

- 1 Fishing is carried on with traps, handlines, longlines, nets and trawls in the waters described; see 1.10 for further information.

Hazards**2.4**

- 1 Navigational marks. See 1.7.

Piracy**2.5**

- 1 An incident of piracy has been reported off the NW coast of Madagascar. For possible preventative measures see 1.58.

Natural conditions**2.6**

- 1 **Tropical storms** affect Mozambique Channel; see 1.212 for further information.

2.7

- 1 **Currents** in the central and E parts of Mozambique Channel set predominantly NNE but are very variable; see 1.170 for further details, and *The Mariner's Handbook* for the effect of tropical revolving storms on the currents. Other seasonal currents affect the area; see the relevant routeing chart.

Regulations**2.8**

- 1 **Pollution.** See 1.40 for regulations concerning pollution of the sea W of Madagascar.

THROUGH ROUTES

GENERAL INFORMATION

*Chart 3877***Scope of the section****2.9**

- 1 In this section are described those parts of the ocean routes between South Africa, the Arabian Sea, Persian Gulf and ports and places in the North Indian Ocean, which pass through the waters of the Mozambique Channel and past the islands of Comores (12°10'S, 44°00'E). The section is arranged as follows:

- 2 Routes W of Grande Comore (2.15).
Routes between Grande Comore and Mohéli (2.20).
Routes between Anjouan and Île Mayotte (2.25).
Routes South-east of Île Mayotte (2.30).

For full details of the routes see *Ocean Passages for the World* and the relevant routeing chart.

Topography**2.10**

- 1 See 3.2 for a general description of the topography of Comores.

Harbour of refuge**2.11**

- 1 See 3.4 for details of places where ocean-going vessels can obtain shelter in Comores.

Fishing**2.12**

- 1 See 3.5 for details of fishing activities off Comores.

Rescue**2.13**

- 1 See 1.54 for details of a reporting system designed to provide information for SAR operations.

Natural conditions**2.14**

- 1 **Currents.** See 3.9 for currents generally around Comores.
2 **Weather.** See 3.7, particularly as regards the incidence of cyclones in the neighbourhood of Comores.

ROUTES WEST OF GRANDE COMORE

General information

*Charts 3877, 563***Routes****2.15**

- 1 Routes between Mozambique Channel and Aden, the Persian Gulf and Karachi, can pass W of Grande Comore (11°40'S, 43°20'E).

Topography**2.16**

- 1 See 3.12 for a description of Grande Comore.

Current**2.17**

- 1 Between Grande Comore and Saint Lazarus Bank (see *Africa Pilot Volume III*), about 110 miles WSW, the South Equatorial Current (1.167) sets W at an average rate of 1½ kn. Other seasonal currents affect this passage, for which see the relevant routeing chart.

Principal mark**2.18**

- 1 **Landmark:**
Le Kartala (11°45'S, 43°22'E) (3.15).

Directions**2.19**

- 1 In the neighbourhood of Comores the routes mentioned in 2.15 lead generally N/S, passing W of Grande Comore and W of Récif Vailheu. This reef lies about 18 miles W of Le Kartala and 11 miles offshore and has a least depth of 4.9 m over it. The sea does not always break over the reef but it can be identified by discoloration of the water and, with good visibility, can be seen from a high vantage point.
- 2 **Caution.** In view of the W-going current, it is advisable in any event to pass clear W of Récif Vailheu.
(*Directions continue in Ocean Passages for the World*)

ROUTES BETWEEN GRANDE COMORE AND MOHÉLI**General information**

Chart 563

Route**2.20**

- 1 A route S between the Gulf of Oman and the Cape of Good Hope passes between Grande Comore and Mohéli.

Topography**2.21**

- 1 See 3.12 for a description of Grande Comore. See 3.42 for a description of Mohéli.

Current**2.22**

- 1 Seasonal currents affect this passage, for which see the relevant routeing chart.

Principal mark**2.23**

- 1 **Landmark:**
Le Kartala (11°45'S, 43°22'E) (3.15).

Directions**2.24**

- 1 Approaching the Comores from N, the route leads SSW, passing (with positions from Pointe M'Vouni (11°53'3S, 43°30'5E)):
ESE of Ras Habu (32 miles NNW) (3.31), the NE extremity of Grande Comore.
ESE of Pointe M'Vouni (3.36), the SE extremity of Grande Comore.

- 2 The track then leads SW, Passing:
NW of Pointe Tsandzani (23 miles SSE) (3.46), the NW extremity of Mohéli, thence:
NW of Île Magnougni (31 miles SSE) (3.46), the W-most islet off the S coast of Mohéli.
Thence the route continues SSW into the Mozambique Channel.

ROUTES BETWEEN ANJOUAN AND ÎLE MAYOTTE**General information**

Chart 563

Routes**2.25**

- 1 Routes between Cape Town or Durban and Mumbai (Bombay), Colombo and Bay of Bengal pass between Anjouan (12°13'S, 44°25'E) and Île Mayotte (36 miles SE).

Topography**2.26**

- 1 See 3.77 for a description of Anjouan and 3.120 for Île Mayotte.

Current**2.27**

- 1 See 3.9 and 3.125 for the currents in the neighbourhood of Anjouan and Île Mayotte; between the two islands there is sometimes a considerable SE set. Other seasonal currents affect this passage, for which see the relevant routeing chart.

Principal marks**2.28**

- 1 **Landmarks:**
Pic d'Anjouan (12°13'S, 44°25'E) (3.79).
Mountains on Île Mayotte (3.128).

Directions**2.29**

- 1 In the neighbourhood of Comores the routes mentioned in 2.25 leads generally SSW/NNE, passing between Morne de la Pointe (12°23'S, 44°32'E) (3.80), on Anjouan, and Banc de l'Iris (26 miles ESE) (3.129), off Île Mayotte.

ROUTES SOUTH-EAST OF ÎLE MAYOTTE**General information**

Charts 3877, 563

Routes**2.30**

- 1 Routes between Karachi, Mumbai, Colombo or the Seychelles and Durban or Cape Town, pass SE of Île Mayotte.

Topography**2.31**

- 1 See 3.120 for a description of Île Mayotte.

Current**2.32**

- 1 See 3.9 and 3.125 for the currents in the neighbourhood of Île Mayotte. Other seasonal currents affect this passage, for which see the relevant routeing chart.

Principal marks**2.33****1 Landmarks:**

Mountains on Île Mayotte (3.128).

Directions**2.34**

- 1 In the neighbourhood of Comores the route between the places mentioned in 2.30 leads SW/NE, passing SE of the barrier reef which surrounds Île Mayotte.

SOUTH-EAST PART OF MOZAMBIQUE CHANNEL**GENERAL INFORMATION**

Chart 4701

Scope of the section**2.35**

- 1 In this section are described the islands and dangers in the SE part of Mozambique Channel, together with their surrounding waters; they consist principally of:
 Île Europa (22°20'S, 40°21'E) (2.41).
 Bassas da India (21°27'S, 39°42'E), an atoll (2.51).
 Île Juan de Nova (17°03'S, 42°43'E) (2.55).
- 2 See 1.109 regarding possession and administration of these islands.

Rescue**2.36**

- 1 See 1.54 for details of a reporting system designed to provide information for SAR operations.

Currents**2.37**

- 1 See 2.7; in the neighbourhood of Île Europa, the strongest current observed over a 25 year period prior to was an ESE set at a rate of 2½ kn in a position about 20 miles W of the island, in February 1980.
 In the S approach to the narrows of Mozambique Channel, in the area S to SW of Île Juan de Nova (17°03'S, 42°43'E), currents have been experienced as follows:
- 2 In 1963, by RFA *Fort Sandusky*, about 80 miles SW, the ship being set 11 miles in an E direction over a period of 8 hours; it was considered that most of this set was experienced in the area N of the bank described at 2.39.
 In April 1978, in a position about 50 miles SW of the island, a S set with a rate slightly less than 4 kn.
- 3 In April 1980, in a position about 25 miles SW of the island, a NNE set with a rate of 4 kn.
 In October 1970, by MV *Dando*, about 12 miles SSW of the island, a very strong NNE set.

Charts 3855, 3868

Isolated banks**2.38**

- 1 Vinés Bank (Banc Vines) (18°51'S, 43°00'E) was reported in 1871 by *Rasa de Juria*. A party which landed found that it dried 0.6 m (2 ft) over a diameter of about 13 m; there were depths of 3.0 m at a distance of ½ cable all around and depths of 6.7 m, coarse sand, were found 5 cables NE.

Chart 1810

2.39

- 1 A bank with a depth of 44 m (24 fm) over it is charted in position 18°18'S, 41°41'E, at the S end of the Davie Ridge; discoloured water and overfalls have been reported in the vicinity but the existence of the bank is doubtful.

Chart 4701

Ocean routes**2.40**

- 1 A number of routes lead through the SE part of Mozambique Channel, between South Africa, the Seychelles Group, and ports and places in the North Indian Ocean; they pass clear of:
 Hall Bank (21°52'S, 39°06'E);
 Île Europa (22°20'S, 40°21'E) (2.41);
 Bassas da India (21°27'S, 39°42'E) (2.51);
 The unnamed bank (18°18'S, 41°41'E) (2.39);
 Île Juan de Nova (17°03'S, 42°43'E) (2.55).
- Full details of the routes are given in *Ocean Passages for the World*; see also the relevant routeing chart.

ÎLE EUROPA**General information**

Charts 648, 760

Topography**2.41**

- 1 Île Europa (22°20'S, 40°21'E) is composed chiefly of sand with hummocks, about 12 m high, in places; it is mostly covered with bushes, with a few trees which attain an elevation of 24 m (80 ft). A coral reef fringes the island, around which sharks are numerous.
 The W side of the island is rocky; a cairn stands on the coast 1 cable S of Pointe Nord-Ouest, the NW point of the island.
- 2 A meteorological station (2.46) is positioned 5 cables ENE of Pointe Nord-Ouest with various structures close by.
 A cairn and the ruins of some houses stand near the N coast of the island, 1 mile W of Pointe Nord-Est, its NE point; the point lies on the E side of the entrance to a lagoon which occupies the E part of the island and is full of coral heads.
- 3 The E side of the island consists of low, steep cliffs. The S side is low, with two wrecks on the reef. Of these, the E-most (2.46) is reported to be conspicuous.

Currents**2.42**

- 1 In the vicinity of Île Europa the currents, although very variable, set N or NE for much of the year; they can attain a rate of 2½ kn and may cause strong ripples and eddies.

Major light**2.43**

- 1 Île Europa Light (round pylon, 18 m in height) (22°19'·2S, 40°20'·2E).

Directions**Approach****2.44**

- 1 As depths decrease rapidly in the vicinity of Île Europa, and in view of the variability of the currents, an approach should be made with caution, the vessel's position being checked frequently.

The island is reported to give good radar responses, but is very difficult to see at night.

Coastal waters

2.45

- 1 Mariners navigating the waters around Île Europa should give the S coast a wide berth, as the limits of the fringing reef are little known and this is usually a lee shore.

Off the E and W sides of the island a vessel should keep to seaward of the fringing reef which extends up to 3½ cables offshore, and appears to be steep-to.

- 2 Off the N coast a vessel should pass seaward of a 2.0 m (6 ft) shoal which lies about 1¼ miles WNW of Pointe Nord-Est, 2 cables off the coastal reef which dries; the reef extends about 7 cables from the coast W of the entrance to the lagoon, and the shoal lies on a steep-to narrow bank with depths from 20 to 25 m (11 to 13 fm) over it, which fringes the reef.

Useful marks

2.46

- 1 Wreck of Taiwanese fishing vessel *Tung King No 1* (250 gt), stranded in 1972, and situated on the edge of the reef off the SE point of the island. Pointe Nord-Ouest (2.41), which is sandy with some bushes on it and fairly distinctive.
White hut of a meteorological station, visible from seaward, 5 cables ENE of Pointe Nord-Ouest.
- 2 Mast of an aero radio beacon, with a flagstaff, a small windmill, a dome and a radio station in close proximity, about 6 cables E of Pointe Nord-Ouest.
Pointe Nord-Est, on which is a hillock.

Anchorage and landing places

Anchorage

2.47

- 1 There is no secure anchorage off Île Europa. It is possible to anchor about 1¼ cables off the reef fringing the N coast, sheltered from S swell, in a depth of about 30 m (16 fm) with the meteorological station bearing 183° and Pointe Nord-Ouest 218°; however, depending on size, there is little or no swinging room should the wind shift, and the holding ground is very poor.
- 2 Precarious anchorage can be obtained on the bank mentioned at 2.45 in a depth of 24 m (13 fm), about 1½ cables off the reef, with Pointe Nord-Est bearing 124° distant 9½ cables.

Landing places

2.48

- 1 Landing can be effected at HW on the N coast of the island, in three places, about 1½ cables, 3¼ cables and 6½ cables ENE of the meteorological station.

Services

Supplies

2.49

- 1 There is some water on the island but it is brackish.

Communications

2.50

- 1 Landing strip, close SE of radio beacon.

BASSAS DA INDIA

General information

Charts 648, 1810

Topography

2.51

- 1 Bassas da India (21°27'S, 39°42'E) (1.109) is a coral atoll, the reef of which mostly dries. The SE part of the reef dries 1.2 m. On the N point there is an anchor. The reef encloses a shallow lagoon to which there is access through a narrow boat passage, visible at LW, about 1 mile S of the N point of the reef. The lagoon is encumbered with shoals and coral heads.

- 2 In 1993 the W and SW extremities of the reef and the stranded wrecks (2.53), were reported to lie about 2½ miles SW of their charted positions.

Natural conditions

2.52

- 1 **Current** in the vicinity of Bassas da India is erratic, but in the main sets N to NE at rates from ¾ to 1½ kn; at times, particularly in April, a W current may predominate.

Tidal levels. The entire atoll is reported to be covered from 3 hours before to 3 hours after HW.

- 2 **Tidal streams** near the NE side of the atoll have been observed to set SE during a rising tide and NW during a falling tide, at a maximum rate of about 1 kn in both directions.

Sea breaks heavily over the reef. The characteristic bright green colour of the lagoon contrasts strongly with the deep blue of the water outside.

Directions

Approach

2.53

- 1 Mariners uncertain of their position should keep well clear of Bassas da India; although the sea on the reef can be seen from a considerable distance in clear weather, the currents in the vicinity of the atoll are erratic, as described above, and depths decrease rapidly.

Useful marks:

- 2 Stranded wreck (fore-part) of a vessel of about 2500 tonnes lying on the SW part of the reef; in 1985 it was reported to be visible on radar, the distance being considerable at LW.
- 3 Stranded wreck of a vessel of about 2900 tonnes situated on the W point of the reef; this wreck is also reported to be visible on radar.

Anchorage

2.54

- 1 With care, a small vessel can anchor off the E point of the atoll.

ÎLE JUAN DE NOVA

General information

Chart 2461, plan of Île Juan de Nova

Topography

2.55

- 1 Île Juan de Nova (17°03'S, 42°43'E) (1.109) is low, sandy and covered with trees which can be seen at a considerable distance in good visibility. A meteorological station with a white roof is situated on the SW side of the island.

A drying coral reef, on which there are a number of stranded wrecks, and an extensive bank surround the island.

Currents**2.56**

- 1 In the vicinity of the island a current sets NE at rates from 1 to 2 kn for much of the time, but the currents can be strong and irregular; in July 1979, MV *British Promise* reported a strong E set towards a bank on which there are numerous charted dangers N of the island.

Principal marks**2.57****1 Landmarks:**

- 1 Light-structure (white metal framework tower, black top, 28 m in height) (7 cables ESE of Pointe Ouest, the W point of the island), situated on a knoll and visible from a considerable distance.
- 2 Wreck (8 cables S of the island), believed to be that of SS *Tottenham* (4494 gt), stranded on the reef in 1911. The wreck was reported to be conspicuous in 1975, and to show up well on a radar display at a considerable distance, from S, in 1981.

Directions**Approach****2.58**

- 1 Unless proceeding to anchor, mariners navigating the waters around Île Juan de Nova should pass:
- S of the steep-to reef which extends 1¼ miles from the S coast of the island. The ruins of a pyramidal beacon stand on the S coast of the island.
- 2 At least 4 miles off Pointe Ouest, and off Pointe Est, the E point of the island, on both of which are the ruins of a beacon and;
- N of a bank with depths less than 11·0 m (36 ft) over it, which extends nearly 7 miles from the N coast.

Anchorage and landing place**Directions****2.59**

- 1 The anchorage (2.60) should be approached from N, preferably in daylight, care being taken to avoid numerous charted dangers on the bank mentioned above; the most dangerous are (positions given from Pointe Est (17°03'·7S, 42°44'·8E)):

4·6 m (15 ft) patch (5 miles NNE).

4·9 m (16 ft) patch (3¾ miles NNW).

4·9 m (16 ft) patch (nearly 4 miles NW).

2 Useful marks:

Flagstaff (middle of N coast), at the root of a pier, in front of a derelict building.

Beacon (black and white) (about 1 cable E of flagstaff).

Berths**2.60**

- 1 Anchorage can be obtained:

In a depth of about 8 m (28 ft), 2½ miles N of the flagstaff, in the position shown on the plan.

- 2 In a depth of 15 m (50 ft), sand and coral patches, with the flagstaff bearing 215° distant 2·2 miles; there are depths over 10m (33 ft) for a distance of about 500 m around this berth. More restricted anchorage can be obtained 2 miles from the flagstaff, in the position shown on the plan.

- 3 Care should be taken not to let go the anchor on a coral head; these heads can usually be seen in daylight.

Landing place**2.61**

- 1 The pier in the middle of the N coast of the island can be used at HW; the pier is reportedly partly in ruins.

Services**Supplies****2.62**

- 1 Fresh water of mediocre quality is available in limited quantity.

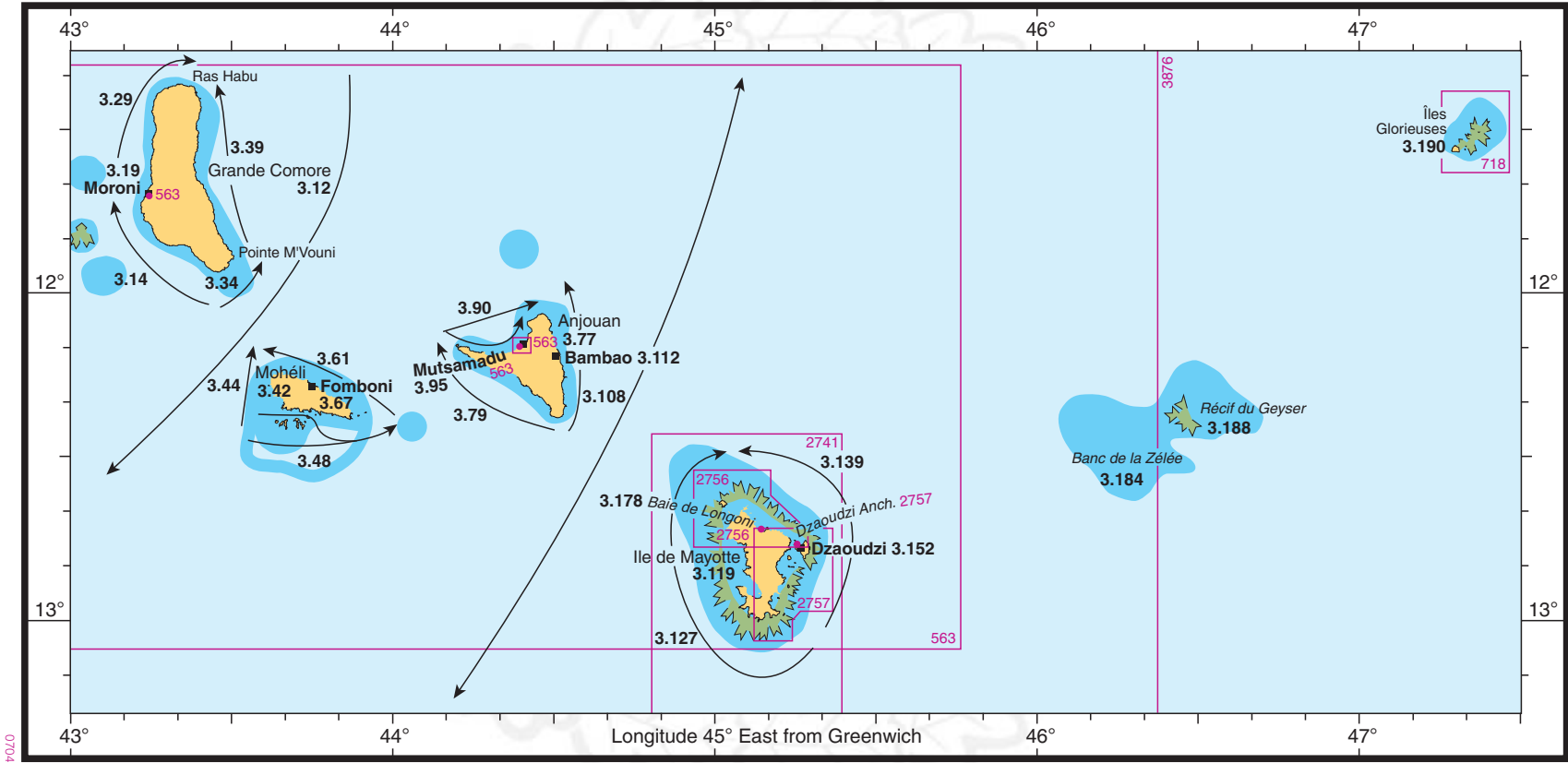
Communications**2.63**

- 1 There is an airstrip.

Small craft**Anchorage****2.64**

- 1 With local knowledge, good anchorage can be obtained in a depth of 10 m (33 ft) with the flagstaff bearing 194° distant 1½ miles.

Chapter 3 - Comores



CHAPTER 3

COMORES

GENERAL INFORMATION

Charts 3877, 563

Scope of the chapter**3.1**

- 1 In this chapter are described the sea passages around, and the ports, harbours and anchorages of Comores (Comoros) which consists, geographically, of four islands lying in an irregular chain, about 150 miles long, across the N entrance to Mozambique Channel; from NW to SE they are:

- 2 Grande Comore (11°40'S, 43°20'E) (3.12).
 Mohéli (12°19'S, 43°43'E) (3.42).
 Anjouan (12°15'S, 44°25'E) (3.77).
 Ile de Mayotte (Île Mayotte) (12°50'S, 45°10'E) (3.119).

- 3 Also in this chapter are the islands and reefs lying E of Comores at the N end of Mozambique Channel, consisting principally of:

- Récif du Geyser (Geyser Reef) (12°21'S, 46°26'E) (3.188).
 Îles Glorieuses (68 miles NE of Récif du Geyser) (3.190).

Topography**3.2**

- 1 The islands of Comores are of volcanic origin and have mountainous summits, making them easy to identify. Palm trees grow at elevations up to 400 m.

Ile de Mayotte is surrounded by coral reefs; the approaches to the other islands are generally safe and the channels between them free of charted dangers.

Positions**3.3**

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions on some charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation. See notes on charts.

Harbour of refuge**3.4**

- 1 The port of Mutsamudu (12°10'S, 44°24'E) (3.95), in Anjouan, is the only place where ocean-going vessels can berth alongside; they can anchor in a number of other places, where cargoes are worked by lighter, weather permitting, but only Ile de Mayotte affords safe anchorage at all seasons.

Fishing**3.5**

- 1 Fishing with traps, handlines, gillnets, longlines, purse seine nets and by trolling is carried on around the islands; see 1.10 for further information.

Rescue**3.6**

- 1 See 1.54 for details of a reporting system designed to provide information for SAR operations.

Natural conditions**3.7**

- 1 **Weather.** For a general description of weather conditions, see Chapter 1.

Comores has two seasons, resulting from the Indian Ocean monsoon wind systems. From November to April the weather is hot and humid with heavy rain falling mostly on the windward sides of high land. Much of the rain falls during thunderstorms but sometimes there is prolonged rain with low cloud. The NW Monsoon blows from mid-December to mid-March, but irregularly and with frequent intervals of calm.

- 2 From December onwards cyclones may strike the islands, the most likely months being February and March. They can cause widespread damage, particularly in coastal areas; ships at sea should take avoiding action as recommended in *The Mariner's Handbook*.

3.8

- 1 From May to October the weather is cooler and drier but still with appreciable rainfall. The SE Monsoon sets in during April and blows, with only rare periods of calm, until November; at times the wind is fresh, especially in July.

Each change of the monsoon is marked by a period of calm, with high temperatures and squalls of short duration.

Winds locally may vary significantly in direction and strength from the general pattern.

3.9

- 1 **Currents.** The islands of Comores lie near the S limit of the branch of the South Equatorial Current which rounds Tanjon' i Bobaomby (Cap d'Ambre) (11°57'S, 49°16'E) as described at 1.167. Consequently, the current is predominantly W-going to the N of about 12°S, with a rate from 1 to 2 kn; to the S of this latitude and near and among the islands the current is variable, although available observations suggest that between Grande Comore and Mohéli it sets either S to SW or N to NE. In June 1971, the yacht *Barbara* on passage from Grande Comore to Anjouan in a fresh SW breeze experienced a current setting N at a rate of 4½kn, reducing to 1 kn on approaching Anjouan.

- 2 See 2.17 regarding the currents W of Comores, and 2.27 for currents between Anjouan and Ile de Mayotte.

Tidal streams. See 1.172.

Navigational aids**3.10**

- 1 **Caution.** Navigational lights on some of the islands cannot be relied upon; for details, see *Admiralty List of Lights Volume D*.

Buoyage is unreliable.

Navigational marks. See 1.7.

Regulations**3.11**

- 1 **Prohibited fishing areas.** See 1.39 for details.

Mayotte Single-hulled tankers carrying heavy petroleum products are prohibited in French waters, see 1.45. Quarantine reports by radio are the same as those applicable to France, for details see *Admiralty List of Radio Signals Volume 1(1)*, see also 1.45.

GRANDE COMORE

General information

Chart 563

Topography

3.12

- 1 Grande Comore, also known in Swahili as Njazidja, is the highest island of Comores, and is formed by two large volcanoes; Le Kartala (3.15) which overlooks the S end of the island and is still active and an extinct volcano (1085 m high) (15¾ miles N), which is studded with ash cones, many of them sharply defined. Both volcanoes slope evenly to the sea on the E side, and Le Kartala also on the S side; on the W side they slope down to a narrow cultivated coastal plain. Between the volcanoes there is a plateau, 700 m high, with open grazing land.
- 2 The most striking topographical features are lava flows which have burned through the vegetation covering the slopes of the volcanoes; where they meet the sea these flows form a dark, craggy coast.

Overfalls

3.13

- 1 Off the S end of the island there are overfalls, as shown on the chart.

South-west coast of Grande Comore

General information

3.14

- 1 **Route.** From a position S of the island's S extremity (11°56'S, 43°27'E), the route leads WNW about 21 miles to a position W of Pointe Moindzaza (11°46'S, 43°14'E), thence about 5 miles farther, NE, to a position NW of Moroni (11°42'0S, 43°14'5E).
- 2 **Topography.** Between the S point of Grande Comore and Moroni (19 miles NW), the coast is generally low and backed by villages; for the first 17 miles, as far as Pointe Moindzaza, it is rocky.
Current off Moroni appears to set constantly NNE, parallel to the coast, at a rate of 1 kn.

3.15

- 1 **Landmarks:**
Le Kartala (11°45'S, 43°22'E) is dome-shaped with a flat, cratered top 2359 m in height (2361 m on chart 3877), and covered with rain forest except for lava flows. In clear weather it can be seen from a distance of about 100 miles; from July to October during the SE Monsoon the top is usually obscured by cloud, except in the early morning.
- 2 Prominent lookout station (11°46'S, 43°14'E) on Cratère Moindzaza (199 m high), a hill with a bluff seaward face which rises above Pointe Moindzaza and is remarkable for the small ravines that run in parallel lines from base to summit.
Landmarks in Moroni, described at 3.23.

Directions

3.16

- 1 From a position S of the S point of Grande Comore, clear of overfalls mentioned at 3.13, the coastal track leads NW to a position W of Pointe Moindzaza (11°46'S, 43°14'E), and passing (with positions from Pointe Moindzaza):
SSW of Dembéni village (11¾ miles SE), thence:
SSW of Mitsoudjé village (3¾ miles SSE), thence:
ENE of Récif Vailheu (11 miles W) (2.19).

- 2 The track then leads to a position W of Pointe Moindzaza.

3.17

- 1 From the position W of Pointe Moindzaza the track leads generally N, passing:
W of a reef which extends up to 3 cables from the coast as far as Pointe N'Gouni (2 miles N), thence:
W of Iconi (1¼ miles N), a coastal village in which there is a large, white, square minaret situated N of a white mosque, both with square windows.
- 2 Cratère Iconi (close N of Iconi), is a coastal hill which, from S, looks like a saddle but from W appears as a deep ravine between two peaks on the N of which are the ruins of a white house.

The track then leads to a position NW of Moroni (4 miles N) which is low-lying, and N and S of which the land is covered with trees.

3.18

- 1 **Useful marks:**

Conspicuous radio mast (6½ miles NE of Moroni) (position approximate).

Marks in the vicinity of Moroni (3.26).

(Directions for coastal passage continue at 3.31.

Directions for Moroni continue at 3.24)

Moroni

Chart 563, plan of Mouillage de Moroni

General information

3.19

- 1 **Position.** Moroni (11°42'0S, 43°14'5E) stands at the head of a cove in the middle of the W coast of Grande Comore.
Function. Moroni, with an estimated population in 1999 of 44 000, is the capital of Comores and a small commercial port.
- 2 **Approach** to the port is direct from sea, between SW and NW.
Traffic. In 2003, 11 vessels with a total dwt of 30 450 used the port.
Port Authority. Moroni Port Authority, Moroni, Grande Comore, Comores

Limiting conditions

3.20

- 1 **Deepest and longest berth** is at the W jetty (3.27).
Density of water in the harbour is 1.025 g/cm³.
Tidal levels. At Moroni the mean spring range is about 3.8 m. the mean neap range about 1.6 m. For further information see *Admiralty Tide Tables Volume 3*.
- 2 **Local weather.** Mouillage de Moroni, the anchorage in the roadstead off Moroni, is open to SW winds which can force vessels to put to sea.
From December to March, during the NW Monsoon, there is a considerable scend at the jetty.

Arrival information

3.21

- 1 **Port operations.** Vessels larger than small coasters work cargo at the anchorage into small craft which are rowed or towed to the jetty or pier.
Information service. There is a signal station at Moroni with which vessels can communicate by day.

Harbour

3.22

- 1 **General layout.** The cove off Moroni is encumbered by a shallow flat of sand and coral; Îlot Souadzou), which is very low-lying, is situated on this flat about ½ cable off the N

end of the town, and is connected to the shore S by a causeway of drying rocks.

The anchorage for vessels lies about $\frac{3}{4}$ cable off the flat, 2 cables WNW of Îlot Souadzou.

- 2 Near the W end of the S shore of the cove there is a jetty extending $1\frac{1}{2}$ cables NNE.

In the middle of the S shore of the cove there is a small pier.

SSE of Îlot Souadzou is the entrance to a basin for small craft which lies at the head of the cove.

On raised ground 3 cables SE of Îlot Souadzou there is a radio mast.

- 3 **Development** to be undertaken includes:
 - Construction of an 80 m quay.
 - Construction of a Ro-Ro terminal.
 - Dredging an access channel.

Principal marks

3.23

- 1 **Landmarks:**

Large white minaret, height 23 m ($11^{\circ}42'0S$, $43^{\circ}14'5E$), from which Moroni Light is exhibited.

Conspicuous airport control tower ($4\frac{1}{4}$ cables SW of the minaret).

Hospital ($5\frac{1}{2}$ cables N of minaret).

Light:

Moroni Light, see above.

Directions for Mouillage de Moroni

(continued from 3.18)

3.24

- 1 **Caution.** The navigational lights at Moroni cannot be relied upon. When exhibited, they are only visible from a short distance in rain squalls; the low-lying town is also frequently obscured. It is therefore dangerous to attempt to make Mouillage de Moroni at night, even with reliable radar, and an approach in the early morning, before sunrise, is recommended. As depths decrease rapidly the anchorage should be approached carefully with cable veered.

3.25

- 1 **Souadzou Leading Lights.** From W of Moroni the alignment (105°) of leading lights, exhibited at the head of the cove, leads to anchorage off the cove.

Front light (white square tower, red top, 7 m in height) ($11^{\circ}41'9S$, $43^{\circ}14'4E$), on Îlot Souadzou.

Rear light (white minaret) (220 m from front light).

The lights are reported to be partially obscured by buildings.

3.26

- 1 **Useful mark:**

Minaret ($11^{\circ}42'1S$, $43^{\circ}14'5E$), 170 m S of minaret at 3.23.

Berths and services

3.27

- 1 **Anchorage** can be obtained in depths from 22 to 35 m about 2 cables WNW of Îlot Souadzou, in the vicinity of the position shown on the plan, but it is restricted and of poor quality as the roadstead is exposed and the holding ground of sand and coral is not good.

- 2 **Jetty** (1 cable WSW of Îlot Souadzou). The berth is about 280 m long and 30 m wide. Depths alongside the jetty are indicated on the chart but local knowledge is required for limitations at individual berths. It is reported that vessels with LOA 70 m and draught to 3.0 m may use the jetty.

Pier ($1\frac{1}{2}$ cables SSW of Îlot Souadzou).

- 3 **Tankers.** It is reported that there is an offshore mooring buoy (not charted) with a submarine pipeline to the shore, with a maximum depth of 4.5 m, see also 1.36.

Landing can be effected at steps on the E side of the pier.

- 4 **Supplies.** Fresh provisions and water are scarce.

Other facilities. Hospital.

Communications. Moroni International Airport with services to Africa, Europe etc (25 km).

Small craft berths

3.28

- 1 **Anchorage** can be obtained in a depth of 1.5 m about $\frac{1}{4}$ cable E of the pier.

Basin (1 cable SSE of Îlot Souadzou), lined with small quays. To enter the basin, craft must proceed along the coast in front of the town to avoid a shoal in the entrance. The basin is encumbered with rocks and dries; local knowledge is required.

West and north coasts of Grande Comore

Chart 563

General information

3.29

- 1 **Route.** From a position NW of Moroni ($11^{\circ}42'0S$, $43^{\circ}14'5E$) the coastal route leads N, initially, about 20 miles, to a position NW of Mitsamiouli village ($11^{\circ}23'S$, $43^{\circ}17'E$) from whence it turns E for a farther 8 miles to a position NE of Ras Habu ($11^{\circ}22'0S$, $43^{\circ}22'6E$).

- 2 **Topography.** The W coast of Grande Comore, N of Moroni ($11^{\circ}42'S$, $43^{\circ}15'E$), is steep and rocky and backed by several villages but has no distinctive natural features.

The N coast of the island is generally low, but the land rises steeply to a plateau about 750 m high on which is the extinct volcano described at 3.12.

- 3 **Current.** See 3.14 for details of coastal current off Moroni.

Overfalls are charted about 12 miles NW of Moroni, 8 miles offshore.

3.30

- 1 **Landmarks:**

Le Kartala ($11^{\circ}45'S$, $43^{\circ}22'E$) (3.15).

Landmarks in Moroni (3.23).

Conspicuous radio mast ($6\frac{1}{2}$ miles NE of Moroni) (position approximate).

- 2 Conspicuous white tower of international airport (9 miles N of Moroni).

Conspicuous white hotel ($11^{\circ}22'S$, $43^{\circ}18'E$) near the coast.

Directions

(continued from 3.18)

3.31

- 1 From a position NW of Moroni, the track leads N along the west coast, which is steep-to, passing (with positions from Moroni Light ($11^{\circ}42'0S$, $43^{\circ}14'5E$)):

W of Itsandra village (2 miles NE) (3.32), thence:

W of a conspicuous airport tower ($9\frac{1}{4}$ miles N), which lies N of Hahala village, thence:

- 2 To a position W of the walled coastal village of Mitsamiouli (19 miles N), where a large white hospital, reported (1996) to be partially obscured by trees, stands in the middle of the village.

The track then leads E a farther 9 miles, giving the N coast a wide berth, as the extent of the fringing reef is little known.

- 3 Thence to a position NE of Ras Habu (11°22'0S, 43°22'6E) which is a rocky promontory connected to the coast by a low neck of land. From a distance it appears as an islet.

(Directions for E coast are given at 3.40)

Anchorage and landing places

3.32

- 1 **Itsandra.** A cove (11°40'2S, 43°15'3E), at the head of which stands the walled village of Itsandra with a smaller village close N, affords anchorage for small coasting vessels but it is very indifferent; the depths are considerable and it is very close to the coastal reef. Vessels should not anchor in depths less than 35 m and it is better to anchor in depths of 45 m, in the middle of the entrance to the cove.

- 2 There is a good landing place at Itsandra.

3.33

- 1 **Mitsamiouli.** The coast off Mitsamiouli village (3.31) affords temporary anchorage, in case of necessity, in a depth of 55 m (as shown on the chart) with the hospital bearing 099° distant 1¼ miles, or in a depth of 20 m with the bearing 114° distant 7½ cables.

The village is fronted by a sandy beach from which a sandbank with depths less than 2 m over it extends up to 5 cables.

South-east coast of Grande Comore

Chart 563

General information

3.34

- 1 **Route.** From a position S of the S extremity (11°56'S, 43°27'E) the coastal route passes NE about 8 miles to a position E of Pointe M'Vouni (11°53'3S, 43°30'5E).

Topography. Between the S point of Grande Comore and Pointe M'Vouni (4 miles NE), the SE coast is low and rocky.

Principal marks

3.35

- 1 **Landmarks:**

Stranded wreck of a coaster (11°55'S, 43°29'E), reported conspicuous in 1980.

Le Kartala (11°45'S, 43°22'E) (3.15).

Directions

3.36

- 1 From a position S of the S point (11°56'S, 43°27'E) of Grande Comore, clear of overfalls mentioned at 3.13, the track leads NE to a position E of Pointe M'Vouni (11°53'3S, 43°30'5E), a distance of about 6 miles, seaward of a coastal reef which extends up to 5 cables offshore, and passing:

- 2 SE of the wreck mentioned at 3.35, thence:
SE of Chindini village (about 1½ miles ENE of the S point), in which is a white house, thence:

To a position E of Pointe M'Vouni, which is low but with a hillock rising to a crater close within it.

(Directions continue at 3.40)

Anchorage

3.37

- 1 **Mouillage de Chindini,** (11°55'5S, 43°28'8E), in a bight in the coast, affords restricted anchorage off Chindini village, in a depth of about 33 m but local knowledge is required before anchoring. The following bearings indicate the position of the anchor berth:

- 2 Pointe Ouest, the SW entrance point of the bight, 258°.

White house in Chindini, 307°.

Pointe Nord, the NE entrance point, 023°.

There is a 5-8 m shoal, ¾ cable NE of the berth, lying 1½ cables off a 5-5 m bank which extends 4 cables from the shore in front of the village.

Small craft

3.38

- 1 **Anchorage** with shelter can be obtained inside a reef fronting Chindini. The passage through the reef lies close S of the village and is narrow; local knowledge is required.

East coast of Grande Comore

Chart 563

General information

3.39

- 1 **Route.** From a position E of Pointe M'Vouni (11°53'3S, 43°30'5E), the coastal route passes generally NNW for a distance of about 35 miles to a position NE of Ras Habu (11°22'0S, 43°22'6E).

- 2 **Topography.** The E coast of Grande Comore, between Pointe M'Vouni and Ras Habu (32 miles NNW) is nearly uniform in aspect and almost inaccessible, the land rising gradually to the heights within. There are lava cliffs about 17 miles NNW of Pointe M'Vouni, E of the village of Koimbani.

- 3 **Landmarks:**

Le Kartala (11°45'S, 43°22'E) (3.15).

Conspicuous radio mast (8¾ miles NNW of Le Kartala) (position approximate).

Directions

(continued from 3.36)

3.40

- 1 From a position E of Pointe M'Vouni (11°53'3S, 43°30'5E), the track leads generally NNW, seaward of the coastal reef which extends about 5 cables offshore, in places, and passing (positions given from Pointe M'Vouni):

- 2 ENE of Malé village (7½ cables NW), in which is a mosque, thence:
ENE of Foubouni (2 miles NW), a town in which there is a mosque overlooking the sea, thence:
ENE of Île Chandroudé (29½ miles NNW), thence:
ENE of Pointe Goulaivoini (31 miles NNW).

The track then leads to a position NE of Ras Habu (3.31).

3.41

- 1 **Useful mark:**

La Table (11°42'2S, 43°24'7E), a remarkable table-topped hill, 500m high, situated near the coast about 4½ miles NE of the summits of Le Kartala.
(Directions for N coast are given at 3.31)

MOHÉLI

General information

Chart 563

Topography

3.42

- 1 Mohéli (12°19'S, 43°43'E), also known in Swahili as Mwali, is the remnant of a large volcano, the rim of the original crater being indicated by a chain of islands off the S coast.

- 2 The length of the island is traversed by a mountain range with even slopes and no outstanding peaks so that, from a distance, its outline is rounded. The surface of the island is,

however, fissured, crossed by old lava flows and dotted with ash cones.

Except for a coastal plain on the N side, Mohéli is thickly wooded.

Current

3.43

- 1 See 3.9 for details of the ocean currents around Mohéli.

West coast of Mohéli

General information

3.44

- 1 **Route.** From a position SW of Île Magnougny (12°24'S, 43°38'E) the coastal route passes generally N, about 14 miles, to a position NW of Pointe Tsandzani (12°15'S, 43°38'E).

Depths. W of Île Magnougny a bank (3.48) extends 3 miles W before curving N a farther 3 miles with least charted depths of 17 m over it. Farther N, the shore of the island of Mohéli is relatively steep-to.

Principal marks

3.45

- 1 **Landmark:**
Roc (Rochers) Bateau (12°21'5S, 43°39'6E) on the coastal reef about 3 cables SE of Pointe Miremani; the rocks resemble a boat under sail and can be seen from a considerable distance.

Directions

3.46

- 1 From a position SW of Île Magnougny (12°24'S, 43°38'E), 156 m in height, and if deep-draught W of a bank (3.44) with a least charted depth of 17 m over it (3 miles W of the island), the track leads generally N, seaward of a reef which extends up to 8 cables from the coast, in places, and passing (with positions from Île Magnougny):
- 2 W of Roc Bateau (2½ miles NNE), lying 3 cables SE of Pointe Miremani, thence:
W of Pointe Damou (4½ miles N), a small peninsula, thence:
W of Îlot Bouélachamba (6½ miles N), a small islet about 3½ cables seaward from Pointe Miringoni.
- 3 The track then leads to a position NW of Pointe Tsandzani (12°15'S, 43°38'E), the NW point of the island.
(Directions for NE coast are given at 3.63)

Anchorage

3.47

- 1 Vessels can anchor off the villages on the coast between Pointe Miremani (12°21'3S, 43°39'4E), and Pointe Miringoni (4¾ miles NNW), from 1 to 1½ miles offshore.

South coast of Mohéli

General information

3.48

- 1 **Route.** From a position SW of Île Magnougny (12°24'S, 43°38'E) the route passes E, about 25 miles, to a position E of Île M'Chaco (12°22'S, 43°55'E).
- 2 **Topography.** Between Pointe Miremani (12°21'3S, 44°39'4E) and Pointe Tsinavouni (12½ miles E), the S coast of Mohéli is fringed by sandy beaches.
A chain of rocky islands lies off the W part of the coast from which it is separated by a navigable channel forming an inshore passage. S of the islands, a bank extends up to

2 miles seaward, its E end curving NE to join the coastal bank, W of Pointe Tsinavouni. The W end curves N (3.44).

- 3 Farther E, several small islets lie on a group of shallow banks which extends ¾ miles E of Pointe Tsinavouni.

3.49

- 1 **Local knowledge** is required for navigation of the channels between the islands off the S coast.

The channel between Île Dzaha (12°24'S, 43°39'E) and Île Canzoni (close E), is closed by a narrow strip of sand.

3.50

- 1 **Outlying obstruction**, 12°25'S, 44°02'E, the position of which is approximate, lies ESE of Pointe Tsinavouni; reported in 1916 by SS *City of Manchester*.

3.51

- 1 **Landmark:**

Roc Bateau (12°21'5S, 43°39'6E) (3.45).

Directions for coastal passage

3.52

- 1 From a position SW of Île Magnougny (12°24'S, 43°38'E), seaward of a bank with depths less than 20 m over it, which extends up to 2 miles S of the chain of coastal islands, the track leads generally E, passing (with positions from Île Magnougny):
- 2 S of a shoal (2 miles S) with a least charted depth of 9.0 m over it, thence:
S of Île Canzoni (1¼ miles E), thence:
S of Île Ouénéfou (3½ miles E), the highest of the coastal islands, thence:
- 3 S of Île Chandzi (4 miles E), thence:
S of breakers (reported) (7½ miles ESE) (position approximate), thence:
S of Pointe Domodé (8 miles E), thence:
S of a bank (8½ miles E), extending S with a least charted depth of 1.4 m over it, thence:
S of Pointe Tsinavouni (13 miles E), which is steep-to, thence:
- 4 S of Île Chikoundou, close NE of Pointe Tsinavouni, near the edge of the coastal reef which extends up to 8 cables offshore for about 1 mile N and dries, thence:
S of a shoal (15 miles E), (reported 1970) with a depth of 15 m over it.
- 5 The track then leads to a position E of Île M'Chaco (12°22'S, 43°55'E), 27 m in height and white and rocky, and clear of the outlying obstruction (3.50).
(Directions continue at 3.63)

Chart 563 (see 1.22)

Directions for inshore passage

3.53

- 1 **Caution.** The channel between the reef fringing the S coast of Mohéli and the chain of islands lying off it is deep but the E part is suitable only for coasters and requires careful navigation as a vessel must pass close to the coastal reef.

3.54

- 1 From a position about 7 cables N of Île Magnougny (12°24'S, 43°38'E), the track leads E, through the W part of the channel, passing (with positions from Île Magnougny):
S of Rochers Bateau (2¼ miles NNE), thence:
N of Île Canzoni (1¼ miles E), thence:
S of Roches Plates (2¾ miles NE), thence:
N of Île Ouénéfou (3½ miles E), thence:
- 2 The track leads between the coastal reef fringing the headland at Nioumachoua (12°22'S, 43°43'E) and the reef fringing the NW extremity of Île Mea, an easily identified

truncated cone, 1 mile SE, which should be kept close to starboard.

Once clear of the island the track leads SSE, midway between Île Mea and Île Foro, 1½ miles farther E.

3.55

- 1 **Leading mark.** When SE of Île Mea (12°23'S, 43°44'E), with Île Foro bearing 353°, the bearing 291° of Rochers Bateau, seen S of Île Mea, astern, leads ESE to the open sea, passing (with positions from Île Mea):

SSW of Pointe Domodé (2¼ miles E), thence:

- 2 Close SSW of a coral shoal (2¾ miles ESE) with a depth of 9 m over it, thence:

S of Pointe Tsinavouni (7¾ miles E).

The track then leads (as at 3.52) to a position E of Île M'Chaco (12°22'S, 43°55'E).

(Directions continue at 3.63)

Anchorage

3.56

- 1 **Coastal islands.** Anchorage can be obtained:
In a depth of 33m, WNW of Île Magnougni (12°23'·5S, 43°38'·5E), with the W extremity of Île Mohéli bearing about 013° and the S extremity of Île Canzoni (12°23'·5S, 43°40'·0E) bearing about 114°; HMS *Undine* (280 tons) anchored here in 1883.
- 2 With local knowledge, in depths from 40 to 50 m between 1 and 1¾ cables off the NW coast of Île Canzoni. There is good shelter from SE winds but vessels should be prepared to weigh at the first sign of a shift in the wind.
With local knowledge, by coasters in depths from 19 to 28 m, 2½ cables E of the S extremity of Île Dzaha (12°24'·0S, 43°39'·5E).
- 3 In a depth of 60 m, 7½ cables NNW of the N extremity of Île Ouénéfou (12°24'S, 43°42'E); MV *Apollon XI* (3800 tons) anchored here in 1972.
SW of Île Ouénéfou, on the bank mentioned at 3.48.
With local knowledge, by coasters in a depth of about 20 m, sand, E of Île Ouénéfou.

3.57

- 1 **Anse Miremani** (12°21'·2S, 43°40'·2E), a cove in the coast 7 cables E of Pointe Miremani, affords well-sheltered but restricted anchorage in depths from 18 to 37 m, sand and mud, in the position shown on the chart; local knowledge is required.

Port Nioumachoua

3.58

- 1 **General information.** Port Nioumachoua is formed by an indentation in the coastal reef off a cove in the coast close E of the walled town of Nioumachoua (12°22'S, 43°43'E); the town is situated on a promontory which terminates in a high red cliff with tall mangroves at its foot.

The port affords good, sheltered anchorage for coasters.

Local knowledge is required.

3.59

- 1 **Directions.** From a position in the inshore passage (3.53) about 2 cables N of the N extremity of Île Mea, the bearing 293° of the rounded W extremity of the high red cliff described at 3.58 leads through the fairway to the anchorage. The coastal reef in this vicinity is steep-to and a large part of it dries; when it is covered it can generally be easily seen from a high vantage point.

3.60

- 1 **Anchorage** can be obtained in a depth of about 18 m, sand and mud, with the W extremity of the red cliff bearing 293° and the E extremity of Île M'Bougo (2 miles SSE) bearing 180°. Vessels can also anchor W of Nioumachoua.

Landing can always be effected on a beach close to the town.

Supplies. There is a watering place at the head of Port Nioumachoua.

North-east coast of Mohéli

Chart 563

General information

3.61

- 1 **Topography.** See 3.42.
 - Depths.** The NE coast of Mohéli, between Pointe Tsinavouni (12°23'S, 43°52'E) and Pointe Tsandzani (16 miles WNW) is little known, except for the approaches to Fomboni (12°16'·7S, 43°44'·4E) (3.67); however, there are reported to be depths from 15 to 30 m all along the coast, between 1 and 2 miles offshore, as far as Pointe Hoani (1½ miles ENE of Pointe Tsandzani).
 - 2 **Tidal streams** set W with a rising tide, turning before LW.
- ### 3.62
- 1 **Landmark:**
Sommet Carré (12°19'·3S, 43°49'·3E), a hill near the coast W of Pointe M'Sangararou.

Directions

(continued from 3.52 or 3.55)

3.63

- 1 From a position E of Île M'Chaco (12°22'S, 43°55'E) the track leads NW, passing (with positions from Île M'Chaco):
NE of Île M'Chaco (3.52), thence:
NE of Îlot Gnandza (1¾ miles WSW) 3 m in height, thence:
NE of Îlot M'Bouzi (2½ miles W), near the edge of the drying coastal reef, thence:
- 2 NE of Rocher Bouélamahombé (4½ miles NW), thence:
NE of the coastal reef in the vicinity of Fomboni (11¾ miles NW), thence:
NE of Pointe Hoani (17 miles NW).

The track then leads to a position NW of Pointe Tsandzani (12°15'S, 43°38'E), the NW point of Mohéli.

3.64

- 1 **Useful marks:**
Prominent flagstaff (3.71), in Fomboni.
Beacon (black and white) (12°16'S, 43°43'E), on the coast 1¾ miles WNW of Fomboni.
(Directions for Fomboni anchorage are given at 3.72, and for W coast at 3.46)

Anchorage and landing place

3.65

- 1 **Anchorage** can be obtained as convenient off the NE coast of Mohéli, as far as Pointe Hoani (12°14'·8S, 43°39'·5E), from 1 to 2 miles offshore, in reported depths given at 3.61; this includes a good berth off the village of M'Batsé (2¾ miles ESE of Pointe Hoani) in depths from 15 to 25 m about 1½ miles from the coast.
- 2 Vessels can also anchor off Domoni village (1 mile SW of Pointe Hoani) where the depths decrease regularly from 24 m to 15 m, 1½ miles offshore.

Landing can be effected near a ravine behind a beach at Domoni.

Small craft

3.66

- 1 **Anchorage** can be obtained close offshore N of Sommet Carré (12°19'3S, 43°49'3E) (3.62); this anchorage is good but requires local knowledge.

Fomboni

Chart 563 (see 1.22)

General information

3.67

- 1 **Position.** Fomboni (12°16'7S, 43°44'4E) is situated on a slight indentation in the NE coast of Mohéli, at the head of Anse Doueny, a cove in the coastal reef.

Function. Fomboni is a small commercial port, off which vessels anchor, and the principal town of Mohéli with an estimated population in 1990 of 5600.

Topography. Some of the houses in the town are prominent.

3.68

- 1 **Approach** to Mouillage de Fomboni, the anchorage off the town, is made from N direct from sea.

Traffic is light and consists mainly of small inter-island vessels.

Port Authority. Port Authority of Fomboni, Fomboni, Moheli Island, Comores.

Limiting conditions

3.69

- 1 **Depths.** The coastal reef on both sides of Anse Doueny and at its head, in front of Fomboni, dries.

Tidal levels. At Fomboni the mean spring range is about 3.2 m, the mean neap range about 1.4 m. For further information see *Admiralty Tide Tables Volume 3*.

Local weather. From about November to February the NW Monsoon causes very heavy swell which makes the anchorage unsafe.

Arrival information

3.70

- 1 **Pilot and tugs** - not available.
- Port operations.** Cargoes are worked between the anchorage and a pier (3.76) by dhows and lighters.
- Information service.** Signal station at Fomboni.

Harbour

3.71

- 1 **General layout.** The port consists of the anchorage and a small pier at Fomboni.

Landmark:

Prominent flagstaff (12°16'6S, 43°44'6E), on the local administration building.

Directions for Fomboni anchorage

3.72

- 1 **Leading marks.** From sea the alignment (195°) of the following marks leads to the anchorage in Anse Doueny:
Beacon A (white chevron on house) (12°16'5S, 43°44'5E), overlooking a beach in front of the town.
Beacon B (wooden post, whitewashed metal topmark) (3¼ cables SSW of Beacon A).

Anchorage and landing place

3.73

- 1 **Anchorage** can be obtained on the alignment of the approach leading marks in depths not less than 16 m, with a post (8½ cables NW of Beacon A), on the coastal reef, bearing less than 267° and open S of a beacon (black and white) (1¼ miles WNW of Fomboni), on the coast; a suitable berth is shown on the chart.

With SE winds anchorage is good although there is sometimes a troublesome swell.

3.74

- 1 **Landing** can be effected at the narrow head of Anse Doueny; the cove is plainly visible when the reef dries out. The pier (3.76) can also be used, when accessible.

Port services

3.75

- 1 **Medical.** Hospital in the town.
- Communications.** Airfield with flights to Moroni.

Small craft

3.76

- 1 **Anchorage** can be obtained in Anse Tsoa (1 mile SE of Anse Doueny), with better shelter from SE winds than off Fomboni.

Landing can be better effected in Anse Tsoa than in Anse Doueny.

- 2 **Pier** in front of Fomboni; length 50m, concrete construction; accessible from 2 hours before to 2 hours after HW.

The alignment of the pierhead with a radio mast (both uncharted) leads through Anse Doueny to the pier.

ANJOUAN

General information

Chart 563 (see 1.22)

Topography

3.77

- 1 Anjouan (12°15'S, 44°25'E), also known in Swahili as Nzwani, is of alpine appearance, with three mountain ranges extending from Pic d'Anjouan, its central and highest peak; the ranges are often covered in cloud but on nearer approach thickly wooded peaks, many of them precipitous, separated by valleys and deep gorges, can be seen.

- 2 Between Pic d'Anjouan and the E coast there are fertile flatlands.

The surface of the island is studded with ash cones.

Tide-rips

3.78

- 1 Off the S, W and N ends of the island, tide-rips form as shown on the chart. The rips give the appearance of shallow water up to about 2 miles outside a reef which borders the coast in places; the bottom is probably rocky and uneven.

South-west coast of Anjouan

General information

3.79

- 1 From a position SSE of Morne de la Pointe (12°23'S, 44°32'E), and clear of tide-rips (3.78) off the S end of Anjouan, the passage leads NW, to seaward of the coastal reef, which extends seawards up to 1 mile in places, a distance of about 28 miles to a position WNW of Île de la Selle (12°10'S, 44°12'E).

- 2 **Topography.** Most of the SW coast is bordered by coastal reef which extends up to 1 mile seawards, the largest

section being between Île de la Selle, at the W extremity, and the village of Pomoni (12°17'S, 44°25'E), 14 miles ESE, where a break in the reef forms and protects the anchorage. This the most important of a number of villages on the SW coast of Anjouan, there being a sugar refinery there.

Inshore, the land rises steeply to the mountain ranges behind and is rugged and scored by numerous deep gorges.

- 3 **Local weather.** During May, heavy rollers occur at times along this coast and rain is said to be incessant.

Landmark:

Pic d'Anjouan (12°13'S, 44°25'E); when not covered by cloud the peak can be seen from a considerable distance in clear weather, especially in the morning.

Directions

3.80

- 1 From a position SSE of Morne de la Pointe (12°23'S, 44°32'E), the track leads NW, keeping seaward of a reef extending up to 1 mile, in places, and passing (positions given from Morne de la Pointe):

SW of an islet, close SE of the point, thence:

- 2 SW of dangerous rocks (1¼ miles W), lying close S of the S extremity of Anjouan, thence:

SW of Moya (6¼ miles NW), a village standing on a promontory which is fronted by a coastal reef extending about 5 cables seawards, thence:

SW of Pomoni (9¼ miles NW) (3.82), thence:

- 3 SW of a coral shoal with a depth of 5 m over it (1¼ miles NW) off the village of Vouani, thence:

The track then leads to a position NW of Île de la Selle (12°10'S, 44°12'E), which island is saddle-shaped.

3.81

- 1 **Useful marks:**

Marks in the vicinity of Mouillage de Pomoni, 9 miles NW of Morne de la Pointe. See 3.84 for details.
(*Directions continue at 3.92*)

Chart 563 (see 1.22)

Pomoni anchorage

3.82

- 1 **Topography.** Pomoni anchorage (12°16'3S, 44°23'8E) is formed by a basin in the coastal reef, situated 7 cables NW of Pomoni village; the reef dries.

The locality of the basin can be identified by high ground in the shape of a saddle, and by two peaks, close together, which overlook Pomoni.

Limiting condition. Maximum length of vessel that can enter the basin is about 60 m.

3.83

- 1 **Outer anchorage.** Vessels can anchor outside the basin, off a gap in the reef in front of Pomoni village, in a depth of about 26 m, with a sugar refinery chimney (see below for details) bearing between 037° and 048°, distant 4½ cables; to E of the anchorage there are some rocks, one of which is covered at HW.

3.84

- 1 **Landmarks:**

Flagstaff (12°16'7S, 44°24'4E), near a house and, (with positions given from the flagstaff);

Sugar refinery chimney (white square) (1¼ cables NW).

Beacon (white cylinder) (2¾ cables N), which is a good mark among trees.

3.85

- 1 **Directions - approach.** The alignment (046°) of the sugar refinery chimney with the cylindrical beacon leads through the approach to the entrance of the basin.

- 2 **Entry.** The alignment (009°) of two distinctive walls (charted as beacons) (about 1 mile NNW of the chimney) leads through the fairway of the entrance channel, which is narrow but deep, passing close E of a coral shoal with a depth of 1-4 m over it (in the entrance); the shoal is difficult to distinguish and the sea only breaks over it at long intervals.

- 3 **Caution.** Care should be taken not to have too much way when entering, in order to turn short round the NW extremity of the reef on the S side of the basin, on which is a ruined beacon. Local knowledge is advisable.

Useful mark:

Store (head of basin).

3.86

- 1 **Anchorage** can be obtained in the basin, in depths of about 15 m, black sand; the sides of the basin are steep-to except for a beach at its head.

The basin is well sheltered except during S to SW winds when swell comes in over the reefs at half-tide; conditions can become dangerous with strong winds, and at HW spring tides.

3.87

- 1 **Landing** can be effected at a small wharf in front of boat houses on the NE side of the basin.

Supplies: good fresh water from a stream near the sugar refinery; fresh provisions are very scarce.

3.88

- 1 **Small craft.** A channel between the reefs and the shore, suitable for boats, connects the basin and sugar refinery.

Other anchorage

3.89

- 1 A similar break in the coastal reef to that in 3.83 lies farther NW, off the village of Assimpao (12°14'S, 44°19'E), and gives good shelter to local craft, but this appears to be encumbered by coral heads and should only be used with local knowledge.

North coast of Anjouan

General information

3.90

- 1 **Routes.** From a position NW of Île de la Selle (12°10'S, 44°12'E), the offshore route leads generally ENE, about 18 miles, to a position N of the N extremity of Anjouan (12°04'S, 44°28'E).

The coastal route leads initially E about 13 miles before turning NE for a farther 10 miles, to the position N of Anjouan.

- 2 **Topography.** The N coast of Anjouan is indented by an extensive bay around which are some villages and at the head of which is the port of Mutsamudu (12°10'S, 44°24'E).

Depths are considerable a short distance offshore, outside a reef which fringes the coast in places. However, a shoal depth of 16 m is charted in position 12°02'S, 44°23'E (existence doubtful).

- 3 **Reefs** show up green at HW and the sea breaks over them at half-tide except in a calm.

3.91

- 1 **Landmarks:**

Pic d'Anjouan (12°13'S, 44°25'E) (3.79).

Prominent minaret (white, square; elevation 27 m) (12°09'8S, 44°23'8E) (Chart 563, plan of Mouillage de Mutsamudu), situated near the centre

of Mutsamudu; a white church on a hill (1¼ cables ESE) is also prominent.

Directions

(continued from 3.81)

3.92

- 1 From a position NW of Île de la Selle (12°10'S, 44°12'E) (3.80), the track leads ENE, seaward of the coastal reef, and passing (with positions from Île de la Selle):

Clear of tide-rips (up to 2 miles N and E) (3.78), thence:

N of Pointe Hamilia (5 miles ESE), thence:

- 2 N of Îlot M'Chacoujou (5¾ miles ESE), thence:

NW of Mutsamudu (11 miles E), thence:

NNW of the W point of a peninsula forming the N end of Anjouan.

The track then leads to a position N of tide-rips (3.78) off the N point of the island (12°04'S, 44°28'E).

3.93

- 1 **Useful marks:**

Mutsamudu Light (12°09'8S, 44°23'9E) (3.102).

Monument (12°08'6S, 44°25'3E) (3.105).

(Directions for E coast are given at 3.109,
for Mutsamudu at 3.102,
and for Mouillage d'Ouani at 3.106)

Anchorage

3.94

- 1 There is reported to be good anchorage off the N side of Île de la Selle in depths of 22 m.

Mutsamudu

Chart 563, plan of Mouillage de Mutsamudu and Mouillage d'Ouani

General information

3.95

- 1 **Position.** The port of Mutsamudu (12°09'8S, 44°23'6E) is situated on the open N coast of Anjouan, close W of a walled town of the same name.

- 2 **Function.** Mutsamudu, estimated population in 1991 of 20 000, is the principal commercial port of Comores, and the only place in the Republic where ocean-going vessels can berth alongside.

Approach and entry to the port is from WSW, direct from the open sea.

Traffic. In 2003, 13 vessels with a total dwt of 58 555 used the port.

- 3 **Port Authority.** There is a Port Director and a Harbour Master; postal address:

Direction du Port de Mutsamudu,

BP205, Mutsamudu, Anjouan,

Republique Fédéral Islamique des Comores.

Limiting conditions

3.96

- 1 **Controlling depth** is 9 m to which the main part of the port is dredged (1985).

Deepest and longest berth is Berth 1A (3.103).

Tidal levels. At Mutsamudu the mean spring range is about 3.4 m, the mean neap range about 1.4 m. For further information see *Admiralty Tide Tables Volume 3*.

- 2 **Local weather.** The NW Monsoon (3.7) may cause a scend at the berths.

Arrival information

3.97

- 1 **Port operations.** Vessels anchor off the port (3.99) and pilotage to a berth is compulsory. Cargoes are worked at any of four different berths, three on the Quai Principal (3.101) and one on the Quai de Transit (3.101).

Tankers are handled at Mouillage d'Ouani (3.105) 2 miles NE.

3.98

- 1 **Port radio.** See *Admiralty List of Radio Signals Volume 6(3)* for details.

3.99

Outer anchorages:

Ocean-going vessels anchor:

- 1 About 3 cables WNW of the harbour entrance, in a depth of 60 m, in the position shown on the plan. The bearing 102° of Mutsamudu Light (12°09'8S, 44°23'9E) (3.102) leads to the berth which lies at the intersection of this bearing with the alignment (184°) of the N and S of three white anchoring beacons at Pagé village (about 1 mile SW of Mutsamudu). The S anchoring beacon is difficult to distinguish when the sun is high.
- 2 About 7 cables WSW of the harbour entrance, in Mouillage de la Fontaine, in a depth of about 60 m, in the position shown on the plan. The alignment (134°) of the N and SE anchoring beacons leads to this berth; the SE beacon is difficult to distinguish when the sun is high.

Coasters anchor:

- 3 About 4¼ cables WSW of the harbour entrance, in a depth of about 30 m, in the position shown on the plan. The bearing 172° of Pagé N beacon leads to this berth which lies at the intersection of the bearing 073° of Mutsamudu minaret (3.91) in line with the centre of an ochre-coloured red-roofed customs house (1¼ cables WSW) (not charted). The berth is only about 1¼ cables off the coastal reef.
- 4 Also NE of the above berth, in a depth of about 25 m, with Mutsamudu minaret bearing 077° distant 6½ cables.
- 5 **Caution.** Depths increase rapidly off a coastal bank, which has depths less than 11 m over it, and on which the drying coastal reef lies; the anchorages must therefore be approached with care. The bearing 052° of Pointe Mirontsi (12°09'3S, 44°24'1E) in line with Maison Wilson, 1½ miles NE (3.107), passes seaward of the coastal bank but the marks are difficult to distinguish in the morning.

3.100

- 1 **Pilots and tugs.** Pilotage is compulsory for berthing alongside which is only undertaken during daylight. A tug equipped with RT is available.

Pilot, and tug if required, should be requested in advance through local agent and communication established with port radio on arrival.

- 2 The pilot boarding place is 7½ cables N of the harbour entrance.

Harbour

3.101

- 1 **General layout.** Mutsamudu is an artificial harbour the entrance to which faces WSW. It is formed between Quai Principal, on the N side, and Quai de Transit, on the S side, both quays projecting WSW from reclaimed land which forms the head of the harbour, 1½ cables WSW of Mutsamudu minaret (3.91).

Directions**3.102**

- 1 From sea, or anchorage, the track into harbour leads ENE, passing:

SSE of a beacon (port hand), close off the seaward end of Quai Principal, which shows up well, and:

SSE of a light (red lantern on hut), exhibited from seaward end of Quai Principal.

- 2 **Caution.** A current, setting NW across the entrance, may be experienced.

Useful mark:

Mutsamudu Light (white square tower, black bands, 5 m in height) (12°09'·8S, 44°23'·9E).

Alongside berths**3.103**

- 1 Four berths are available at Quai Principal and Quai de Transit:

Quay	Berth	Length m	Depth m	Usage
Principal	1A	173	9.0	Containers
Principal	1B	66	4.5	Coasters
Principal	1C	10		Ro-Ro
Transit	2	82	3.7	Coasters

Port services**3.104**

- 1 **Repairs.** No facilities.

Other facilities. Medical facilities available; Ouani airport 7 km.

Supplies: fresh water at the berths; fresh provisions in limited quantities.

Communications: Local airfield with flights to Moroni International Airport..

Mouillage d'Ouani**General information****3.105**

- 1 **Position.** Mouillage d'Ouani lies in a bay in the coast between Pointe Mirontsi (12°09'·3S, 44°24'·1E) and Pointe Ouani, 2 miles NE.

Function. Discharge facilities for coastal tankers are provided at a pier (3.107) on the shore near the anchorage.

- 2 **Landmark:**

Prominent monument (12°08'·6S, 44°25'·3E), near root of the pier.

Directions**3.106**

- 1 **Leading marks.** The alignment (097°) of white leading beacons, situated 1½ cables SE of Pointe Patsy (12°08'·3S, 44°25'·3E), leads to the anchorage.

Caution. The rear leading beacon may be concealed by vegetation.

The berth (3.107) lies only 1 cable off a steep-to coastal bank with depths less than 11 m over it, and should be approached with care.

Berths and landing place**3.107**

- 1 **Anchorage** can be obtained in a depth of 35 m on the leading line with Maison Wilson (Wilson Store, red roof), on Pointe Patsy, bearing 081° and Pointe Ouani bearing 030°.

Pier (2 cables S of Pointe Patsy); there are three mooring buoys off the head of the pier and a group of oil tanks near its root. The maximum berth depth is 12·0 m.

Landing is made at a small pier (S side of Pointe Patsy).

East coast of Anjouan

Chart 563

General information**3.108**

- 1 **Route.** From a position SSE of Morne de la Pointe (12°23'S, 44°32'E) and clear of tide-rips (3.78) off the S end of Anjouan, the passage leads generally N, about 27 miles, to a position N of the N extremity of Anjouan (12°04'S, 44°28'E).

- 2 **Topography.** The E coast of Anjouan, between Morne de la Pointe (12°23'S, 44°32'E) and the N point of the island (19 miles N), is high and rocky and has not been closely examined, except in the vicinity of Bambao (12°12'S, 44°31'E), but appears in general to be steep-to. A number of villages stand on or near the coast.

- 3 **Tide-rips.** In 1989 heavy tide-rips were reported in position 12°12'·0S, 44°32'·2E, about 1½ miles ESE of the village of Bambao (3.112).

Local weather. Winds from NE are at their strongest in August and September, making anchorage off the E coast untenable.

Landmark:

Pic d'Anjouan (12°13'S, 44°25'E) (3.79).

Directions**3.109**

- 1 From a position SSE of Morne de la Pointe (12°23'S, 44°32'E) the track leads N, passing (with positions given from Morne de la Pointe):

Clear of the tide rips (3.78), S of Morne de la Pointe, thence:

E of an islet, close SE of the point, thence:

- 2 E of Pointe Gomajou (2 miles N), to W of which, in the village of M'Ramani, a white minaret is prominent, thence:

E of a small peninsula (7½ miles N), near the root of which is the village of Domoni, with a sugar refinery, thence:

- 3 E of Rocher Noir (7¾ miles N), thence:
E of Rocher Conique (9 miles N), with a height of 18 m, thence:

E of Gégé Beacon (octagonal white tower, red band) (9½ miles N), standing on the coastal reef at the mouth of the Gégé River, thence:

- 4 E of a steep-to coastal bank (from 9½ to 12 miles N) with depths less than 11 m over it which also extends up to 4 cables offshore, thence:

E of Bambao (10½ miles N) (3.112), thence:

E of Pointe N'Dragani (15¾ miles N), thence:

- 5 E of a narrow reef which fringes the coast between Pointe N'Drangani and the N point of Anjouan (3½ miles NNW), thence:

To a position N of the N extremity of Anjouan (12°04'S, 44°28'E).

3.110**Useful marks:**

Marks at Bambao (see 3.115 and 3.116 for details).

Anchorage**3.111**

There is a good anchorage off the sugar refinery at Domoni (12°15'S, 44°32'E), in depths from 15 to 28 m, 4 cables offshore, except during August and September, when conditions are as described at 3.108. The village has a boat harbour.

Bambao

Chart 563, French Chart 4806 plan Mouillage de Bambao

General information**3.112**

Position and function. The village of Bambao (12°11'S, 44°31'E), is situated near a break in the coastal reef, in the middle of the E side of Anjouan, and is a small commercial port off which vessels anchor.

Approach to Mouillage de Bambao, the anchorage off the village, is made from E direct from sea.

Traffic is light, consisting of coasters and inter-island vessels.

Limiting conditions**3.113**

Local weather. See 3.108 regarding the effect of NE winds; heavy swell can affect the roadstead at any time.

Arrival information**3.114**

Port operations. Cargoes are worked between the anchorage and a small craft harbour (3.115) by dhows.

Harbour**3.115**

General layout. The port comprises the anchorage and a harbour for small craft in a narrow break in the coastal reef (4 cables S of Bambao).

Landmarks:

Factory (white chimney) (12°11'S, 44°30'9"E).

House (flagstaff) (2¼ cables N of factory).

Directions for Mouillage de Bambao**3.116**

Leading marks. From sea, the alignment (274°) of the following marks leads to anchorage in the roadstead:

M'Sangani Beacon (white octagonal tower, black band) (12°12'3S, 44°31'2E).

Achombo Beacon (two white octagonal stone columns, wide black band) (3½ cables W of M'Sangani Beacon).

Anchorage**3.117**

North anchorage. Vessels can obtain restricted anchorage on the approach leading line, in depths from 30 to 35 m, with Gégé Beacon tower (3.109), 1¼ miles SSE of M'Sangani Beacon, bearing 184°; this berth, shown on the plan, lies off the small craft harbour, about 1 cable outside

the steep-to coastal bank (3.109), and is most convenient for working cargo.

3.118

South anchorage, also restricted, is in a depth of about 20 m, with Achombo Beacon bearing 301° and Gégé Beacon tower bearing 189°; this berth is on a less steeply shelving bottom, about 1½ cables off the coastal bank and 1¼ cables W of an 11 m rocky shoal.

ILE DE MAYOTTE**General information**

Charts 2741, 2756, 2757 (see 1.22)

Routes**3.119**

Being virtually encompassed by a barrier reef, Ile de Mayotte (Île Mayotte) and its ports, Dzaoudzi (12°47'S, 45°15'E) (3.152), and Pointe de Longoni (12°43'S, 45°10'E) (3.178), are reached via passages through this reef.

Passe Mtsamboro (Passe M'Zamboro) (12°36'S, 45°07'E) (3.150) affords a route from N and is the deepest and shortest route to Pointe de Longoni.

Passe de Bandré (Passe Bandélé) (3.148) 6½ miles S of Dzaoudzi, is the main passage on the E side of a barrier reef which surrounds the island and the only one that is lit, but see also 3.148 for difficulties of navigation.

Dzaoudzi can be approached through Passe de Bandré or Passe Mtsamboro.

Passe des Iles Choazil (Passe des Îles Choizil) (12°41'S, 44°58'E) (3.136) affords a route from W.

There are no passages through the S side of the barrier reef.

Topography**3.120**

Ile de Mayotte is remarkable from all directions on account of its high, irregular profile; the coasts, however, are generally low and swampy, being flooded by the sea and in many places covered with mangroves.

The barrier reef is broken by a number of passages some of which, mentioned above, give access to a spacious lagoon.

Depths**3.121**

Depths on the passages through and inside the reefs have been investigated by sidescan sonar, and the areas investigated are indicated on the charts. See also the note on the charts.

The maximum draughts for Dzaoudzi are less than 11.5 m via Passe Mtsamboro (3.150) and less than 5.0 m for Passe de Bandré (3.148).

Fishing**3.122**

Many fish aggregating devices have been established around the coast of the island and are marked by strings of orange coloured floats and masts with flags. Mariners are advised to keep a good lookout for these devices and keep at least 1½ miles clear.

The fish aggregating devices are not charted but their latest positions are promulgated in temporary Notices to Mariners.

Pilotage**3.123****2 General information.**

Pilotage is compulsory for vessels over 30 m in length and available 24 hours.

Notice of ETA should be sent 48 and 24 hours before arrival.

The pilot boat is a launch with a blue hull and white superstructure.

Berthing and unberthing is undertaken between 0600 and 2200.

See *Admiralty List of Radio Signals Volume 6(3)* for details.

3 Passe de Bandré. Pilots board on the entrance leading line (3.149) about 1¼ miles off the entrance.

Passe Mtsamboro. Pilots board on the entrance leading line (3.150) about 2 miles off the entrance.

Local knowledge**3.124****1 Passages** through the W side of the barrier reef require local knowledge, except for Passe des Iles Choazil (12°41'S, 44°58'E) (3.136). However, Grande Passe de l'Ouest (3.129), 7 miles S of Passe des Iles Choazil, should not be used as it is unsafe with the probability of uncharted dangers.**2 Lagoon.** The W part of the lagoon, S of Passe des Iles Choazil, requires local knowledge. There are few soundings in that part, S of Passe Bouéni (12°55'S, 44°58'E), and much of the remainder is encumbered with dangers, the positions of which can best be seen on the chart.**Natural conditions****3.125****1 Current** in the vicinity of Ile de Mayotte, although variable as described at 3.9, sets W for much of the time at rates from 1 to 2 kn. In the area S of the barrier reef the current may be E-going.

Close inshore, the current follows the reefs and coast of the island, sometimes attaining a rate of 3 kn in the passages.

See 2.27 for the current between the barrier reef and Anjouan.

2 Tidal streams. See information on the chart.**Caution****3.126****1 Barrier reef** should be approached with care; parts of the reef lie far off the land, it is generally steep-to and the currents are uncertain. Breakers usually mark the reef but in calm weather, at HW, the only warning may be discoloration of the sea.**2 Passage** through the reef should be attempted at or near LW, draught permitting; at this time those reefs which do not dry are generally visible in a good light.

It is essential that main engines and steering gear be completely reliable.

South and west coasts of Ile de Mayotte**General information****3.127****1 Topography.** Between Pointe Sazilé (Pointe Saziley) (12°58'S, 45°12'E), and Pointe Bouéni, 9 miles NW, the coast forms a number of bays separated by narrow, high headlands. Each is fronted by the continuous coastal reef

while a second broken line of reefs lies from 2 to 5 cables off the headlands.

2 Between Pointe Bouéni and Tsiraka Kahirimtrou (Pointe Mohila), 10½ miles farther N, the coast is indented with numerous marshy bays separated by headlands and generally dominated by the surrounding hills. The largest, Baie de Bouéni (12°55'S, 45°07'E), is entered between Pointe Bouéni and Pointe Doujani, 3 miles N. It extends about 5 miles SE into the coast but, although of moderate depth, it is partially encumbered with reefs and banks. Its shores are partially fronted by the coastal reef and its head is covered by mangrove swamp.**3** From Tsiraka Kahirimtrou to Rassi Douamounyo (Cap Douamoungo), 5¾ miles NE, the coast is steep-to, fronted by a narrow coastal reef and dominated by the hills of Hachiroungou and Mlima Dziani Bolé, immediately inland.**3.128****1 Landmarks:**

Mlima Choungui (12°57'4'S, 45°08'1'E) a peak resembling a sugar-loaf, which rises from comparatively low land and is the first identifiable mountain when approaching from S.

Mont Rassi Gouja (12°57'6'S, 45°05'6'E), forms a headland above Pointe Kani, the SW extremity of the island.

2 Mlima Choungui Kéli (12°57'5'S, 45°09'8'E) (3.141). Mlima Bénara (12°52'8'S, 45°09'8'E); this is the highest mountain, 658 m in height, on Ile de Mayotte and rises to a double summit.

Mlima Combani (Mont Lima Combani) (12°48'3'S, 45°09'1'E), which has a distinctive conical summit, 513 m in height, but is not distinguishable from S.

3 Ochoungui (12°48'2'S, 45°06'5'E), which is a distinctive hill.

Mlima Mtsapéré (Mont Sapéré) (12°45'9'S, 13°10'9'E) (3.141).

Hachiroungou (12°42'8'S, 45°04'1'E).

4 Mlima Dziani Bolé (12°41'4'S, 45°05'3'E); this mountain is prominent from N.**Directions: passage west of the barrier reef****3.129****1** From a position S of Récif du Sud, the S part of the barrier reef, the track W of the reef leads initially NW, having regard for the cautions given at 3.126 and passing (with positions from Mlima Choungui (12°57'S, 45°08'E)):**2** SW of Passe aux Bateaux (9 miles W) (3.132), an unsurveyed break in the reef, thence:

SW of Passe Bouéni (10 miles WNW) (3.133), thence:

SW of Passe Sada (10½ miles WNW) (3.134), thence:

SW of Passe du Morne Rouge (12½ miles NW) (3.135), thence:

3 To a position W of the W point of the reef (13½ miles NW), on which there is a least charted depth of 2.3 m.

From thence, the track leads generally N, passing (with positions from Chissioua Mtsamboro (12°38'5'S, 45°01'7'E)):

W of Grande Passe de l'Ouest (10 miles SSW), an unsafe passage heavily encumbered with banks and shoals, thence:

W of Passe des Iles Choazil (4¼ miles WSW) (3.136), thence:

W of a depth of 6 m (5 miles W), on the NW point of the reef, part of which dries, thence:

4 Clear of a detached reef with a depth of 5 m over it (6¼ miles NW) (position doubtful). Deep-draught vessels should pass W of this reef and also of Banc

de l'Iris, with a minimum charted depth of 14 m, lying between 1 and 4 miles farther N. Thence:

- 5 To a position seaward of Récif du Nord (4¾ miles NE), the N point of the reef.

3.130

- 1 **Useful mark:**

Chissiou Mtsamboro (Île M'Zamboro) (12°39'S, 45°02'E), which is saddle-shaped, seen from SW. Rassi Douamounyo (Cap Douamoungo) (3¾ miles E of Chissiou Mtsamboro) (3.150).

(Directions for passage E of barrier reef are given at 3.142)

Directions for passages through west side of barrier reef

3.131

- 1 **Caution.** Except for Passe des Iles Choazil (12°41'S, 44°58'E) (3.136), the passages through the W side of the barrier reef are not recommended. The leading marks described below are not good and some passages have not been closely examined. Mariners without local knowledge should only attempt them in emergency. In all cases, the cautions at 3.126 should be observed.

3.132

- 1 **Passe aux Bateaux** (12°58'S, 44°59'E); the bearing 082° of Pointe Kani (5½ miles E of the passage) seen between Mont Rassi Gouja (3.128) and Mlima Choungui (3.128) leads through this passage.

3.133

- 1 **Passe Bouéni** (3¼ miles N of Passe aux Bateaux). The alignment (078°) of Mont Rassi Bolé, 126 m high, overlooking Pointe Bouéni (6 miles E of Pass Bouéni), with the E summit of Mlima Bénara (3.128) leads through this passage; however, the marks are not easy to identify and their alignment should not be followed E of the passage as it leads over a reef which dries 1.4 m (7 cables E of the passage). There are also some dangers N of the leading line and the area S is incompletely surveyed.

3.134

- 1 **Passe Sada** (4¾ miles N of Passe aux Bateaux). The axis of this passage is 075° but, if used, care should be taken to avoid a 5.3 m shoal situated 1½ miles within the lagoon, close N of this track.

3.135

- 1 **Passe du Morne Rouge** (7 miles N of Passe aux Bateaux); the alignment (066°) of the N side of Ochoungui (10 miles ENE of Passe du Morne Rouge) (3.128) with the S side of Mlima Mtsapéré (5 miles farther ENE) (3.141) leads through this passage which has a depth of 7.9 m in the fairway, about 1 mile wide, but the marks are too distant to be easily identified.

3.136

- 1 **Passe des Iles Choazil** (Passe des Îles Choizil) (12°41'S, 44°58'E); the alignment (084°) of the N side of the W island of Iles Choazil (Îles Choizil), 5 miles E of the passage, with a beacon on Morne H, 2½ miles farther E, leads through this passage which has been swept to a depth of 5.3 m in the fairway.

Directions for north-west part of the lagoon

3.137

- 1 **Local knowledge.** See 3.124 for requirement.

Passe des Iles Choazil to Passe Mtsamboro. From a position 4¾ miles WSW of Rassi Douamounyo Light (12°39'2S, 45°06'2E), on the entrance leading line for Passe des Iles Choazil, the track leads ENE, passing (with positions from Rassi Douamounyo Light):

- 2 Between the W island of Iles Choazil (3½ miles WSW) and Chissioua Mtsamboro (4 miles W) (3.130), thence:

NNW of Rassi Douamounyo, thence:

NNW of Récif Chaloupe (1 mile NE), thence:

- 3 NNW of Caribou light-buoy (starboard hand) (2 miles NNE), moored on a 7.3 m patch, thence:

To a position about 6½ cables N of Caribou light-buoy. *(Directions for passage to Dzaoudzi continue at 3.167.*

Directions for Passe Mtsamboro are given at 3.150)

Anchorage

3.138

- 1 Temporary anchorage can be obtained outside the barrier reef on the NW side of Ile de Mayotte, in depths from 11 to 26 m on Banc de la Prudente, 2 miles NW of Chissioua Mtsamboro. Care should be taken to ensure a vessel swings clear of the least depth of 8m on the bank, 1¼ miles WNW of Chissioua Mtsamboro. The holding ground is reported to be poor.

East and north coasts of Ile de Mayotte

General information

3.139

- 1 **Topography.** Between Pointe Sazilé (12°58'S, 45°12'E), and Pointe Mahabo (Pointe Choa) (12°47'0S, 45°14'3E), 11½ miles N, the coast is low and narrow, backed by the central range of hills inland. The coastline forms a number of coves and bays, each fronted by the coastal reef, and the low-lying shore is marshy. At Rassi Bambo (Pointe Abambo), 2½ miles NW of Pointe Sazilé, the coastal reef extends about 7 cables SE. Beyond this, a bank with a least charted depth of 4 m extends farther E to the barrier reef, 2 miles offshore.

- 2 Between Rassi Domonyombé (Pointe Hamouro), 6¼ miles N of Pointe Sazilé, and Pointe Mahabo the coastal reef varies in width, extending about 9 cables S off Pointe Mahabo itself, while the shore is covered by mangroves.

- 3 The barrier reef extends N from Récif du Sud, 3 miles SE of Pointe Sazilé, to Petite-Terre (Ile Pamandzi) (3.141), 2½ miles E of Pointe Mahabo, and is broken by several small channels of varying depths, few of which are navigable with safety. Between the barrier and coastal reefs the waters are encumbered with isolated reefs, banks and small islets.

- 4 East of Pointe Mahabo, Petite-Terre lies on the barrier reef with Dzaoudzi (Île Dzaoudzi) lying on an arm of the reef which extends W towards Pointe Mahabo. The waters surrounding the point and islands are encumbered by banks, reefs and smaller islets.

- 5 From Pointe Mahabo to Rassi Douamounyo, 11 miles NW, the coast is fronted by the coastal reef and is mostly high and rugged, with the exception of Baie de Longoni (3.179), 6 miles NW of the point, which is low-lying and bordered by mangroves.

- 6 The barrier reef continues from Petite-Terre, turning NW and continuing unbroken to a point 2¾ miles NE of Rassi Douamounyo. The waters between the reefs are encumbered with banks and isolated reefs.

3.140

- 1 **Current.** See 3.125 for details.

3.141

- 1 **Landmarks:**

Mlima Choungui Kéli (12°57'5S, 45°09'8E), a square-topped mountain.

Mlima Choungui (12°57'4S, 45°08'1E) (3.128).

Chissioua Bambo (Île Bambo) (12°56'0S 13°02'1E), which is a good landmark.

- Chissioua Bandré (Île Bandé) (12°53'9S, 13°13'9E) (3.143).
- 2 Mlima Bénara (12°52'8S, 45°09'8E) (3.128).
Trambatsini (12°53'0S, 13°02'0E), a hill backing the coast behind Pointe Bandré (Pointe Bandé).
Ilot du Récif (12°49'5S, 45°16'9E), which is prominent on Récif Pamandzi, part of the barrier reef.
- 3 Petite-Terre (Île Pamandzi) (12°47'0S, 45°17'0E) which, from a distance, appears to be saddle-shaped between two summits, the S of which is the higher. The E side of the island terminates in a high and almost sheer cliff which makes a good landmark, approaching from S.
- 4 Mlima Combani (12°48'3S, 45°09'1E) (3.128).
Mlima Mtsapéré (Mont Sapéré) (12°45'9S, 45°10'9E), which is 570 m in height and prominent from N.
Mlima Dziani Bolé (12°41'4S, 45°05'3E) (3.128).

Directions for passage east of the barrier reef 3.142

- 1 From a position S of Récif du Sud, the S part of the barrier reef, the track E of the reef leads initially NE, having regard for the cautions given at 3.126 and passing (with positions from Mlima Choungui (12°57'S, 45°08'E)):
SE of the E extremity of Récif du Sud (7 miles ESE).
2 Thence, the track leads generally N, passing:
E of Passe Sazilé du Sud (6¼ miles SE) (3.144), between Récif du Sud and Récif du Sable Blanc, in the vicinity of which a nature reserve has been established, marked by yellow spherical buoys. Thence:
3 E of Passe Sazilé du Milieu (Passe Saziley du Milieu) (5½ miles E) (3.145), between Récif du Sable Blanc and Récif Sazilé, thence:
E of Passe Sazilé du Nord (5¼ miles E) (3.144), between Récif Sazilé and Récif Bambo, thence:
4 E of Récif Bandré (Récif Bandé), lying 1 mile E of Chissioua Bandré (6¾ miles NE) (3.143), thence:
E of Passe Bandré (8 miles NE) (3.148), the recommended passage for entry to the lagoon and approach to Dzaoudzi between Récif Bandré and Récif Hajangoua (Récif Ajangoua), thence:
5 E of Passe Longogori (10 miles NE) (3.151), between Récif Hajangoua and Récif Pamandzi, thence:
E of Ilot du Récif (11¼ miles NE) (3.141), thence:
E of Petite-Terre (Île Pamandzi), thence:
6 To a position NE the N extremity of Petite-Terre. Thence, the track leads NW, passing (with positions from Mlima Mtsapéré (12°45'9S, 45°10'9E)):
NE of Grand Récif du Nord-Est, which extends 12½ miles NW from Petite-Terre, thence:
7 NE of Passe Mtsamboro (10 miles NNW), the recommended passage for entry to the lagoon and approach to Dzaoudzi from N, between Grand Récif du Nord-Est and Récif du Nord, thence:
To a position N of Récif du Nord (11½ miles NNW), the N part of the barrier reef.

3.143

- 1 **Useful marks:**
Rassi Maoussi (Pointe Dapani) (12°59'7S, 45°10'6E), which is high and easily identified from E.
Pointe Sazilé (1¾ miles NE of Rassi Maoussi) (3.145).
Chissioua Bandré (Île Bandé) (12°54'S, 13°14'E), which can be identified from seaward by a scar, resembling a quarry, on the E slopes.

- 2 Lights (12°52'S, 45°13'E) (3.149).
Rassi Douamounyo (12°39'S, 45°06'E) (3.150).
Chissioua Mtsamboro (12°39'S, 45°02'E) (3.130).
(Directions for passage W of barrier reef are given at 3.129)

Caution for passages through east side of barrier reef 3.144

- 1 There are six passages through the E side of the barrier reef. Of these, Passe Sazilé du Sud (13°00'S, 45°14'E), and Passe Sazilé du Nord (2½ miles N) should be avoided, as there are no marks for them and the S passage has a charted shoal of 5.7 m at the E end.
- 2 When attempting the other passages the cautions at 3.126 should be followed.

Directions for Passe Sazilé du Milieu

3.145

- 1 **Approach.** The bearing, about 275° of Mlima Choungui (12°57'S, 45°08'E) (3.128), just open S of Mlima Choungui Kéli (1¾ miles E) (3.141), leads into the E approach to Passe Sazilé du Milieu (Passe Saziley du Milieu). When about 4 miles from the entrance Mlima Sazilé, a hill 233 m high, above Pointe Sazilé, will be seen standing clear of higher land in the background.

3.146

- 1 **Entrance.** When about 5 cables from the entrance, the bearing 253° of a white patch on the cliff at Pointe Sazilé, or of the summit of Mlima Sazilé, 2½ cables within the point, leads through the fairway. This is about 4 cables wide, between Récif du Sable Blanc on the S side and Récif Sazilé to the N, and passes over a bar in a least charted depth of 5.7 m. This passage should not be attempted at night.

3.147

- 1 **Tidal streams** are as follows:

Interval from HW	Remarks
Dzaoudzi/ Dar-es-Salaam	
At HW	Out-going stream begins to set NE.
+0415	Out-going stream attains its maximum rate; 2½ kn has been observed at ordinary tides.
-0410	In-going stream begins to set NW; this stream is much weaker.

(Directions continue at 3.159)

Directions for Passe Bandré

3.148

- 1 **Caution.** Passe Bandré (Passe Bandé) (12°53'S, 45°15'E), is difficult to navigate on account of its narrow width and the effect of the tidal streams which are strong at HW and change very rapidly. At the entrance to the passage the in-going stream sets SW and at the inner end the out-going stream sets SE. The pass should not be attempted at spring tides nor with heavy swell from ENE, which causes a violent bore in the passage.
- 2 Leading lights are exhibited for the passage but their structures may be difficult to identify if the natural light is unfavourable, particularly in the afternoon. Passage should only be attempted when the marks are clearly visible in daylight.

3.149

- 1 **Pointe Amoro Leading Lights:**

Front light (white eight-sided tower, red band, 8m in height) (12°52'6S, 45°13'1E).
Rear light (similar construction) (273 m WNW).

The alignment (292¾°) of these lights (not named on chart) leads through Passe Bandrélé, passing:

- 2 Over a bar at the entrance in a least depth of 6·8 m but see 3.153 for draught limitation, thence:
1¼ cables NNE of the N end of Récif Bandrélé, marked by a light-beacon (port hand, red square top mark), thence:
1¼ cables SSW of the SW end of Récif Hajangoua, marked by a light-beacon, (starboard hand, green triangular topmark).
- 3 Note that these beacons are not clearly visible except in good weather.

Useful mark:

Chissioua Bandrélé (about 1 mile SE of the passage) (3.143).

(Directions continue at 3.163)

Directions for Passe Mtsamboro (Passe M'Zamboro) 3.150

- 1 **Caution.** Although Passe Mtsamboro (Passe M'Zamboro) (12°36'S, 45°07'E), is lit it should not normally be attempted at night. Buoyage is reported to be reliable.

Leading marks:

- Light-beacon (white beacon) (12°39'S, 45°06'E), situated on the rounded summit, 73 m high, of Rassi Douamounyo (Cap Douamoungo).
- 2 Summit of Mlima Dziani Bolé (2½ miles SSW) (3.128).

The alignment (202½°) of these marks or, at night, the white sector (194°–209°), indicates the recommended track which leads from sea, in deep water, through Passe Mtsamboro, between Récif du Nord and Grand Récif du Nord-Est, where a beacon marks the extremity of each reef.

- 3 The track continues to a position on the alignment where a second light, exhibited on Chissioua Mtsongoma (12°41'·3S, 45°07'·8E), bears 174°.

Useful mark:

Chissioua Mtsamboro (5½ miles WSW of Passe Mtsamboro) (3.130).

(Directions continue at 3.167)

Chart 2741

Small craft passage

3.151

- 1 **Passe Longogori** (12°52'S, 45°16'E), narrow and tortuous, is navigable by small craft but requires local knowledge. A nature reserve, marked by buoys (special) has been established in the vicinity.

Dzaoudzi and approaches

Charts 2741, 2756, 2757 with plan of Dzaoudzi Anchorages

General information

3.152

- 1 **Position and function.** Dzaoudzi (12°46'·9S, 45°15'·3E), situated E of the lagoon on the E side of Ile de Mayotte, is a small port off which vessels anchor or secure to moorings. In 2002 it had a population of 12 066. Mamoudzou, the capital of Ile de Mayotte, lies across the lagoon, and in 2002 had a population of 45 485.
- 2 **Approach** to the port is through the lagoon from the passages in the barrier reef; see 3.119 for details.

Traffic. In 2002, 2 vessels with a total dwt of 42 226 used the port.

Port Authority. Port Authority of Mayotte, BP 279. Mamoudzou, Mayotte, Comores.

Limiting conditions

3.153

- 1 **Controlling depths:**

S approach: see 3.149 for depth in Passe Bandrélé.
N approach: 9·6 m charted along the leading lines in the fairway of the approach from Passe Mtsamboro, but there are lesser depths charted close to the track (see 3.167 for details).

- 2 Anchorage depths are generally greater, but there is a 8·7 m patch in the N approach to anchorage N of Dzaoudzi.

Directions - sidescan sonar. Mariners following the directions in 3.156 to 3.168 should remain within the areas investigated by side scan sonar, see 3.121.

- 3 **Berths.** There are no alongside berths for sea-going vessels.

Tidal levels. At Dzaoudzi the mean spring range is about 3·2 m, the mean neap range about 1·0 m. For further information see *Admiralty Tide Tables Volume 3*.

Density of water: 1·025g/cm³.

- 4 **Largest vessel.** Maximum permitted draught for Dzaoudzi is 11·5 m but Passe Bandrélé is restricted to vessels less than 5 m draught.

Tankers of 37 000 dwt are reported to have used the port.

Arrival information

3.154

- 1 **Port operations.** Cargoes are worked by lighter in the anchorages (3.173) except for oil products (see 3.175).

Port information service. There is a Port Office at Dzaoudzi, equipped with RT.

- 2 **Notice of ETA required.** A vessel's ETA should be reported 18 hours in advance, giving length and draught and the name of the pass it is intended to use. Confirmation should be sent 2½ hours before arrival at the pilot boarding place.

3.155

- 1 **Outer anchorages.** Anchorage is available in the SE part of the lagoon, as shown on the chart (with positions from Anse Amora (12°52'S, 45°13'E)):

In Anse Amora.

Off Anse Dembéni (1¼ miles NNW), care being taken to avoid 9·0 m and 4·4 m patches, 2½ cables farther E.

- 2 N of Iles Hajangoua (Îles Ajangoua) (2½ miles NNE). Anchorage is also available in the N part of the lagoon, in Baie de Longoni (12°43'S, 45°09'E) (3.178).

3.156

- 1 **Pilotage** (see 3.123).

Tug available.

Harbour

3.157

- 1 **General layout.** The harbour comprises:

Anchorage WNW and WSW of Dzaoudzi and in Baie de Pamandzi.

Numerous moorings, mostly in Baie de Pamandzi.

Mole on the W side, and small jetty on the E side of Dzaoudzi.

- 2 Small jetty (1¼ miles W of Dzaoudzi) at Mamoudzou (Mamutzu).

Tidal streams. See information on chart.

3.158

1 Landmarks:

- Prominent water tower (12°47'·0S, 45°15'·4E).
Prominent radio mast, ¾ cable W of water tower.

Directions: Passe Sazilé du Milieu to Passe Bandrélé
(continued from 3.147)

3.159

- 1 **Leading marks.** From the inner end of Passe Sazilé du Milieu, the bearing 340° of the W side of Chissioua Bambo, 2½ miles N of Pointe Sazilé (12°58'S, 45°12'E), leads through the lagoon in a least charted depth of 5·2 m and passing (with positions from Pointe Sazilé):

- 2 WSW of Récif Sazilé (1¼ miles NE), thence:
Between Récif Bambo (1½ miles NE) and a reef (1¾ miles NNW) which extends SE from Rassi Bambo.

3.160

- 1 The alignment (030°) of the E side of Chissioua Bandrélé (4¾ miles NNE) (3.141) with the E side of Petite-Terre (7 miles farther NNE) (3.141) leads:

- WNW of Récif Bambo, on the barrier reef, thence:
ESE of Chissioua Bambo, thence:
ESE of Pointe Mounyendre (Pointe Mougndre) (12°55'S, 45°12'E).

3.161

- 1 At the intersection of the above alignment (030°) with the line of bearing, about 243°, of Pointe Mounyendre in line with the summit of Mlima Choungui (3.128) 4¾ miles WSW, the line of bearing 341° of an unnamed point, (2¼ miles NNE of Pointe Mounyendre) leads:

- 2 ENE of Laminor Buoy (E cardinal), 1 mile NE of Pointe Mounyendre, moored off the E end of Récif du Laminor, two reefs which dry but are easy to distinguish, especially at HW, thence:
WSW of Chissioua Bandrélé.

3.162

- 1 From W of Chissioua Bandrélé the track leads NNE, passing:

- ESE of Pointe Bandrélé (12°53'·0S, 45°13'·1E), thence:
ESE of a rocky shoal, 8 cables NE of Pointe Bandrélé, thence:

To a position 7¼ cables N of Chissioua Bandrélé.

Directions: Passe Bandrélé to Dzaoudzi

(continued from 3.149)

3.163

- 1 From a position 7½ cables N of Chissioua Bandrélé, on the entrance leading line for Passe Bandrélé, with Rassi Domonyombé bearing 316° distant 9¼ cables, the track through the lagoon leads NNW for ¾ miles on the line of bearing 352° of a minaret (16 m) at Mtsapéré (12°47'·5S, 45°13'·2E), passing (with positions from Rassi Domonyombé (12°52'·3S, 45°13'·3E):

- 2 ENE of Rassi Domonyombé, thence:
WSW of Chissioua Kolo Issa (Ile Pouhou) (2¼ miles NNE), 29 m in height, the W of Iles Hajangoua (Îles Ajangoua) which are easily identified, thence:
To a position about 8½ cables SSW of Chissioua Mbouzi (Île Bouzi) (3½ miles NNE), a wooded islet, 153 m in height).

3.164

- 1 From this position the track leads ENE for 1¼ miles to a position about midway between Chissioua Mbouzi and Chissioua Pouhou (Île Boué), 1 mile SE, thence the track leads N about 2½ miles, passing (with positions from Pointe Mahabo (12°47'·0S, 45°14'·3E)):

E of an 8·1 m shoal (2 miles SSE), the SE edge of a bank extending 3 cables SE of Chissioua Mbouzi, thence:

- 2 E of an area of drying reefs (1¾ miles SSE) extending to 3 cables E of Chissioua Mbouzi, thence:

E of a steep-to reef which fringes and extends to 4½ cables S of Pointe Mahabo, thence:

To a position W of a light-buoy (W cardinal) (5 cables ENE), which is moored close off the W extremity of a drying reef which extends 4 cables W of Dzaoudzi.

- 3 **Clearing marks.** The bearing 037° of the E point of Monyé Amiri (12°46'·3S, 45°15'·1E) in line with the W point of Gombé Ndroumé (1½ miles NE) passes about 1 cable NW of the drying reef mentioned above, which can usually be distinguished by the colour of the water over it.

3.165

- 1 When clear of the W end of the drying reef the track to Baie de Pamandzi leads NE and then E, passing (with positions from the SW point of Monyé Amiri):

SE of a depth of 9·6 m (2½ cables SSW), thence:

N of a depth of 5 m (3½ cables S), thence:

S of a depth of 4·3 m (1½ cables SE), thence:

N of a depth of 8·8 m (4 cables SSE), thence:

- 2 Between Dzaoudzi and Vatou (6 cables E), avoiding a 8·7 m shoal in mid-channel.

Caution. This approach is rather difficult as two sharp turns are required; the tidal streams are strong; strong breezes sometimes blow across Baie de Pamandzi, and there are a number of mooring buoys in the approach and in the bay, the positions of which can best be seen on the plan of the approaches.

3.166

1 Useful marks:

Light (white post with black top on stone structure, 3 m in height) (12°47'·0S, 45°15'·2E), exhibited from the head of Jetée Ballou on W side of Dzaoudzi.

- 2 Light (grey post on stone structure, 3 m in height) (12°46'·7S, 45°14'·0E), exhibited close NNW of the root of the jetty at Mamoudzou (Mamutzu).
Chimney, 2¼ miles WNW of Dzaoudzi.

Directions: Passe Mtsamboro to Dzaoudzi

(continued from 3.137 or 3.150)

3.167

- 1 **Caution.** Passage through the lagoon to Dzaoudzi is mostly lit but should not be attempted at night without local knowledge.

Sidescan sonar areas. See 3.153.

Leading lights:

- 2 Light-beacon (12°41'·4S, 45°07'·7E), on Chissioua Mtsongoma.

Light-beacon, 7 cables farther S, on Pointe de Bandraboua (Bandaboi), which is a high, prominent point.

- 3 From a position about 6½ cables N of Caribou light-buoy (12°37'·4S, 45°07'·1E), at the inner end of Passe Mtsamboro, the alignment (174°) of these lights leads through the N part of the approach channel to Dzaoudzi; care should be taken

not to deviate from the leading line, passing (with positions from Rassi Douamounyo Light (12°39'2S, 45°06'3E)):

- 4 E of Caribou light-buoy (starboard hand) (1¾ miles NNE) moored on the E side of a 7.3 m patch, thence:
Close W of Surprise Light-buoy (port hand)) (about 1¾ miles NE) which marks the NW end of Banc de la Surprise, thence:
- 5 E of Chaloupe Light-buoy (starboard hand) (about 1¾ miles ENE) which marks the E side of Récif Chaloupe and lies over a shoal (5 m) 1 cable W of the leading line, thence:
E of Récif Vacluse Light-beacon (triangular topmark on white beacon) (1 mile ESE), thence
- 6 Close E of a shoal depth of 9.6 m (1¼ miles ESE); mariners should proceed with caution as this shoal lies very close W of the 174° leading line; thence:
Onto the 140½° alignment below.

3.168

1 Leading marks:

- 1 Light-beacon (white) (12°43'1S, 45°10'4E), on Ile Blanche in the NW approach; the island is prominent due to its white appearance.
Beacon (white) (8¼ cables SE of front beacon, near Kangani).
- 2 The alignment (140½°) of these beacons, which are difficult to see, leads through the fairway of the lagoon, passing (with positions from Ile Blanche):
SW of Bancs Jumeaux, marked by a light-beacon (port hand) (4 miles NNW), and:
NE of foul ground extending NE from Chissioua Handréma (Île Andréma) (4¼ miles NW), thence:
- 3 SW of Banc du Coq (3½ miles NNW), and:
NE of foul ground extending N and E from Chissioua Mtsongoma (3.150), thence:
NE of a 3 m patch (2¾ miles NW), thence:
To a position 1¾ miles NW of Ile Blanche.

On the outward passage the alignment astern (140½°) of the above beacons will align with the 320½° bearing ahead of Récif Vacluse Light-beacon (3.167).

(Directions for Porte de Longoni are given at 3.178)

3.169

1 Leading marks:

- 1 Beacon (12°40'0S, 45°05'2E) on Morne H, a hill 111 m in height.
Saddle of Chissioua Mtsamboro, 3½ miles WNW.
- 2 The alignment (293°) astern of these marks leads through the fairway of the lagoon, passing (with positions from Ile Blanche (12°43'1S, 45°10'4E)):
SSW of Prévoyante Light-beacon (port hand) (1½ miles N), which marks the S side of Récif de la Prévoyante, thence:
- 3 NNE of reefs, marked by a light-beacon (W cardinal), off Pointe de Longoni (4½ cables W), which is low, thence:
SSW of Récif Peitro (1¾ miles NNE), and:
NNE of Ile Blanche light-beacon, thence:
- 4 NNE of Pointe de Koungou (Pointe Kongo) (2½ miles ESE), and:
SSW of Récif Nanga (3 miles E), the edge of a group of dangerous coral heads and shallow patches extending SW from the barrier reef, thence:
- 5 Between Kongo Light-buoy (N cardinal) (3½ miles ESE), which marks the N edge of the coastal reef, and a light-buoy (port hand), moored on the S edge of the shallow patches extending ESE from Récif Nanga, thence:

To a position 3 cables E of Kongo Light-buoy and on the 141° alignment below

- 6 **On the outward passage**, by day the track follows the 293° alignment above; by night the white sector of Chissioua Mtsongoma Light-beacon (12°41'4S, 45°07'7E) leads from between the Kongo Light-buoys WNW for 5 miles to meet the 140½° alignment (astern) of Ile Blanche and the beacon near Kangani, thence as described at 3.168.

3.170

1 Leading lights:

- 1 Front (white) (12°46'4S, 45°16'4E).
Rear (white), 9 cables SE of front light.
The alignment (141°) of these light-beacons on the NW side of Petite-Terre leads through the S part of the approach to Dzaoudzi, passing (with positions from Pointe Amoha (12°45'8S, 45°14'4E)):
- 2 NE of isolated patches (1¾ miles N), with a least charted depth of 9.7 m, thence:
NE of a group of projections of the coastal reef (1½ miles N), and:
SW of a 3 m patch (1¾ miles NNE), thence:
NE of a projection of the coastal reef (1 mile NE), with a least charted depth of 6.3 m over it, thence:
- 3 NE of Zissioua Ziné (Les Quatre Frères) (6 cables NNE), a group of four islets at the SE end of a projection of the coastal reef, thence:
NE of a light-buoy (starboard hand) (1 mile E), marking the S extremity of a dangerous projection of the coastal reef, thence:
- 4 To a position NE of Kakazou (12°46'3S, 45°15'5E), a small island 35 m in height.

Clearing mark. The bearing 227° of Kakazou passes about 3½ cables SE of the coastal reef.

3.171

- 1 When clear of the reef the track to Baie de Pamandzi leads SSW, passing (with positions from Kakazou (12°46'3S, 45°15'5E)):
WNW of a depth of 7 m (6¼ cables ENE), on the edge of the reef bordering Petite-Terre, thence:
ESE of Vatou (1½ cable SSE), thence:
Passing clear of the shoal patches charted in the anchorage (3.165).

3.172

1 Useful marks:

- 1 Chimney (2¼ miles W of Kakazou).
Light (white post with red top on stone structure, 3 m in height) (12°46'9S, 42°15'5E), exhibited from the root of Môle Issouf on E side of Dzaoudzi.

Berths at Dzaoudzi

3.173

- 1 **Anchorage.** Vessels should anchor in berths shown on the chart, N or S of Dzaoudzi, according to season (3.7). From November to April anchorage S of the island is recommended; the holding ground is good throughout but swinging room is limited.
- 2 From May to October there is well-sheltered anchorage in Baie de Pamandzi in depths from 15 to 26 m. It is always calm at Dzaoudzi at this season.

3.174

- 1 **Prohibited anchorage** exists within ¼ cable of a submarine pipeline laid between Île Dzaoudzi and Mamutzu (1¼ miles W), as shown on the plan.

3.175

- 1 **Moorings.** There are numerous mooring buoys off Dzaoudzi and in the approaches to the port, the positions of which can be seen on the chart and plan of Dzaoudzi; they

include a tanker berth (1½ miles NE of Dzaoudzi) where oil products are discharged through a submarine pipeline to a tank farm on Petite-Terre, see also 1.36. Vessels berth bows NE with two anchors down and the stern secured to two mooring buoys; maximum draught 11.0 m.

Port services

3.176

- 1 **Repairs** can be undertaken.

Other facilities:

Hospital in Mamoudzou; no facilities for disposal of refuse or reception of oily waste.

- 2 **Supplies:**

Small quantities of fresh provisions; fresh water available at Porte de Longoni (3.180).

Fuel oil available at Porte de Longoni.

Communications:

Air connection to La Réunion and others islands of Comores.

Small craft

3.177

- 1 **Navigation.** There is a narrow navigable channel N of Monyé Amiri (12°46'3S, 45°15'1E), between a buoy (port hand) and a buoy (starboard hand), which mark the ends of reefs on the S and N sides, respectively.

Berths are available at the jetty and mole on the E and W sides of Dzaoudzi, respectively.

Porte de Longoni

Chart 2756 Plan of Baie de Longoni

3.178

- 1 **General information.** Two quays and a jetty have been constructed on the S side of Pointe de Longoni (12°43'S, 45°10'E). On the S side of the harbour opposite the berths is a drying reef marked by light-beacons (starboard hand).

Traffic. In 2002, 10 vessels with a total dwt of 249 466 used the port.

- 2 **Arrival information.** The Longoni port control must be advised of a vessel's ETA 48 hours prior to arrival, indicating LOA, draught and beam and also listing any dangerous cargo carried.

- 3 **Directions.** From a position 3 miles NW of Ile Blanche on its 140½° alignment (3.168), the alignment (175°) of a pyramidal beacon (uncharted) on Île Verte (12°43'6S, 45°08'8E), at the head of the bay, with Mlima Combani (4¼ miles S) (3.128) (chart 2741) leads safely towards the

bay, passing (with positions from Pointe de Bandraboua Light (12°42'1S, 45°08'0E):

E of the drying reefs (8½ cables NNE) extending ENE from Chissioua Mtsongoma (3.150), thence:

About 3 cables E of an isolated 3 m shoal (6½ cables NE), thence:

E of Pointe de Bandraboua Light (3.167).

- 4 Thence the line of bearing 140° of Port de Longoni No 1 Light-beacon (starboard hand) (2¼ miles SE), leads towards the port.

3.179

- 1 **Anchorages.** Baie de Longoni (6½ miles SSE of Passe Mtsamboro) affords good sheltered anchorage in depths from 18 to 36 m, W of Pointe de Longoni (12°43'S, 45°10'E). There are three recommended berths (with positions from Pointe de Longoni):

4 cables W, in depth of about 30 m.

1 mile WNW, in depth of about 30 m.

9 cables NW, in depth of about 42 m.

- 2 **Alongside Berths.** The main berth consists of a quay, 130 m in length, 29 m wide, capable of berthing vessels up to 10 m draught, 185 m length. A second quay, 47 m in length, 15 m wide, is for the use of coasters, barges and other service boats up to 60 m length with a depth alongside of 4 m.

- 3 **Landing.** A floating jetty, 25 m in length, is situated E of the second quay for use by small craft.

3.180

- 1 **Port services**

Fresh water available, fuel available by road tanker.

For other service see Dzaoudzi (3.176).

Other names

3.181

- 1 Bambo, Anse (12°56'S, 45°11'E).
Bandré, Anse (12°54'S, 45°12'E).
Boa Sadia, Banc (12°41'S, 45°02'E).
Chira Bouéni (12°54'S, 45°03'E).
Chira Gourd (12°49'S, 45°04'E).
Chira Matré (12°52'S, 45°02'E).
Chira M'Sangua (12°51'S, 45°02'E).
Handréma, Baie de (Baie Andréma) (12°40'S, 45°06'E).
Laclochétierie, Banc (12°39'S, 45°09'E).
Makoen, Pointe (12°45'S, 45°14'E).
- 2 Mounyambani, Anse (12°57'S, 45°11'E).
M'Zouazia, Baie de (12°56'S, 45°05'E).
Oreste, Roche (12°46'8S, 45°15'0E).
- 3

ISLANDS AND REEFS EAST OF COMORES

GENERAL INFORMATION

Charts 3877, 3876

Scope of section

3.182

- 1 In this section are described the sea passages and routes in the vicinity of the islands and reefs at the N end of Mozambique Channel, E of Comores, which consist, principally, of:

Récif du Geyser (Geyser Reef) (12°21'S, 46°26'E) (3.188).

Îles Glorieuses (68 miles NE of Récif du Geyser) (3.190).

- 2 See 1.109 for details of possession and administration of the islands.

Routes

3.183

- 1 A number of routes, between South Africa, the Seychelles Group and ports and places in the North Indian Ocean, pass well E of Récif du Geyser and Îles Glorieuses, or to W of them and close to the positions of some of the reported dangers in 3.184. Caution is necessary in the vicinity of these dangers; see 3.188 regarding Récif du Geyser).
- 2 Full details of the routes are given in *Ocean Passages for the World*; see also the relevant Routeing Chart.

Depths**3.184**

- 1 Banc de la Zélée (Zélée Bank), on which there is a least depth of 5·7 m, is situated 5 to 16 miles WSW of Récif du Geyser and on the same bank.

- 2 In past years numerous shoals, reefs and dangerous underwater rocks have been reported within 37 miles E, N, NNW and WNW of Récif du Geyser but during a French survey carried out in 1991 none of these dangers were found and they are no longer charted. However, the prudent mariner should give this area as wide a berth as possible, navigating with caution in the vicinity. See 3.183 and 3.187

Offshore fishing**3.185**

- 1 See 1.10.

Rescue**3.186**

- 1 See 1.54 for details of a reporting system designed to provide information for SAR operations.

Currents**3.187**

- 1 In the vicinity of the islands and reefs described there is an intermingling of the erratic but mainly NE-going current from Mozambique Channel, and the W-going branch of the South Equatorial Current that rounds the N end of Madagascar as described at 1.167; consequently the currents are uncertain.

RÉCIF DU GEYSER

Charts 3876, 3877

Caution**3.188**

- 1 The neighbourhood of Récif du Geyser (Geyser Reef) (12°21'S, 46°26'E) is the most dangerous part of Mozambique Channel and should be avoided. By day, in fine weather at HW and with a smooth sea, even a good lookout and careful sounding may give little warning of its proximity.

General information**3.189**

- 1 **Topography.** Récif du Geyser is a dangerous circular shaped reef about 12 miles in diameter. At the W edge lies Banc de l'Ouest, a U-shaped coral and sand reef, about 5 miles in length, which dries 2·3 m. The smaller Banc du Nord-Ouest, which dries 1·8 m, lies 1½ miles NE. From Banc de l'Ouest the reef extends about 3½ miles ESE with rocks and shallow water. The largest drying rocks on the reefs, many of which become visible halfway through a falling tide, appear about the size of boats under sail; the remains of wrecks are embedded in the sandbanks.
- 2 **Depths.** The N, E and S of the reef comprises a crater rim, 1 to 2 miles wide, with depths between 11 and 30 m; within the reef are uncharted depths greater than 30 m.
- 3 **Current.** See 3.187.

ÎLES GLORIEUSES**General information**

Chart 718, plan of Îles Glorieuses

Topography**3.190**

- 1 Îles Glorieuses comprise Île Glorieuse (11°35'S, 47°18'E), and Île du Lys (5½ miles NE), which lie near the ends of a reef about 9 miles long in a NE/SW direction; both islands are sandy and their outlines continually changing.
- 2 Île Glorieuse is flat but covered with trees up to 12 m high which can be seen from a considerable distance. A meteorological station with a flagstaff is situated on the S side of the island; this is the only habitation and is occupied during the cyclone season (see below).
- 3 At the S end of Île du Lys a sandhill is prominent; in the centre of the island there is a salt water lagoon. From a distance N the island appears as three small hummocks with trees, up to 11 m high, between them.
On the greater part of the reef between the two islands, and around them, are sandbanks and coral heads which dry.

Natural conditions**3.191**

- 1 **Local magnetic anomaly.** Local deflection of the magnetic compass, small in extent, has been reported in the vicinity of Îles Glorieuses (1977).
Current. See 3.187; as a consequence of the intermingling of the currents the area is prone to the formation of rips.
- 2 **Tidal streams** are generally weak, setting W with a rising tide and E with a falling tide.
Tidal levels. At Îles Glorieuses the mean spring range is about 2·8 m, the mean neap range about 0·9 m. For further information see *Admiralty Tide Tables Volume 3*.
- 3 **Sea** does not always break on the narrow part of the reef, even when breaking heavily elsewhere; there is, however, no passage through the reef.
Swell from E prevails.
Local weather. The prevailing wind is NE.
Cyclones may be experienced from November to May.

Principal marks**3.192**

- 1 **Landmark:**
Beacon (red and white bands, diamond topmark) on Rocher Sud (11°35'·3S, 47°17'·9E); the beacon is reported to be visible from a considerable distance.

Directions**3.193**

- 1 Because of uncertainty as to behaviour of the currents close to Îles Glorieuses, and the rapid reduction in depths outside the charted bank on which they lie, their vicinity should only be navigated by day, with caution, passing (with positions given from Rocher Sud):
S of Rocher Sud;
- 2 Well clear to W of Île Glorieuse, so as to avoid discoloured water with the appearance of a reef which has been observed to extend about 2 miles W;
N of a 5·3 m shoal (6 miles NNE);
- 3 Depending on draught, clear of an 9 m patch (7½ miles NNE) and a 9·7 m patch (1 mile farther NNE), which are the outer charted dangers NW of the reef.

No dangers are charted E and SE of the reef but a vessel should avoid passing on this side in view of the strength of the W-going ocean current which may prevail (3.187).

3.194

1 Useful mark:

Roches Vertes (three rocks, 2-6 m high) (2 miles ENE of Rocher Sud).

Anchorage and services

Anchorage

3.195

- 1 Small vessels can find most shelter from the prevailing wind and swell (3.191) on a shelf, about 1 cable wide, off the NW side of Île Glorieuse; the anchor should be let go in depths of 20 to 40 m, outside which they increase rapidly, about 5 cables from the island and $2\frac{3}{4}$ cables from the edge of the reef, with the N point of the island bearing 115° . There is a depth of 3-8 m about 3 cables E of this berth, in which a vessel usually rides parallel with the coast, stemming the NE wind and generally W-going current. During spring tides, if the wind is light, the tidal streams setting E on a falling tide may overcome wind and current, and a vessel again lies parallel with the coast, stemming the tidal stream.

3.196

- 1 Small vessels have also anchored S and W of the above berth, as follows:

In a depth of 26 m, good holding, with the N point of Île Glorieuse bearing 105° distant 7 cables.

2

In a depth of 28 m, apparently good holding, with the N point of Île Glorieuse bearing 097° distant 8 cables. In 1974, a French naval vessel at anchor in this berth lay parallel to the coast for 24 hours, into a NE wind of 15 kn.

3

In a depth of about 26 m with the N point of Île Glorieuse bearing 092° , the W point 169° and the summit of Île de Lys 061° .

3.197

- 1 Anchorage has been obtained in a depth of 15 m on a level sandy bottom about $1\frac{3}{4}$ miles NW of Île du Lys, with the E point of the island bearing 140° .

A shallow-draught vessel can find restricted anchorage in a depth of 7 m with Île du Lys bearing 082° distant 7 cables, care being taken to avoid a 3-2 m patch (6 cables WNW of Île du Lys).

Landing place

3.198

- 1 There is sheltered landing on the NW coast of Île Glorieuse, about $2\frac{1}{4}$ cables from the N point of the island, at the foot of a track from the meteorological station.

- 2 An approach can be made over the reef for $3\frac{1}{2}$ hours either side of HW; at other times a narrow channel through the reef can be used. The alignment (140°) of a coconut palm with a filia tree (painted red and white) leads through the channel. The landing cannot be used at LW spring tides.

Communications

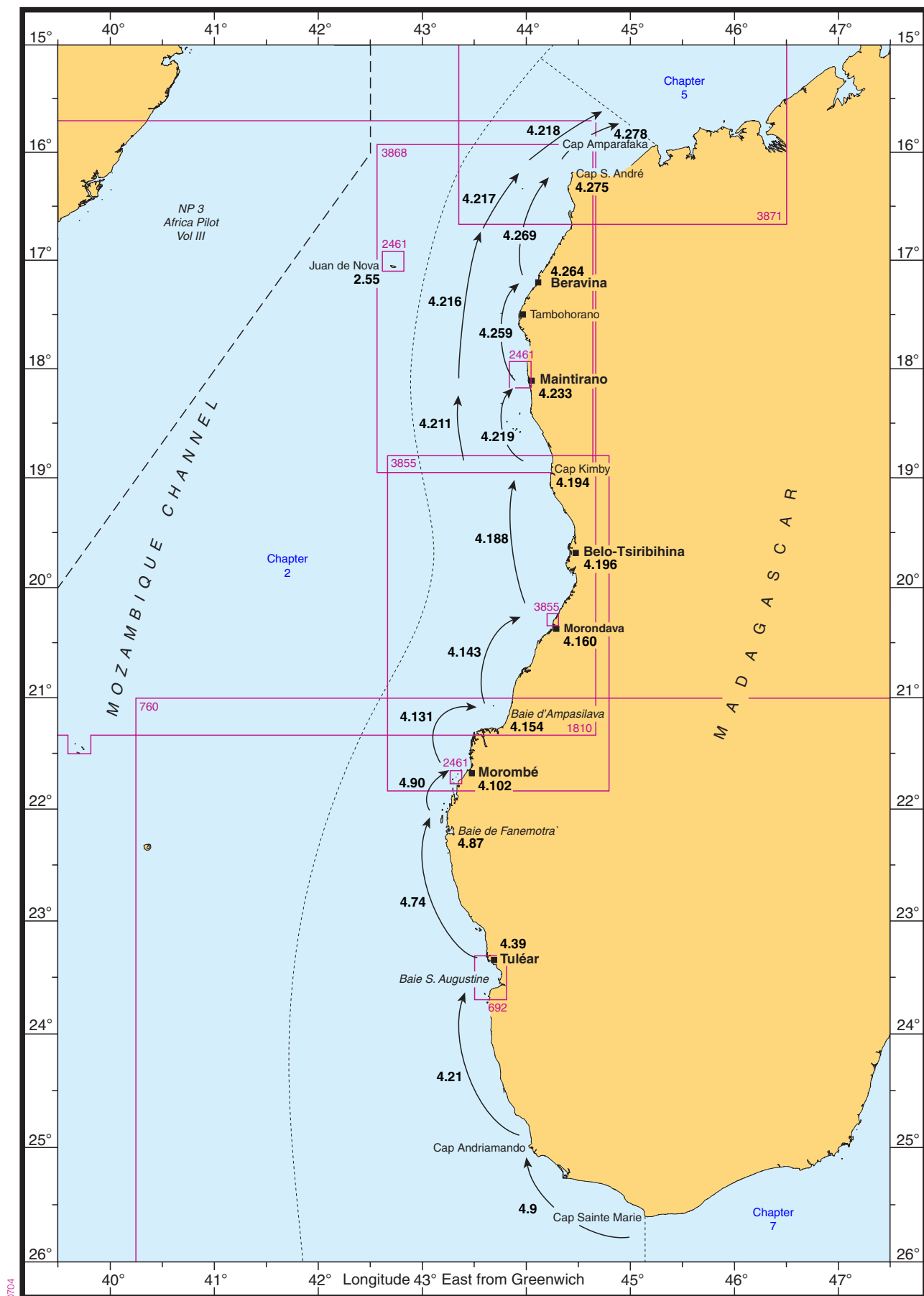
3.199

- 1 Airstrip on Île Glorieuse.

NOTES



Chapter 4 - West coast of Madagascar - Cap Sainte Marie to Cape Amparafaka



CHAPTER 4

WEST COAST OF MADAGASCAR - CAP SAINTE MARIE TO CAP AMPARAFAKA

GENERAL INFORMATION

Chart 4701

Scope of the chapter

4.1

- 1 This chapter describes the coastal and offshore waters of the W coast of Madagascar from Cap Sainte Marie (Tanjona Vohimena) (25°35'S, 45°09'E) to Cap Amparafaka (15°56'S, 45°16'E), about 587 miles N.
- 2 The description includes the coastal and inshore passages around the coastline together with the ports of Tuléar (Toliara) (23°21'S, 43°40'E) (4.39), Morombé (21°45'S, 43°21'E) (4.102), Morondava (20°17'S, 44°17'E) (4.160), Maintirano (18°04'S, 44°01'E) (4.233) and other minor harbours and anchorages. Otherwise there are few harbours along the coast and traffic is light; waters off the N part of the coast, over an extensive bank described below are, in general, only frequented by coasters and fishing vessels.
- 3 The chapter is arranged as follows:
Cap Sainte Marie to Tuléar (4.8).
Tuléar to Baie d'Ampasilava (4.73).
Baie d'Ampasilava to Cap Kimby (4.140).
Cap Kimby to Cap Amparafaka (4.206).

Depths

4.2

- 1 A coastal shelf fronts the entire coast. Between Banc de l'Étoile (Toraky ny Kintana) (25°50'S, 45°00'E) and about latitude 19°S, the banks are relatively narrow, depths are irregular and soundings may not indicate proximity to the coast. Changes in the colour and transparency of the waters in this area do not accurately reflect the marine topography. North of latitude 19°S the banks extend up to about 47 miles offshore and there are numerous dangers, with depths of 11 m (36 ft) or less over them, up to 35 miles from the coast.
- 2 Caution is necessary when approaching the banks, especially between latitudes 19°S and 25°S, as the coastal waters have not been thoroughly surveyed and uncharted dangers may exist. In addition, the edges of the banks may lie farther to seaward than charted.

Positions

4.3

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions obtained from charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation, and are advised to use alternative methods of position determination, especially when closing the shore or navigating near dangers. See notes on charts.

Navigational information

4.4

- 1 Because of insufficient information it is not possible to ensure that Admiralty Charts covering the waters of Madagascar are up to date for new dangers or changes to

navigational aids. Mariners are advised to exercise particular caution when navigating in these waters. See also 1.7 for information on navigational marks.

Natural conditions

4.5

- 1 **Winds.** In winter, from June to August and into September, the whole coast is under the influence of the SE Trade Winds. However, mountains inland, lying across the general airflow, materially affect both the direction of the wind and its characteristics (see 1.202).
- 2 In the vicinity of Cap Sainte Marie, where the wind blows round the S end of Madagascar, a pattern of local winds is established. From Cap Sainte Marie to Cap Tsingilofilo, 245 miles NNW, winds between SE and SW predominate. Farther N, in the vicinity of Morondava (20°17'S, 44°17'E), winds are generally E and subject to marked effect of land and sea breezes (see 1.203).
- 3 At Tuléar, in September, the wind blows from SW for much of the time.
In October, when the Intertropical Convergence Zone (1.196) moves S, winds are generally SW to W between Cap Sainte Marie and Cap Sainte André (Tanjona Vilanandro) (16°12'S, 44°27'E). Beyond Cap Sainte André NW winds predominate.
- 4 In November, when the warm weather of summer is well established, SW winds still predominate in the vicinity of Tuléar, becoming W near Morondava and NW off the remainder of the coast to the N.
From December to March the predominant winds are SW to W at Tuléar, SW near Morondava, and W in the vicinity of Maintirano (18°04'S, 44°01'E). The Intertropical Convergence Zone is farthest S in February.
- 5 In April the Intertropical Convergence Zone moves N again, although thunderstorms are still frequent. In May the effects of the SE Trade Winds are felt again and by June the wind is fully established.
Cyclones may occur in this area. See 1.209 for further details.
- 6 **Currents.** At a distance over 5 miles from the coast between Tuléar and Maintirano the current generally sets in the direction towards which the wind is blowing. Local inshore currents are described in the geographical sections of the text.
Tidal streams. See 1.171.

Offshore fishing

4.6

- 1 Fishing with traps, handlines, gillnets, longlines, purse seine nets and by trolling and trawling, is carried out off the coast; see 1.10 for further information.

Rescue

4.7

- 1 A reporting system is established to assist SAR operations. For details see 1.54 and *Admiralty List of Radio Signals Volume 1(1)*.

CAP SAINTE MARIE TO TULÉAR

GENERAL INFORMATION

Chart 760

Routes

4.8

- 1 In this section are described the coastal and inshore routes between Cap Sainte Marie (25°35'S, 45°09'E) and Baie de Saint Augustin (Helodrano Ianantsony) (23°33'S, 43°42'E), about 147 miles NNW. The section is arranged as follows:
- 2 Cap Sainte Marie to Cap Andriamanoa (4.9).
Cap Andriamanoa to Tuléar (4.21).
Baie de Saint Augustin (4.28).
Tuléar and approaches (4.39).

CAP SAINTE MARIE TO
CAP ANDRIAMANAO

General information

Chart 760

Routes

4.9

- 1 **Coastal route.** From a position S of Cap Sainte Marie the route leads W then generally NNW to a position WSW of Cap Andriamanoa (25°00'S, 44°02'E).
 - Inshore route.** Local knowledge is required.
- From a position S of Cap Sainte Marie the inshore route leads WNW across the Banc de l'Etoile (4.11), passing between the reefs at its NW end, thence a short distance NNW to Cap Andriamanoa.

Topography

4.10

- 1 The high, steep-sided, rocky promontory that dominates Cap Saint Marie (25°35'S, 45°09'E) is visible from a considerable distance, up to 30 miles. To the NW, as far as Pointe Baravo, 49 miles WNW, the coast appears as a high sandy cliff with a flat, arid summit behind which the plain rises in three distinct levels to a tableland 5 to 15 miles inland from 300 to 450 m high. The mouth of the Menarandra River, 11 miles E of Pointe Baravo, can be identified by a break in the second range of hills.
- 2 Pointe Baravo is the W extremity of a long and narrow tongue of sand and rock with the appearance of a breakwater, marking the S side of the Baie de Minorodo (4.18). The bay is backed by sparsely wooded sand dunes. Port Cruizer, on the N side of the bay, is backed by Cap Ambohibola (not charted), a sandy promontory marked by a distinctive, rectangular patch of dark vegetation.

Depths

4.11

- 1 Between Cap Sainte Marie and Pointe Baravo the coast is fronted by the Banc de l'Etoile which extends about 40 miles to seaward from Cap Sainte Marie, decreasing to 10 miles off Pointe Baravo. Thence reefs and banks front the coast, extending about 1 mile from Cap Andriamanoa (25°00'S, 44°02'E).
- 2 So far as Banc de l'Etoile (Toraky ny Kintana) has been examined, depths across it appear to decrease regularly from 183 m (100 fm) to 20 m (11 fm) about 1 mile from the coast. The passage between Pointe Baravo and Récifs de l'Etoile (Harandriakan' ny Kintana), 6 miles SW, has a least charted depth of 27 m (15 fm) in the fairway.

Currents

4.12

- 1 Currents off the coast are variable. In the vicinity of Cap Sainte Marie a current setting onshore at rates up to 1 kn has been experienced.

Principal marks

4.13

- 1 **Landmark:**
Vahidranoro, (25°28'S, 44°59'E) (not charted) which is a remarkable cone-shaped hill, 150 m high, rising from the coastal plain in front of the first range of hills and visible from a considerable distance.
- 2 **Major light:**
Cap Sainte Marie (Tanjona Vohimena) Light (square masonry tower, white corners, 18 m in height) (25°35'S, 45°09'E).

Directions

Cap Sainte Marie to Cap Andriamanoa

4.14

- 1 **Caution.** Coastal waters in the vicinity of Cap Sainte Marie and the Banc de l'Etoile are incompletely surveyed and the edge of the bank may lie farther seaward than charted.
- 2 From a position S of Cap Sainte Marie (25°35'S, 45°09'E), a rocky promontory rising vertically from the sea in cliffs from which some blackish rocks extend 1 mile S, terminating in an isolated pointed rock only visible from the E, the track leads initially about 45 miles W to a position outside the 200 m (100 fm) depth contour, passing (with positions from Cap Sainte Marie Light (25°35'S, 45°09'E)):
- 3 S of Rocher Albatros (12¼ miles NW) (4.15), thence: N of a shoal (46 miles SW), reported (1974) to have a depth of 30 m (16 fm) over it, thence: S of a 30 m (16 fm) patch (38 miles W).
The track then leads about 45 miles NNW remaining to seaward of the 200 m (100 fm) depth contour, passing:
- 4 WSW of a bank (44½ miles WNW), with a least depth of 30 m (16 fm) over it, thence: WSW of a stranded wreck (49 miles WNW), which is conspicuous, thence: WSW of Récifs de l'Etoile (53 miles WNW), an extensive area of reefs on which the sea always breaks, thence:
- 5 WSW of the NW end of Banc Tozer (56 miles WNW). Nosy Manitsa, a small islet in the centre of Banc Tozer is readily identified by radar. Thence: WSW of Nosy Barona (68½ miles WNW), a flat sandy islet, surrounded by reefs, thence:
- 6 To a position WSW of Cap Andriamanoa, (70 miles NW), a conical sandhill covered with trees.
(Directions for the coastal passage continue at 4.24.
Directions for the coastal passage
E of Cap Sainte Marie are given at 7.13)

Chart 760 (see 1.22)

Inshore passage

4.15

- 1 From a position about 6 miles S of Cap Sainte Marie the track leads initially about 65 miles WNW thence about 15 miles NNW, passing (with positions from Cap Sainte Marie Light (25°35'S, 45°09'E)):

- SW of Rocher Albatros (12¼ miles NW), an above-water rock, thence:
- 2 SSW of Mahalsandry River mouth (39 miles WNW), thence:
- NNE of a stranded wreck (49 miles WNW), thence:
- SSW of Pointe Baravo (47 miles WNW) (4.10), thence:
- NNE of Récifs de l'Etoile (53 miles WNW) (4.14), thence:
- 3 SSW of Nosy Manitsa (54½ miles WNW) (4.14), thence:
- SSW then WSW of NW end of Banc Tozer (56 miles WNW), thence:
- WSW of Nosy Barona (68½ miles WNW) (4.14), thence:
- To a position WSW of Cap Andriamanoa (4.14).

Useful marks

4.16

- 1 Mont Elambo (25°14'6S, 44°40'8E), which is tabular with three small summits.
- Nosy Manitsa, 54½ miles WNW of Cap Sainte Marie, (4.14)
- (Directions continue at 4.24; directions for passage E of Cap Sainte Marie are given at 7.13)*

Anchorage and landing places

Banc de l'Etoile

4.17

- 1 Anchorage, with shelter from E winds and swell, may be obtained in depths of about 12 m (39 ft), sand, with good holding ground, in a position with Cap Sainte Marie Light (25°35'S, 45°09'E) bearing 135° distance 2 miles. Local knowledge is required.
- 2 In case of necessity, during offshore winds only, a vessel can anchor in depths from 25 to 30 m (13 to 16 fm), 2 or 3 miles off the coast fronted by the bank, in a position, indicated on the chart, 15 miles NW of Cap Sainte Marie, off Lavanono village.
- 3 Landing is possible between Lavanono and a line of black rocks to the N, but it is hazardous and it should be borne in mind that, even if a landing can be made, a heavy swell may suddenly develop and persist for a considerable time.

Baie de Minorodo

4.18

- 1 Anchorage can be obtained 1 mile N of Pointe Baravo (25°16'S, 44°22'E), the SE entrance point of Baie de Minorodo (Helodranon' i Fenambosy). The depth is about 10 m (33 ft) but anchorage in this bay is poor as winds between S and W raise a heavy swell and surf, while winds from W to N make anchorage dangerous.

Baie d'Androka

4.19

- 1 Baie d'Androka (25°02'S, 44°02'E) affords anchorage for coastal craft. The bay is approached from W through a break in the coastal reef; at HW small craft can also approach from SE, from Port Cruizer (4.20). Local knowledge is required.
- 2 **Directions.** Passing N of Nosy Borona, the bearing (079°) of a prominent house in Androka village, at the head of the bay, leads through the break in the coastal reef in a least depth of 10-0 m (33 ft). The bearing of Nosy Borona (208°), astern, leads to the anchorage.

- 3 Anchorage is in a depth of about 8 m (26 ft) with the prominent house bearing 090° distance about 1¼ miles; it is exposed to W swell which sometimes breaks.
- 4 Landing can be made, in fine weather, in front of Androka; if there are breakers, local boats, usually dug-out canoes, can be used.
- 5 **Facility.** Hospital in Androka.

Small craft

Port Cruizer

4.20

- 1 **General information.** Port Cruizer (25°05'S, 44°07'E), situated off Cap Ambohibola about 5 miles ESE of Nosy Barona, is formed by a break in the coastal reef. It affords anchorage for small craft but local knowledge is required.
- Directions.** Approaching from S, Cap Ambohibola can be identified by a dark rectangular patch of very dense vegetation in the middle of light-coloured sparsely wooded dunes.
- 2 The bearing 315° of a white sandhill on the W point of the cape leads to the anchorage, passing between an isolated reef, marked by breakers, on the SE side of the cape, and the SE end of the coastal reef.
- Anchorage** can be obtained in a depth of 8 m (26 ft), off the village of Ambohibola, on the cape, on the following bearings:
- 3 Prominent fall of the white sandhill bearing 315°. Isolated breakers bearing 107°. SE end of the reef bearing 175°.
- There is no shelter from wind and swell between SSE and SSW.
- A small craft passage, navigable at HW, exists inside the reef, between Port Cruizer and Baie de Langarano (4.24), 4 miles NW.

CAP ANDRIAMANAO TO TULÉAR

General information

Chart 760

Route

4.21

- 1 From a position WSW of Cap Andriamanoa (25°00'S, 44°02'E) the route leads initially NNW then N to Tuléar (23°23'S, 43°43'E).

Topography

4.22

- 1 In general there are no significant features on this stretch of coastline. Between Cap Andriamanoa and Pointe Anakao (23°40'S, 43°38'E) (4.27) the coastal reef, marked by breakers, fronts a beach with numerous dunes of white sand marked, here and there, with grey trees. Behind this three ranges of hills can be seen, parallel to the coast. The level coastal plain is from 5 to 8 miles wide up to the first range of hills, which have the appearance of cliffs.
- 2 From Pointe Anakao N to Soalary (23°35'S, 43°43'E) the coast is low and sandy and backed by a screen of trees. Beyond this, the topography of the channels and mangrove covered islets of the Fihérénana River delta, to the N of Tuléar, is constantly changing.

Currents

4.23

- 1 Currents off this part of the coast are very variable and can attain rates of 1 to 2 kn.

Directions*(continued from 4.14 or 4.16)***4.24**

- 1 **Caution.** Between Cap Andriamanao (25°00'S, 44°02'E) and Pointe Anakao (23°40'S, 43°38'E) the coastal waters have not been thoroughly surveyed and uncharted dangers may exist.

From a position WSW of Cap Andriamanao (25°00'S, 44°02'E), the track leads generally NNW for about 110 miles, passing (with positions from Falaises de Lanivato (24°20'S, 43°40'E)):

- 2 WSW of Baie de Langarano (42 miles SSE), thence:
 WSW of Baie de Lambelabe (30 miles SSE), thence:
 WSW of Pointe Itampolo (27 miles SSE), thence:
 WSW of Falaises de Lanivato, a stretch of sandhills which resemble cliffs when seen from a short distance offshore in certain light conditions, thence:
 WSW of Pointe Mangoro (35 miles N), thence:
 3 WSW of Nosy Satrana (37 miles N), a small islet, thence:
 WSW of a projection of the coastal reef (38½ miles N), which dries and extends 1¼ miles SW from Pointe Anakao. Thence:
 WSW of Pointe Anakao (40 miles N) (4.27), thence:
 WSW of Nosy Vé (41½ miles N) (4.27), a small islet surrounded by reefs, thence:
 4 WSW of the entrance to Baie de Saint Augustin (44 miles N), thence:
 WSW of Le Grand Récif (extending from 10 miles NNE to 17 miles N of Nosy Vé) (4.27), thence:
 To a position W of Pointe Anosy Front Leading Light (58½ miles N) (4.58) off the approach to Tuléar via Passe du Nord.

Useful marks**4.25**

- 1 Valley of Onilahy River (23°34'S, 43°46'E) (4.38) which flows into Baie de Saint Augustin and is distinctive when approaching from S.
 Mont Mahinia, or La Table (23°24'S, 43°47'E) (4.57).
(Directions for coastal passage continue at 4.78 and for Baie de Saint Augustin at 4.33. Directions for Tuléar are given at 4.58)

Anchorage and landing places*Chart 760 (see 1.22)***Baie de Salapaly****4.26**

- 1 Anchorage may be obtained by small coastal vessels close off Itampolo, a small village in the SE part of Baie de Salapaly (24°42'S, 43°56'E). Local knowledge is required.
- 2 **Directions.** Immediately N of a point on the S side of the cove is an old military outpost consisting of a two-storey ochre-coloured building and a red house on a sandhill. The line of bearing 093° of this outpost leads through the approach to the cove, passing close to the coastal reef which forms its S side.

When clear of the reef, the track leads SE to the anchorage, keeping within the shelter of the reef.

- 3 **Anchorage** may be obtained in depths of more than 9 m (30 ft), with the outpost bearing 059° distant 9 cables.

There is shelter from wind and swell, except in winds between WSW and N when anchoring is dangerous.

Landing place. Boats can beach abreast the outpost, rounding the end of the coastal reef which fronts it.

*Chart 692***Nosy Vé****4.27**

- 1 Anchorage may be obtained by small coastal vessels in the narrow channel between Nosy Vé (23°39'S, 43°37'E), a low-lying, white sandy islet covered with brushwood, lying on the E side of the reef, and the mainland ESE. At the S end of the islet are the ruins of a settlement and at the N end there is a clump of trees.

- 2 **Tidal streams.** See information on the chart and *Admiralty Tide Tables Volume 3*. The maximum rate of 1 kn is attained 3 hours before and after HW.

Directions. Approaching from S, the line of bearing 039° of a tree covered point (23°36'6S, 43°39'6E) leads through the middle of the channel to a position 9½ cables ESE of the S point of the island, whence a vessel can proceed NNW to anchorage.

- 3 Approaching from N the bearing, about 176°, of Pointe Anakao (23°40'S, 43°38'E) leads into the channel; the point is flat and rocky, rising to some low hills 5 cables inland. The bearing 253° of the N extremity of Nosy Vé leads to the anchorage.

Anchorage may be obtained in the following positions:

- 4 In depths of about 10 m (33 ft), sand and coral, moderate holding ground, with the N extremity of Nosy Vé bearing 253° and the SE extremity 195°. This is the best anchorage.
 In depths of about 8 m (27 ft), 5 cables off the middle of the E side of Nosy Vé, as indicated on the chart.

- 5 There is shelter from winds between S and W but a good length of cable should be veered as vessels are liable to swing continually due to changes in the wind and tidal streams which sometimes cause the anchor to drag.

Landing is easy on the E coast of Nosy Vé in normal weather conditions. At HW, boats can beach anywhere on this coast but the best place at LW is through a gap in the reef about 1½ cables from the N part of the island.

- 6 A break in the coastal reef, 2 miles E of Nosy Vé, affords access for boats to the village of Anakao.

Baie de Saint Augustin*Chart 692***General information****4.28**

- 1 **Description.** Baie de Saint Augustin (Helodrano Ianantsony) is a wide semi-circular bay indenting the coastline N of Nosy Vé (4.27). The SE part lies at the mouth of Onilahy River (4.38) with deep water up to the river entrance. The N part contains an extensive reef, Le Grand Récif, 10 miles long and parallel to the coast. A channel runs between the coast and the reef which, except at its N end, is full of dangers. The port of Tuléar lies at the N end of the bay, close inside Le Grand Récif.

4.29

- 1 **Topography.** On the S side of the bay, the coastal reef is broken by a channel which allows access to the village of Anakao. The coast is a sandy plain behind which scattered trees are visible. The reef extends a farther 5½ miles E of this channel, at which point a limestone cliff formation commences and continues E. This point is marked by a white rectangular rock, Rocher Tente. The rock, which is 4 m high, white and rectangular, lies close inshore and is not easily seen.

- 2 Thence, 1½ miles E, the cliff is broken by a steep valley through which flows the river Lovokampy, with American Creek at its mouth. The cliffs here are white and very

prominent when sunlit. They continue farther E to Pointe Ampasimanoro (23°34'·1S, 43°45'·5E) which marks the S side of the Onilahy River (4.38) entrance.

- 3 The N side of the river entrance is backed by white limestone cliffs with a beach forming a crescent shaped cove at the head of which the village of Saint Augustin is situated. The W tip of the crescent extends into the waters of the bay, forming Nosy Andréa, a peninsula with Pointe Barn Hill (23°33'·0S, 43°44'·5E) at its S end.

- 4 N of this point a sandy promontory extends from the W side of Nosy Andréa, the N extremity of which is Pointe Sarodrano (23°30'·4S, 43°44'·4E). This promontory is fronted, to seaward, by a section of the coastal reef which extends up to 5 cables from the beach.

4.30

- 1 **Approach and entry.** From seaward the bay may be approached and entered as follows:

From S through the narrow channel between Nosy Vé and the mainland (4.27).

From W from a position NW of Nosy Vé.

- 2 From N through Rade de Tuléar (4.39), thence through the inshore channel inside Le Grand Récif, and finally through Passe du Sud (23°30'·3S, 43°42'·0E).

4.31

- 1 **Tidal streams.** In the vicinity of the E shore of Nosy Vé the current flows NNW during the flood tide and SSE during the ebb tide. A current of 1 kn is usually experienced mid-tide.

On the S coast of the Baie de Saint Augustin the current flows E during the flood tide at about 0.3 kn and W during the ebb at about 0.5 kn.

Principal mark

4.32

- 1 **Landmark:**

Mont Mahinia, or La Table (23°24'·5S, 43°46'·9E) (4.57).

Directions

(continued from 4.25)

4.33

- 1 **Inshore passage South-east of Nosy Vé.** Directions are given at 4.27.

4.34

- 1 **From west.** From a position about 4 miles NW of Nosy Vé the track leads ENE for 10 miles, passing (with positions from the N end of Nosy Vé (23°38'·4S, 43°36'·1E)):

NNW of Nosy Vé, thence:

NNW of the N end of an extensive shoal area (2 miles NNE), with a least charted depth of about 9 m (29 ft, charted as 4¾ fm) over it, thence:

- 2 NNW of Soalary (7 miles ENE), thence:

To anchorage as required.

Useful marks:

Church (23°35'·5S, 43°42'·9E) at Soalary.

Pointe Barn Hill (23°33'·0S, 43°44'·5E) (4.29).

4.35

- 1 **From north via inshore route.** Follow directions at 4.58 for Rade de Tuléar, thence via the Passe du Sud (4.62) for which local knowledge is required.

Anchorage

4.36

- 1 **South side of bay.** From April to October, when the South-east Trade wind is blowing, small vessels should

anchor on the S side of the bay in a depth of 9 m (30 ft) on the alignment (about 171°) of two beacons (truncated cones) (23°35'·9S, 43°43'·6E), standing SE of Soalary (4.37), with Pointe Ampasimanoro (4.29) bearing 068°. Coasters can anchor closer inshore in a depth of 5.2 m (17 ft) with Soalary Church (4.34) bearing 229°.

- 2 From November to March, vessels should anchor in a depth of 20 m (65 ft), with Pointe Ampasimanoro bearing 081° and Rocher Tente (4.29), 2¼ miles SW, bearing 158°. There are often heavy rollers in this anchorage.

- 3 **North side of bay.** From November to March, and with local knowledge, coasters can obtain a more secure anchorage between the reef fringing Pointe Sarodrano (4.29) and Nosy Tafara (4.62), which lies off the point. The gap between the reefs is only about 1 cable wide in depths of more than 5.0 m (16 ft).

Soalary

4.37

- 1 **Description.** There is a small harbour for lighters at Soalary (Soalara) (23°35'·5S, 43°43'·2E), on the S side of Baie de Saint Augustin. It is protected by a small pier and served by a railway system. Entry to the harbour is on the alignment (171°) of two beacons (23°35'·9S, 43°43'·6E) (4.36).

- 2 **Supplies.** Soalary has little to offer in the way of provisions. Meat can sometimes be obtained but vegetables are scarce.

Small craft

Onilahy River

4.38

- 1 **General information.** Onilahy River, at the head of Baie de Saint Augustin, is entered between Pointe Ampasimanoro (23°34'·1S, 43°45'·5E) (4.29) and a low sandy point, 5 cables N. The river is navigable, with local knowledge, by small craft with the tide, but access is only easy at HW.

The village of Saint Augustin (Ianantsony) (4.29) stands on the N side of the entrance.

- 2 **Directions.** Approaching from the W, the banks on the S side of the bay should be given a wide berth, while avoiding a spit which extends 7 cables SW from Pointe Barn Hill (4.29). The banks are subject to considerable change in the rainy season, from November to March, and the sea breaks on them with fresh winds from SW to W.

- 3 As a bar may form at the mouth of the river, entry should not be attempted with a NW swell. The N entrance point is subject to change during the rainy season.

TULÉAR AND APPROACHES

General information

Chart 692

Position

4.39

- 1 Tuléar (Toliara) (23°21'·2S, 43°40'·0E) is situated on the mainland at the N end of Baie de Saint Augustin (4.28), on the E side of the Rade de Tuléar, a roadstead formed at the N end of the channel between the coast and Le Grand Récif.

Function

4.40

- 1 It is a small commercial port and the seat of administration of a mainly agricultural province. In 1993 the population was 61 640.

Topography**4.41**

- 1 The mainland coast, on the E side of the channel, from Pointe Kilibré (23°25'·6S, 43°43'·7E) to within 5 cables of Pointe Mahavatsy, 4 miles NW, is bordered by mangroves and backed by sand dunes. These give way, farther N, to a low, sandy plain on which Tuléar stands. The delta of the Rivière Fihérénana, N and W of Tuléar, is made up of numerous islets, mainly covered in sand dunes with mangrove bordering the constantly changing waterways.
- 2 Offshore, the N end of Le Grand Récif lies 8 cables W of Pointe Anosy (23°21'·5S, 43°38'·5E) with a deep water channel between. At this point the reef is 6 cables wide and exposed at all states of tide. S of Pointe Mahavatsy, 2 miles SE, the channel shoals with isolated shallow patches of less than 5·5 m (18 ft) while the reef widens and curves away from the shore, drying out only during LW springs.

Approach and entry**4.42**

- 1 The port is approached from N through the Passe du Nord (4.58), 2½ miles W of Tuléar, and entered through the Rade de Tuléar.

Coasters can approach from S through the Passe du Sud (4.62), 9 miles S of Tuléar, for which local knowledge is required.

Traffic**4.43**

- 1 In 2003, 64 vessels with a total dwt of 483 699 used the port.

Port Authority**4.44**

- 1 Ministère des Transports, Avenue de France, Tuléar.

Limiting conditions**Controlling depths****4.45**

1	Passe du Nord	12·8 m (42 ft).
	Rade de Tuléar (deepest anchor berth)	11·9 m (39 ft).
	Passe du Sud	12·8 m (42 ft).
	Channel from Passe du Sud to Rade de Tuléar	4·0 m (13 ft).

Deepest and longest berth**4.46**

- 1 Mahavatsy Pier (23°22'·1S, 43°40'·4E) (4.67).

Mean tide levels**4.47**

- 1 At Tuléar the mean spring range is about 2·6 m; mean neap range about 0·8 m. For further information see *Admiralty Tide Tables Volume 3*.

Largest vessel**4.48**

- 1 Maximum acceptable draught at Mahavatsy Pier:
7·5 m at neap tides.
Maximum size at the port:
LOA 168 m, 8035 dwt.

Local weather**4.49**

- 1 Winds from SW prevail from September to May; for the rest of the year winds associated with the South-east Trade Wind generally prevail.
- 2 When SW winds are blowing they freshen from 1200 to 1900, causing sandstorms which obscure Mont Mahinia (23°24'·5S, 43°46'·9E) (4.57), the main approach leading mark. In addition, this wind raises a choppy sea in the channels and anchorage, making landings on the coast difficult. Strong SW winds tend to freshen in the afternoon and frequently prevent unberthing from Mahavatsy Pier until evening when they weaken. Other winds may raise a sea affecting cargo operations, especially in the afternoon.
- 3 In calm weather there is often a slight mist over the reefs, making it difficult to identify them at night. In the early morning fog may be experienced but this usually clears by about 1 hour after sunrise.
- 4 The port lies near the S limit of the zone affected by cyclones which are most likely to occur in January and February. Severe damage was caused by a cyclone in 1969 and such storms may cause waves up to 2 m in height in the anchorage.

For cyclone warning signals see 4.55.

Arrival information**Notice of ETA****4.50**

- 1 Notice of ETA is required by 1100, for arrival in the afternoon, and by 1630 for arrival at night or the following morning.

Outer anchorage**4.51**

- 1 Waiting anchorage, with limited swinging room, in which vessels can anchor temporarily while awaiting instructions, is in a depth of 13 m (42 ft), good holding ground, in Rade de Tuléar (4.39), at the intersection of: The alignment (088°) of Beacon E (5 cables N of Mahavatsy Pierhead) (4.67) with Mahavatsy Beacon (root of pier) (4.65).
- 2 The bearing 053° of the Norwegian Church (1½ miles N of Mahavatsy Pierhead) (4.57).

Prohibited anchorage exists in Rade de Tuléar and Passe du Nord (4.58), N of the waiting anchorage.

See 1.41 regarding anchorage for foreign fishing vessels.

Pilots**4.52**

- 1 Pilotage is compulsory for vessels over 150 dwt; in 1996 it was reported that a port captain and pilot may be contacted on VHF.
Vessels can arrive and sail at any time but the reliability of navigational lights and lack of buoyage may preclude movement at night.

Tugs**4.53**

- 1 Tugs are available to work lighters in the anchorage; launches assist in berthing operations.

Harbour**General layout****4.54**

- 1 The harbour comprises the anchorages (4.66) in Rade de Tuléar and Mahavatsy Pier (4.67).

Storm signals

4.55

- 1 Cyclone signals for the area and international storm signals are displayed at the signal station, 2½ cables N of the root of Mahavatsy Pier (4.67). See 1.48 for details of storm warning signals.

Tidal streams

4.56

- 1 See information on the chart. With a rising tide the streams set SSE in Passe du Nord and NNE in Passe du Sud, meeting about midway, off Pointe Kilibé. The reverse occurs with a falling tide and an eddy setting SE may develop close inshore on the NE side of Passe du Nord.
- 2 The streams generally follow the fairway except when Le Grand Récif is covered; cross sets may then be experienced.
The streams are strongest off the N end of Le Grand Récif where, at springs, they attain a rate of 2 kn. At the anchorage they attain a rate of 1½ kn and off Mahavatsy Pier they are weak.

Principal marks

4.57

- 1 **Landmarks:**
Mont Mahinia (La Table) (23°24'·5S, 43°46'·9E), which has a flat top 164 m (537 ft) in height and is the first distinctive feature to be sighted when approaching from SW.
- 2 Radio masts (23°21'·4S, 43°40'·7E) on the E side of Tuléar.
Norwegian church (two square towers, red roof), 6½ cables WNW of radio masts; the church is easily identified.
- 3 Water tower, 045° distant 2·6 cables from Norwegian church; the tower is the first landmark to be seen on nearer approach to the port.

Directions

North approach to Rade de Tuléar

4.58

- 1 **Caution.** The entrance to Passe du Nord, between the N end of Le Grand Récif and the delta of Fiherenana River (4.41), about 1 mile NE, is difficult to distinguish in bad weather and care must be taken not to confuse it with the mouth of the river. Le Grand Récif (4.28) should be identified before entry is attempted.
- 2 **Passe du Nord.** From sea, the line of bearing 114° of Mont Mahinia leads through the approach to the entrance of Passe du Nord until the outer leading lights can be seen.

Pointe Anosy Leading Lights:

- Front light-beacon (white triangle, black bands on metal framework tower, 11 m in height) (23°21'·3S, 43°38'·3E), situated on the S island of the Fiherenana River delta, 5 cables NNW of Pointe Anosy which is low-lying.
- 3 Rear light-beacon (white square stone tower, black lantern, 18 m in height) (200 m ESE of front light).

The alignment (114½°) of these lights leads into Passe du Nord.

4.59

- 1 **Alternative leading mark.** The front leading light-structure is difficult to distinguish at a distance and the rear leading light is obscured by dunes. However, the N side of Mont de la Selle (summit 150° distant 6·1 cables

from Mont Mahinia) (name not charted) is on the alignment of the leading lights and it may be of advantage, by day, to follow a bearing of the mountain until the front light-structure is seen.

Rade de Tuléar

4.60

- 1 **Caution.** Entry with the sun ahead should be avoided and careful attention should be paid to changes in colour of the water; sounding is a better guide to the channel, however, as muddy water flows into it from rivers.
- 2 **Rade de Tuléar** (N entrance) should preferably be entered at LW when the drying reefs and banks on both sides can be seen. There are no buoys in Passe du Nord or in the Rade de Tuléar. The channel through the S part of the Rade de Tuléar to the anchorages (4.66) and to Mahavatsy Pier (4.67) is bordered on the NE side by the Banc de Mahavatsy, a shallow spit which extends 1¼ miles SE from Pointe Anosy (4.41).

4.61

- 1 **Inner leading lights:**
Light-beacon C (black lantern on white beacon, white topmark, 7 m in height) (23°23'·4S, 43°39'·1E) situated on the NE side of Le Grand Récif.
- 2 Light-beacon D (similar structure, 9 m in height) (890 m from front light).
The alignment (148°) of these lights leads through Passe du Nord into Rade de Tuléar.

South approach to Rade de Tuléar

4.62

- 1 Passe du Sud. From Baie de Saint Augustin (4.28) the line of bearing 039° of the middle of Mont Mahinia (4.57) leads into Passe de Sud, between Nosy Tafara (23°30'S, 43°43'E), a detached drying reef, and the S end of Le Grand Récif, about 1 mile WNW, passing close NW of an 8·7 m (28 ft) shoal in the middle of the entrance.

4.63

- 1 **Rade de Tuléar** (S entrance). From a position on the approach leading line, with Pointe Sarodrano (23°30'·4S, 43°44'·5E) (4.29) bearing 100° the track shown on the chart should be followed, passing (with positions from Pointe Sarodrano):
WSW of Roche Microbe (2¼ miles NW), thence:
- 2 ENE of Pointe Angèle (5 miles NW) on Le Grand Récif, thence:
WSW of Banc Mareana (5¼ miles NNE), thence:
WSW of a stranded wreck lying on the coastal bank fringing Pointe Befotaka (7 miles NNW), thence:
ENE of Pointe du Serpent (7 miles NW), on Le Grand Récif, thence:
- 3 Into Rade de Tuléar.

Caution. Local knowledge is required for the navigation of the winding channel from Passe du Sud to Rade de Tuléar owing to the numerous shoals and lack of marks.
See 4.49 for the best time to enter Rade de Tuléar.

Approaching Mahavatsy Pier

4.64

- 1 Vessels proceeding from Rade de Tuléar to Mahavatsy Pier (4.67) should do so with extreme caution as the channel is unmarked.
Vessels usually berth alongside, stemming the tidal stream (4.56); an eddy may be experienced near the S dolphin of the pier.
- 2 **Caution.** Depths less than charted have been reported between the pier and a position 6¼ cables SW of its end.

Useful marks**4.65**

- 1 Beacon E (masonry pillar, black can topmark), 5 cables N of Mahavatsy pierhead (22°22'·6S, 43°39'·8E), on the coastal bank.
- Mahavatsy Beacon (white masonry pyramid, black stripe, white cylinder topmark, 14 m in height) at root of pier; the beacon is difficult to see in the morning but an adjacent tank farm helps to identify it.
- Flagstaff, about 1 cable S of Norwegian church.

Berths**Anchorage****4.66**

- 1 The channel between Le Grand Récif and the coastal reef and banks affords secure anchorage. Anchor berths in Rade de Tuléar, in depths from 10 to 12 m (33 to 39 ft), mud or sand, are shown on the chart.
- With local knowledge and with the permission of the Harbour Master, coasters can anchor 2½ cables W of Mahavatsy Pierhead on the alignment (043°) of Beacon E (4.65) in line with the E radio mast (4.57) and with the outer rear leading light (4.58) bearing 318°.

Alongside berth**4.67**

- 1 Mahavatsy Pier (23°22'·1S, 43°40'·4E) consists of a causeway and bridges, 1320 m in length, with an L-shaped wharf at the outer end.
- The outer face of the wharf is 150 m in length with its alignment 152°/332°. A dolphin is positioned off the SSE end of the wharf.
- 2 An obstruction with a depth of 5·2 m (17 ft) over it lies about 1 cable SSE of the wharf. Tankers berth at Mahavatsy Pier to discharge cargoes. Other cargoes may be handled at the pier, at the lighterage quay (4.72), in the anchorage (4.80) or on the beach where craft dry out.

TULÉAR TO BAIE D'AMPASILAVA**GENERAL INFORMATION**

Charts 760, 3855

Description**4.73**

- 1 In this section are described the coastal and inshore routes between Tuléar (23°21'·2S, 43°40'·0E) (4.39) and Baie d'Ampasilava (21°11'·S, 43°42'·E) (4.133), about 142 miles N. The section is arranged as follows:
- 2 Tuléar to Nosy Hao (4.74).
Nosy Hao to Morombé approaches (4.90).
Morombé and approaches (4.102).
Morombé approaches to Baie d'Ampasilava (4.131).

TULÉAR TO NOSY HAO**General information****Route****4.74**

- 1 From a position 3 miles NW of Passe du Nord (4.58) the route leads about 81 miles NNW to a position W of Nosy Hao (22°05'·S, 43°11'·E) (4.78).

Port services**Facilities****4.68**

- 1 A hospital in Tuléar.
No facilities for receiving oily residues.

Supplies**4.69**

- 1 Supplies of meat, fish, poultry and eggs may be obtained but vegetables are scarce.
Fresh water is obtainable on the NW end of Mahavatsy Pier.
Fuel oil may be supplied for small vessels by road tanker.

Communications**4.70**

- 1 Airport, 4 miles SSE of Tuléar, with flights to Tananarive and Fort Dauphin.

Harbour regulations**4.71**

- 1 The Harbour Master should be informed by 1630 in the evening if a vessel wishes to leave Mahavatsy Pier at night or during the following morning, or by 1100 if the intention is to leave in the afternoon.

Small craft**Berths****4.72**

- 1 Small craft berth on the NW side of the wharf at Mahavatsy Pier (4.67) where there is a quay parallel to the causeway. The quay is 90 m in length with depths of 2 m alongside. Here, small craft usually berth head to tide but, with strong winds across the jetty, it is usual to put an anchor on the bottom to one shackle and dredge in to the berth with head to wind to reduce leeway.

Topography**4.75**

- 1 North of Tuléar, the coast is fringed with a steep-to barrier reef which extends up to 3 miles offshore. To seaward of the reef there are no charted dangers, except in the approaches to Baie de Fanemotra (4.87). Occasional breaks in the reef allow passage for small craft.
- 2 The valley of Fiherenana River (4.41) is indicated by a gap in the hills, more visible when coming from N. Farther inland there is a range of flat-topped mountains sloping towards the coast at Tuléar, 2 miles ESE of Fiherenana River delta.
- 3 Moving N, to Baie de Ranobé (4.80), the coast for the first 5 miles consists of rocky points separated by sandy beaches and is backed by sand dunes and wooded hills. The reef forms a barrier across the bay with two channels allowing access (4.80). Thence for 4 miles to the N limit of the bay, Pointe Tony (23°00'·S, 43°30'·E) (not charted), the coast is fringed with mangroves.
- 4 From here to the Manombo River (4.78) the coast is composed of sandy beach and backed by low hills covered with thin, meagre vegetation.

From the Manombo River entrance to the village of Ambatomilo, 34 miles NNW, the coast is rocky, with mountains inland.

- 5 Beyond Ambatomilo, to the entrance to Baie de Fanemotra, there are arid sandhills, jagged in outline, which are visible from some distance seaward.

The entrance to Baie de Fanemotra (4.87) lies between Pointe Antsamotra (4.87), (not charted), (22°14'S, 43°14'E) and Pointe (22°12'S, 43°14'E) (4.87) (also not charted).

- 6 On the N side of the entrance the coast is generally rocky, bordered by a coastal reef, and with wooded hills behind.

Current 4.76

- 1 The coastal current is affected by the wind and, within 5 miles of the coast, it sets:
N to NNE at rates of $\frac{1}{4}$ to $1\frac{3}{4}$ kn, with a moderate breeze from S to SSE.
W at a rate of about $\frac{1}{4}$ kn with a strong breeze from E to NE.
 - 2 SSW to SE at rates from $\frac{3}{4}$ to 1 kn, with a moderate breeze from NE to N.
ESE to NE at a rate of about $\frac{1}{2}$ kn with a moderate breeze from W to SW.
- See 4.5 regarding the current farther offshore.

Principal marks 4.77

- 1 **Landmarks.** The following are good marks for a vessel making a landfall on the coast between Fiherenana River and Baie de Fanemotra:
The gap formed by the valley of Manombo River (22°58'S, 43°28'E) (4.78), which is easily identified.
Massif Analavelona (22°36'S, 44°12'E) situated about 45 miles inland.

Directions (continued from 4.25)

4.78

- 1 From a position W of Pointe Anosy Front Leading Light (23°21'3S, 43°38'3E) the track leads generally NNW then N for about 80 miles keeping well to seaward of the coastal reef, passing (positions given from the entrance to Manombo River (22°58'S, 43°28'E)):
- 2 WSW of the approach to the entrance of Baie de Ranobé, (12½ miles SSE) (4.80), which may be identified by a rectangular hill with a few trees situated behind the SE entrance in the reef, thence:
WSW of Pointe Tony (2¾ miles SSE) (4.75), about 1 mile N of which is a hill with sharply defined steps showing above the trees, thence:
WSW of Fitsitika (1 mile SE), a fishing village consisting of two groups of huts, thence:
- 3 WSW of Manombo River entrance which may be identified by the more luxuriant vegetation in this vicinity; also by Manombo Atio, a village which stands on the NW side of the river and is visible from some distance seaward. A temple with a red roof stands with a church N of the village and an old lookout station situated NE of the entrance on a hill overlooking Manombo Atio. Thence:
- 4 WSW of Fierenamasay (4 miles NNW), a village in which a chapel is prominent, thence:
WSW of Les Coins de Mire (34 miles NNW), some small rocks lying close together on the N end of a

section of the coastal reef opposite Ambatomilo village, thence:

- 5 WSW of Dos de Baleines (45 miles NNW), rocks which dry 2.1 m and lie $1\frac{3}{4}$ miles from the coast on the inner end of Banc du Dos de Baleine, off Pointe Tala which is low, black and rocky, thence:
WSW of Banc du Dos de Baleine, with depths less than 9.0 m (30 ft), which extends $2\frac{3}{4}$ miles WNW of the coast close S of the entrance to Baie de Fanemotra.
- 6 Thence the track leads N keeping the seaward of the 200 m (100 fm) depth contour, passing:
W of Pointe Antsamotra (22°13'0S, 43°14'5E) (4.87) which forms the S entrance point of Baie de Fanemotra, thence:
W of Pointe Lamboharana, (1 mile NNW of Pointe Antsamotra) (4.87), the N entrance point of Baie de Fanemotra, thence:
- 7 To a position at least 4 miles W of Nosy Hao (22°05'S, 43°11'E), an island composed of low sand dunes, thickly covered with bushes, and lying on a reef which extends $1\frac{3}{4}$ miles to the S. It does not stand out clearly when viewed against the coast.

Useful mark 4.79

- 1 Church (white tower) (23°18'72S, 43°37'65E) in the village of Bellalanda (Chart 692) on the N side of Fiherenana River delta (4.41).
(Directions continue for coastal passage at 4.95)

Anchorage

Baie de Ranobé 4.80

- 1 **General information.** Baie de Ranobé (23°05'S, 43°32'E) is situated within the barrier reef and affords the best anchorage between Tuléar (4.39) and Baie de Fanemotra (4.87), but is only suitable for coasters, requires local knowledge and there are no local facilities.
- 2 The bay is approached through Passe Fanandomotra (23°05'S, 43°30'E), an opening in the barrier reef with a navigable width of 2 cables and a least depth of 7 m (23 ft) in the fairway. The passage is only safe in fine weather, however, due to strong tidal streams and the sea which, in bad weather, makes it impossible to distinguish the breakers marking the barrier reef.
- 3 The bay itself is encumbered by coral reefs but these are easily identified by discolouration of the sea, even at HW. In the centre of the bay there is a 4 m (13 ft) shoal with coral heads. The S part of the bay is shallow.

4.81

- 1 **Tidal streams** are weak in Baie de Ranobé, although strong in Passe Fanandomotra, where strong eddies form. In the bay the rate does not exceed about $\frac{3}{4}$ kn. The stream sets N with a rising tide and attains its maximum rate at half-tide; then decreases in strength but continues N until 1 hour after HW. On a falling tide the stream sets S attaining its maximum at half-tide, and ceasing at LW.
- 1 **Directions.** The best time to enter Baie de Ranobé, having regard to the position of the sun for distinguishing the barrier reef, is about 1 hour before LW and, for leaving, at about HW.

From sea, the depth decreases rapidly at the entrance to Passe Fanandomotra. The fall of the valley of the Manombo River, bearing 040°, leads through the passage; thence the bearing 339° of the hill 1 mile N of Pointe Tony (4.75) leads to the anchorage.

- 2 **Caution.** Care must be taken not to confuse Passe Fanandomotra with Passe Maroazo, 4 miles SE, which permits entry to the S part of the bay. A bearing of Massif Analavelona (22°36'S, 44°12'E) may assist identification.

4.83

- 1 **Anchorage** can be obtained in a depth of 10 m (33 ft), mud, care being taken to avoid the coral reefs in the bay. At HW, a considerable sea is raised at the anchorage during SW winds and strong tide-rips are formed.

4.84

- 1 **Boats** can use Passe Maroazo, which leads into a small area in the S part of the bay, clear of dangers, but has no access to the N anchorage for larger vessels.

Manombo River

4.85

- 1 Anchorage can be obtained by coasters in fine weather off the entrance to Manombo River (22°58'S, 43°28'E) (4.78), in depths from 7 to 9 m (23 to 29 ft), sand, good holding ground; the reefs N and S of the mouth of the river afford some shelter to the anchorage which may be identified by a bearing of Massif Analavelona (22°36'S, 44°12'E).

- 2 A larger vessel has anchored in a depth of 29 m (16 fm) with the temple near Manombo village (4.78) bearing 044°, 1¼ miles offshore and 6 cables from the barrier reef.

Landing can be made by boat on a beach in front of Fitsitika village (4.78), within 4½ hours either side of HW, care being taken to avoid a sandy point in front of the village.

Banc du Dos de Baleine

4.86

- 1 Anchorage can be obtained, with local knowledge, in depths from 17 to 23 m (56 ft to 13 fm), good holding ground, within Banc du Dos de Baleine (22°15'S, 43°11'E) (4.78) in Antsepoka anchorage. The bank affords shelter from SW swell but the anchorage is exposed to winds between W and N.

Baie de Fanemotra

4.87

- 1 Sheltered anchorage can be obtained for coasters in Baie de Fanemotra (22°12'S, 43°16'E) but local knowledge is required. The entrance to Baie de Fanemotra lies between Pointe Lamboharana (22°12'S, 43°14'E) (not charted), being the SW extremity of an island close to the N shore of the bay, and Pointe Antsamotra, (not charted) 1 mile SSE, which consists of a white cliff situated N of some bare hills. The entrance is shallow and the navigable width is reduced by a reef lying in the middle of it. A basin within the entrance mostly dries.

- 2 The village of Lamboara is situated about the middle of the NE side of the island which terminates in Pointe Lamboharana, the N entrance point of the bay.

Anchorage can be obtained in the basin in a depth of 5 m (16 ft), 9 cables NE of Pointe Antsamotra, the S entrance point, but swinging room is limited.

Boats can use a narrow channel between the coast and the NE end of the island on which Lamboara is situated.

Nosy Hao

4.88

- 1 There is anchorage E of Nosy Hao (22°05'S, 43°11'E) (4.78) sheltered from W swell. It is, however, exposed to the S, from which direction the sea is often heavy. In these conditions anchorage off Nosy Andrahombava (4.94) is preferable.

See 4.93 regarding the tidal streams.

- 2 **Directions.** The anchorage can be approached from the sea, passing N of Nosy Fasy (4.96) and from S or N through the inshore passage as described at 4.98.

Anchorage. is in depths from 8 to 15 m (25 to 48 ft), fine sand and shell, good holding ground, 6 cables E of Nosy Hao, with the N extremity of the island bearing 325° and S extremity bearing 245°.

Small craft

Barrier reef

4.89

- 1 **Directions.** With local knowledge, several gaps in the barrier reef and the channel between the reef and the coast are navigable by small craft. The gaps include that between Les Coins de Mire (22°26'S, 43°15'E) (4.78) and the coastal reef, 2 miles N, which gives access to Ambatomilo village (4.78).

NOSY HAO TO MOROMBÉ APPROACHES

General information

Charts 760, 3855

Routes

4.90

- 1 **Coastal route.** From a position W of Nosy Hao (22°05'S, 43°11'E) (4.78) the route leads NNE about 30 miles to a position NW of Nosy Lava (21°44'S, 43°18'E) (4.97) at the entrance to Passe Sud (4.117).

Inshore route. This is limited to about 10 miles here, due to the presence of shoals, and follows the coastal route for parts of the passage. Local knowledge is required.

Topography

4.91

- 1 Nosy Hao (4.78) lies 3 miles off the coast, W of a sandy cove formed by Pointe Andavadoaka (4.98) (not charted), at the head of which stands Andavadoaka village. A cairn, which is easily seen, stands on the summit of a hill at an elevation of 34 m, 1½ miles N of the village.

- 2 Farther N, the coast forms a peninsula with Cap Sainte Vincent at its N tip (21°57'S, 43°16'E), identifiable by two prominent sandhills, 1 mile apart, the N of which is pointed. To the E, behind the peninsula, the coast is low, bordered by mangroves and forms the delta of Rivière Sainte Vincent. An island, 34 m (112 ft) high, lies to the NNE of Cap Sainte Vincent, between the delta of the river and the barrier reef which fronts both the island and the peninsula to seaward. The N tip of the island is high and wooded and forms Cap Tsingilofilo (21°52'S, 43°18'E).

- 3 The barrier reef extends 14 miles N from Cap Sainte Vincent with numerous small islets along its length, terminating in Nosy Lava (21°44'S, 43°18'E) (4.97) at which point the reef is 2 miles wide, extending ¼ mile seaward and 1½ miles coastward from the island. N of this islet reefs exist in isolated patches.

- 4 Between the reef and the coast the Rivière Sainte Vincent runs N and passes through Baie de Tsingilofilo, S of Morombé (4.102), to enter the sea off Cap Morombé (21°45'S, 43°21'E). The coast as far as this cape is bordered by mangroves and the town of Morombé lies close NE of the cape.

- 5 Between 4 and 6 miles NE of Cap Morombé, and about 5 miles inland, a ridge of sandhills up to 47 m high can be identified by whitish jagged cliffs with black patches.

Depths**4.92**

- 1 Coastal waters between Nosy Hao (4.78) and Pointe Andifitra (Andefitra) (21°39'S, 43°26'E), situated about 35 miles NNE on the NE side of the approaches to Morombé, are encumbered with reefs, banks, shoals and islands. These dangers lie on a bank which is steep-to on the seaward side, depths decreasing rapidly from 180 m (100 fm) to 18 m (60 ft) or less. They extend up to 5 miles from the coast at the S end, increasing to 12½ miles at the N end. Farther to seaward there are no charted dangers.
- 2 Between the offshore dangers and reefs fringing the coast as far as the N extremity of a narrow peninsula, Cap Sainte Vincent (4.91) there is an inshore passage suitable for coasters with depths from 11 to 25 m (36 ft to 13½ fm).

Current**4.93**

- 1 Tidal streams E of Nosy Hao (4.78) set NNW at a rate of ¼ kn with a rising tide and SSE at a rate of ½ kn with a falling tide.
Between Nosy Hao and Nosy Lava (4.97), 29 miles N, in the approaches to Morombé (4.102), the current within 5 miles of the coast is similar to that described at (4.76).
- 2 From Nosy Lava to Baie d'Ampasilava (4.133) the current sets:
WNW at a rate of about 1 kn, with a strong ENE breeze.
S to SSW at rates from 1½ to 2 kn, with a fresh breeze from NNE to NW.
See 4.5 for the current farther offshore.

Principal marks**4.94**

- 1 **Landmarks:**
Two prominent sandhills, 1 mile apart, the N of which is pointed, at the N end of a narrow peninsula, Cap Sainte Vincent (21°57'S, 43°16'E) (4.91).
- 2 Nosy Andrahombava, 3 miles W of the N end of the above peninsula, which rises to a prominent sandhill, 11 m high, covered in bushes with a few clumps of trees.

Directions*(continued from 4.79)***Landfall****4.95**

- 1 Approaching Cap Sainte Vincent (4.91) from seaward in clear weather, a large opening with sheer sides will be seen dividing a range of mountains in the interior. The opening should be steered for, keeping in depths more than 180 m (100 fm), until the coastal islands, described below, can be identified.

Coastal passage**4.96**

- 1 From a position at least 4 miles W of Nosy Hao the track leads NNE, passing (with positions from Nosy Hao (22°05'S, 43°11'E)):
WNW of Nosy Fasy (2 miles N) a reef which dries 2.4 m (8 ft), thence:
WNW of Récif Parson (4 miles NNE), thence:

- 2 WNW of reefs which extend 1½ miles S and 5 cables N from Nosy Andrahombava (8 miles NNE) (4.94), thence:
WNW of Récif Rogier Sud (9½ miles NNE), thence:
WNW of Récif Rogier Nord (11 miles NNE) with a least depth of 11 m (36 fm), thence:
WNW of Morrison Reef (17 miles NNE), thence:
- 3 WNW of Morombé Banks (22 miles NNE) situated on the S side of the approaches to Morombé. The banks must be specially guarded against as the sea only breaks over them occasionally and they are difficult to discern. Thence:

To a position WNW of Coelacanth Banks (21°38'S, 43°14'E) or, if bound for Morombé, pass SE of the banks into the approaches to the port.

4.97

- 1 **Useful mark:**

Nosy Lava (21°43'·8S, 43°17'·5E), an islet on the N end of the barrier reef, A light (white square tower, black lantern, 17 m in height) is exhibited from the islet.

(Directions for coastal passage continue at 4.134.

Directions for Morombé are given at 4.117)

Charts 760, 3855 (see 1.22)

Inshore passage**4.98**

- 1 The inshore route is best entered between Nosy Fasy (22°04'S, 43°12'E) (4.96) and Récif Parson (4.96), 3 miles N, since the narrow channel between Nosy Hao and Nosy Fasy, to the N, is not recommended due to the presence of a 7 m (23 ft) shoal in the middle of the channel.
- 2 The channel E of Nosy Hao, and of the reef extending 1¾ miles S from it, is navigable but is constricted by a 3.3 m (11 ft) shoal which lies on the E side, W of Pointe Andavadoaka (22°09'S, 43°15'E) (not charted). This point is easily identified by a large black perforated rock, 2½ cables W, on the coastal reef.

4.99

- 1 From a position W of Nosy Fasy (22°04'S, 43°12'E) (4.96) the track leads N, passing (with positions from Nosy Fasy):
W of Nosy Vé (not charted) (3 miles NE) on the edge of the coastal reef, thence:
E of Récif Parson (3½ miles N) (4.96), thence:
- 2 W of Nosy Bemoka (4½ miles NNE) on the edge of the coastal reef, thence:
E of a 4.9 m (16 ft) shoal (4½ miles N), thence:
E of Nosy Andrahombava (6 miles N) (4.94) thence:
W of Récif Rogier Sud (8 miles NNE) (4.96), thence:
W of Récif Rogier Nord (11½ miles N) (4.96).
- 3 Thence the track leads NW passing SW of Banc Rogier (9 miles N) with a least depth of 11 m; the directions for the coastal passage (4.96) should then be followed.

Anchorage**Nosy Andrahombava****4.100**

- 1 Anchorage with good shelter from W swell can be obtained E of Nosy Andrahombava (21°57'S, 43°12'E) (4.94).
Directions. The anchorage can be approached from S or N through the inshore passage described at 4.98.
- 2 **Anchorage** is in a depth of 16 m (52 ft), sand and shell, good holding ground, 3 cables offshore, with the N

extremity of the island bearing 294° and the S extremity bearing 243°.

Small craft

Inshore channel

4.101

- 1 A channel between the coastal reef and Récif Rogier Sud (4.96) is navigable by small craft. There is a least depth of 2.2 m (7 ft) off the S end of Récif Rogier Nord and local knowledge is required.

Useful mark:

Nosy Ratafanika, 2¾ miles N of Récif Rogier, which is 18 m high, rocky and wooded.

MOROMBÉ AND APPROACHES

General information

Chart 2461, plan of Mouillage de Morombé, 3855

Position

4.102

- 1 Morombé (21°45'S, 43°21'E) is situated close NE of Cap Morombé (4.91) behind a sandy beach and is a small commercial port off which vessels anchor or secure to moorings.

Function

4.103

- 1 The town of Morombé is a sub-prefecture for local and maritime administration. It is also the local port for the export of salt, manioc and timber.

Topography

4.104

- 1 Cap Morombé (4.91) lies midway between Cap Tsingilofilo (4.91) and Pointe Andefitra (4.92), to the NE, and rises to a sand dune behind which can be seen numerous low-lying hills. The coast to the S of the cape is bordered by mangroves and this forms the E side of the Baie de Tsingilofilo (4.91). To the N, as far as Pointe Andefitra, the coast is low and sandy with dunes behind.

Approach and entry

4.105

- 1 Two channels lead through the approaches to Morombé which are otherwise difficult to negotiate due to shoals and reefs, plus the lack of visible markers or landmarks. From seaward it is difficult to distinguish and identify the islets, with the exception of Nosy Lava (4.97) which may be identified by the light on its summit.
- 2 The best time to approach the port is in the early morning, before sunrise.
- The main approach is through Passe Sud (4.117), which is well marked, and is entered about 3 miles NW of Cap Morombé.
- Coasters may also approach from N, through Passe Nord (4.120), entering about 4½ miles N of Cap Morombé. (see 4.112).

Traffic

4.106

- 1 Traffic is coastal, consisting almost entirely of vessels under 100 dwt.

Port Authority

4.107

- 1 See 1.88; the local authority is a port Agent.

Limiting conditions

Controlling depths

4.108

Passe Sud: 8.6 m (28 ft).
Passe Nord: 5.5 m (18 ft).

Mean tide levels

4.109

- 1 At Morombé the mean spring range is about 3.4 m; mean neap range is about 1.1 m. For further information see *Admiralty Tide Tables Volume 3*.

Maximum size of vessel handled

4.110

- 1 The anchorage is accessible to vessels drawing not more than 7.9 m (26 ft).

Arrival information

Port operations

4.111

- 1 Cargoes are worked by lighter in the anchorages (4.123) except for oil products; see 4.126 for further information.

Pilots

4.112

- 1 Pilotage is optional but in 1987 no qualified pilot was available.
- Local knowledge is required for traffic approaching from N, through Passe Nord (4.120).

Tugs

4.113

- 1 Launches are available to tow lighters.

Harbour

General layout

4.114

- 1 The harbour comprises a roadstead W of the town, moorings off Cap Morombé and a beach on which cargoes are worked.

Natural conditions

4.115

- 1 **Tidal streams** set N from 3 hours before until 3 hours after local HW, and then S.
- In Passe Sud the streams are particularly strong and may differ in direction on either side of the leading line. In both channels the streams are slack at HW and LW.
- 2 In the anchorages, at spring tides, the streams set SSW with a rising tide, attaining a maximum rate of about 1¾ kn 1 hour before HW. With a falling tide the streams set ENE attaining a maximum rate of about 1¼ kn 2 hours before LW.

Local weather. Land and sea breezes are well established; the afternoon sea breeze often blows strongly.

Principal mark

4.116

- 1 **Landmark:**

Court-house (conspicuous red front), 4 cables NE of Cap Morombé (21°44'7S, 43°21'2E).

Directions for entering Morombé

Passe Sud

4.117

- 1 **Leading lights:**

Front light (white beacon, black band, 10 m in height) (21°44'9S, 43°20'9E), situated on Cap Morombé (4.91).

Rear light (white beacon, black stripe, 16 m in height) (640 m SE of front light). The lights are exhibited on request.

- 2 From sea, the alignment (133°) of these lights in their intensified sectors (127°-139°) leads through the outer part of Passe Sud, which has a least navigable width of 1½ cables, passing (with positions from Cap Morombé):

SW of L'Arête (3½ miles NW), a coral bank, thence: Close NE of a depth of 4.0 m (13 ft) (2½ miles NW), off the NE end of the extensive reef on which Nosy Lava is situated, thence:

- 3 About 1 cable NE of a beacon (black and white tower) (2¼ miles NW), situated on the edge of the reef, thence:

To a position about 1 cable SW of Nosy Bé (2 miles NW), a reef on the SW end of which are the anchorage leading beacons.

4.118

- 1 **Leading beacons:**

Front beacon (red and white tower) (2¼ miles NW of Cap Morombé) on the SW end of Nosy Bé.

Rear beacon (black and white tower) (2 cables NNW of front beacon) on the SW edge of Nosy Bé.

- 2 From off the SW end of Nosy Bé, the alignment (345°) of these beacons, astern, leads through the inner part of Passe Sud, passing:

ENE of MB1 Buoy, 1¼ miles NW of Cap Morombé, which marks the W side of the passage, and:

WSW of MB2 Buoy, 2 cables E of MB1 Buoy, which marks the E side of the passage, thence:

- 3 WSW of MB4 Buoy, 9 cables WNW of Cap Morombé, which marks a depth of 4.0 m (13 ft) on the end of the tail of a bank forming the E side of the fairway, thence:

To the deep-draught anchorage (4.124).

- 4 **Clearing bearing.** The line of bearing, not less than 090°, of the front leading light-beacon clears N of shallow water S of the deep-draught anchorage.

4.119

- 1 **Deep-draught anchorage to secondary anchorage.**

From the inner end of Passe Sud (4.117) the alignment (275°) of Nosy Trozona (21°44'4S, 43°18'1E), a small rock, with the S extremity of Nosy Lava, 6 cables W (4.97), astern, or the bearing 095° of Morombé court-house (4.116), 3 miles E of Nosy Trozona, ahead, leads E, passing:

Close S of MB4 Buoy, 1¼ miles W of the court-house, and:

Over the tail of the bank extending S of Nosy Bé, in a least depth of 4.9 m (16 ft).

- 2 Thence the bearing 233°, astern, of Nosy Tsipoy (21°46'0S, 43°18'2E), an islet on which there are several trees, leads to the anchorage.

Passe Nord

4.120

- 1 **Approach.** From a position between the S part of Coelacanth Banks (4.96) and Banc les Langoustes, 11 miles ENE, the track to the entrance of Passe Nord, between Nosy Andramona (21°39'0S, 43°22'3E) and Nosindolo, 2½ miles SW, leads generally SE. Approaching from N, the high sandhills, described in 4.91, are first sighted and then a white beacon on Nosy Andramona. This is a brownish islet, 20 m high, that stands out well when seen from S. The track passes (with positions from Nosy Andramona):

- 2 NE of Têtes des Nosindolo (2¾ miles WSW), a coral shoal, thence:

SW of a shoal area which extends 1 mile SW from Nosy Andramona, and:

NE of the outer end of a spit (1¾ miles SW) extending N from Nosindolo, a reef with a group of coral heads up to 0.3 m high, the highest of which are white and easily seen.

4.121

- 1 **Passage leading mark.** From the entrance to Passe Nord, the bearing 186½° of the front leading light-beacon (4.117) on Cap Morombé leads through the passage towards the anchorages (4.123) off Morombé, passing (positions given from Cap Morombé):

E of a detached reef (3¾ miles N) off Nosindolo, thence:

- 2 Over a neck of the coastal bank (3¼ mile N) in a depth of 5.5 m (18 ft), thence:

Between the coastal bank and a bank on which lies Nosy Bé (1½ miles NNW) (4.117); here the fairway narrows and care must be taken to keep strictly to the leading line.

4.122

- 1 **Useful mark:**

Rock (21°42'7S, 43°20'5E) on Nosy Bé (4.117). The rock dries 4.3 m (14 ft) and is then prominent.

Berths

Anchorage

4.123

- 1 There are two anchorages off Morombé. The holding ground is good and both are well sheltered, although choppy sea is raised in the afternoon by the sea breezes (4.115).

4.124

- 1 **Deep draught vessels.** Anchorage 11 cables W of Cap Morombé, in a depth of 12 m (39 ft), as indicated on the plan, is suitable at all states of the tide for vessels of the deepest draught (4.108) that can call at Morombé. It lies on the alignment (345°) of Passe Sud leading beacons (4.118) with the front leading light-beacon (4.117) on Cap Morombé in line bearing 097°, with a beacon (white with black band at top, conical), 2¾ cables E.

4.125

- 1 **Secondary anchorage.** Vessels may anchor, as indicated on the plan, in depths from 7 to 8 m (23 to 26 ft) with the front leading light-beacon on Cap Morombé bearing 142° distant 6 cables.

Mooring buoys

4.126

- 1 There are two mooring buoys near the end of a submarine pipeline which extends 2½ cables NW from tanks on the coast close NE of Cap Morombé, see also 1.36.

Landing place

4.127

- 1 A beach in front of Morombé affords a landing place; small boats or local canoes should be used.

Port services

Facilities

4.128

- 1 Hospital in Morombé.

Supplies**4.129**

- 1 A limited supply of fresh provisions is available.

Small craft**4.130**

- 1 **Boat channel**, usable at HW, exists over a bank of sand rock and coral, between Nosy Andramona (21°39'0S, 43°22'3E) (4.120) and the coast SE.

MOROMBÉ APPROACHES TO BAIE D'AMPASILAVA

General information

Chart 3855

Route**4.131**

- 1 From a position WSW of Coelacanth Banks (21°38'S, 43°14'E), off the Passe Sud approach to Morombé, the route is mainly NE for about 35 miles to a position W of Marsouin Bank (21°10'S, 43°36'E) (4.134), off the S approach to Baie d'Ampasilava.

Topography**4.132**

- 1 North of Morombé, to Pointe Andifitra (21°39'S, 43°26'E) (4.92), the coast is low and sandy, backed by sand dunes. Between Pointe Andifitra and Andranopasy (4.133), E of the Delta du Mangoky, the coast is uniform in appearance, very low and, where the land is not marshy, it is covered in palm trees. The delta of the Rivière Mangoky (4.138), which has many branches and extends for 20 miles, is formed by numerous shifting sandbanks and is backed by thick mangroves.

Depths**4.133**

- 1 Between Pointe Andifitra (4.92) and Andranopasy (21°17'S, 43°44'E), a village at the head of Baie d'Ampasilava, the coastal shelf extends as much as 12 miles offshore with depths of 11·0 m (36 ft) or less and is scattered with detached banks with lesser depths. At the shelf edge depths increase rapidly to 180 m (100 fm) and beyond.
- 2 From the N part of the coast the muddy discharge of Rivière Mangoky, (4.138) through Delta du Mangoky, SW of Baie d'Ampasilava, often extends several miles during the outgoing tidal stream. This discharge gives the appearance of shoal water seaward of sandbanks, which mostly dry and are constantly changing, lying up to 2 miles off the delta.

Directions

(continued from 4.97)

4.134

- 1 On passage between Morombé approaches and Baie d'Ampasilava it is advisable to keep in depths over 180 m (100 fm).
- From a position WSW of Coelacanth Banks (21°38'S, 43°14'E) (4.96) the route leads NE, passing (with positions from Pointe Andifitra (21°39'S, 43°26'E)):

- 2 NW of South Persépolis Bank (14 miles NW), thence: NW of North Persépolis Bank (15 miles NNW), thence:

NW of Requin Bank (16½ miles NNW), thence: NW of Caïmans Banks (between 18½ and 23 miles N), thence:

- 3 To a position W of Marsouin Bank (30 miles NNE), off the S approach to Baie d'Ampasilava.

Caution. Waters off Delta du Mangoky (4.132) have not been thoroughly surveyed.

4.135

- 1 **Useful marks:**

Ambohibe (21°21'S, 43°31'E), a village in which, amongst several buildings, are a mission house and a chapel, each with a red roof.

(Directions continue for offshore passage at 4.150.

Directions for coastal route are given at 4.152)

Anchorage**Andranopasy****4.136**

- 1 **General information.** Coasters can anchor at the S end of Baie d'Ampasilava, off Andranopasy (21°17'S, 43°44'E) (4.133) but local knowledge is required.

Tidal streams. See 4.148.

- 2 **Directions.** In the W approach to the anchorage, care should be taken to avoid (with positions from Andranopasy):

Petrel Bank (6½ miles NW);

Round Head (5 miles NNW), a patch.

A vessel approaching from N should pass 5 cables ESE of Malin Bank (5½ miles N).

- 3 **Useful marks:**

Iataka (4.153), 3¾ miles ENE of Andranopasy.

Conspicuous dune (4.153), 6½ miles NE of Andranopasy.

4.137

- 1 **Anchorage** is in a depth of about 8 m (26 ft) with a flagstaff in Andranopasy bearing 158° distant 3 miles. Small craft can anchor closer in, in a depth of 6 m (20 ft)

During strong W winds vessels should anchor farther offshore or, as a better alternative, seek shelter off Nosy Andriamitaroka (4.150), about 13 miles N of Andranopasy, bearing in mind that local knowledge is required for passage within the offshore dangers.

- 2 **Supplies.** Limited quantities of fresh provisions are available at Andranopasy.

Communications. Airstrip E of Andranopasy, distant 4 km.

Small craft**4.138**

- 1 **Mangoky River.** Local knowledge is required for the navigation of the river, the mouths of which are obstructed by shifting sandbanks, except for a narrow branch (21°20'S, 43°34'E) accessible to boats and sometimes small craft.

Other names**4.139**

- 1 Namakia Bank (21°30'S, 43°22'E).
Pélor Bank (21°32'S, 43° 18'E).

BAIE D'AMPASILAVA TO CAP KIMBY

GENERAL INFORMATION

Chart 3855

Description**4.140**

- 1 In this section are described the sea passages and routes between Baie d'Ampasilava (21°12'S, 43°41'E) and Cap Kimby (18°52'S, 44°14'E), a distance of about 145 miles. The description includes Morondava (20°17'S, 44°17'E) (4.160), the only port, and anchorages off the coast.

- 2 This section is arranged as follows:

Baie d'Ampasilava to Morondava approaches (4.143).

Morondava and approaches (4.160).

Morondava approach to Cap Kimby (4.188).

Depths**4.141**

- 1 The coast forms a wide bight, filled by the coastal shelf

which extends to about 30 miles off the shore and has depths of 30 m (16 fm) or less at its outer edge. Beyond this the depth drops steeply away to 180 m (100 fm) and beyond.

- 2 In the S and central part of the bight a line of islets, reefs and banks lie along the outer edge of the coastal shelf (4.2).

Caution is necessary when approaching the area of the coastal shelf as these waters have not been thoroughly surveyed and uncharted dangers may exist. In addition, the edges of the shelf may lie farther to seaward.

Currents**4.142**

- 1 The local coastal currents are described in the relevant sections of the text while information on currents at a distance of more than 5 miles from the coast may be found at 4.5.

BAIE D'AMPASILAVA TO MORONDAVA APPROACHES

General information

Chart 3855

Routes**4.143**

- 1 **Offshore route.** From a position W of Marsouin Bank (4.134) the offshore route leads generally NNE for about 60 miles, keeping outside the coastal shelf, to a position W of the entrances (20°13'S, 44°00'E) to the approach channels to Morondava.

- 2 **Coastal route.** This route, which leads NNE between the outer banks of the coastal shelf and the shore, is difficult and requires local knowledge, due to the numerous detached dangers between the line of offshore dangers and the coast. It can be followed from the vicinity of the anchorage off Andranopasy (4.137) or, alternatively, from a position 1½ miles N of Nosy Andriamitaroka (13½ miles NNW) (4.150) after passing through the passage between Nosy Andriamitaroka and Banc du Petit Robert, 3 miles NE (4.150).

Topography**4.144**

- 1 At the S end of the E shore of Baie d'Ampasilava, NE of Andranopasy (4.133) there is a beach of white sand, broken only by a notable hillock, Iataka (4.153), and a notable sand dune, 3 miles NNE; thence NNE, the coast of the bay increases in elevation, becoming high and wooded, with several groups of rocks scattered along the shore and sandhills covered with tufts of vegetation.

- 2 From the N entrance point of Baie d'Ampasilava, near the village of Ankoba (21°07'S, 43°52'E), to the entrance of Kirindy River, 17 miles N, the coast consists of high sandhills, broken by the mouth of Maintapaka River which forms a wide gap in the hills, 4 miles N of Ankoba. The mouth of Kirindy River is also wide between steep sand dunes; thence to the estuary of Belo River, 7 miles NNE, the coast is low and sandy.

- 3 From Belo River, sandy beaches form the coast as far as Pointe Andriambe (20°30'S, 44°06'E) (4.153). The remainder of the coast, to Morondava, 16 miles NNE, is low-lying, bordered by mangroves and is broken by the mouths of several rivers.

Depths**4.145**

- 1 Between Andranopasy (4.133), at the head of Baie d'Ampasilava, and Morondava (20°17'S, 44°17'E) (4.160), a distance of about 65 miles, the coastal shelf slopes gently seawards up to a distance of 15 miles from the shore off Morondava, giving depths of less than 30 m (16 fm) over most of the area. W of Morondava a deeper channel, the Morondava Deep, gives depths of over 30 m (16 fm) to within 7 miles of the port.

- 2 Farther to seaward, a line of banks, shoals and reefs, marked by heavy breakers and some islets, mark the edge of the shelf beyond which there are depths in excess of 180 m (100 fm) and no charted dangers.

Several passages lead from seaward into the waters between the offshore banks and the coast but, due to the numerous detached dangers, they are only navigable by coasters.

Least charted depths**4.146**

- 1 These lie on the coastal route, within the line of offshore dangers; see 4.152 for details.

Natural conditions**4.147**

- 1 **Current** within 5 miles of the coast between Baie d'Ampasilava and Morondava is influenced by the wind. With a light to moderate NE breeze it sets SSW to SW; a maximum rate of 1¼ kn has been observed.

4.148

- 1 **Tidal streams** in Baie d'Ampasilava are as follows:

Interval from HW		Remarks
Local	Dar es Salaam	
−0300	−0225	In-going stream sets E.
−0130	−0055	Stream attains maximum rate at about ¾ kn.
+0300	+0335	Outgoing stream begins.
+0600	+0635	Stream attains maximum rate of about ½ kn.

4.149

- 1 In the vicinity of Nosy Andriamitaroka (21°04'S, 43°41'E) the streams set SE with a rising tide and W on a falling tide, attaining a rate of ½ kn.
- 2 Off the estuary of Belo River (20°45'S, 43°59'E) the streams are:

Interval from HW		Remarks
Local	Dar es Salaam	
-0100	-0025	Stream, setting ENE, attains a maximum rate of about ¾ kn.
+0300	+0335	Stream, setting NNW on a falling tide, attains maximum rate of about ¼ kn.
+0600	+0635	Stream slack.

Directions for offshore passage
(continued from 4.135)

4.150

- 1 From a position W of Marsouin Bank (21°10'S, 43°36'E) (4.134) a vessel making an offshore passage between Baie d'Ampasilava and the approaches to Morondava should proceed NNE, keeping in depths over 180 m (100 fm) and passing (with positions from Nosy Andriamitaroka (21°04'4S, 43°41'2E)):
 - 2 WNW of a line of shoals with a least depth of 7.9 m (26 ft) which extend to Banc du Petit Robert (3¼ miles N). The shoals lie across the approach to a passage N of Nosy Andriamitaroka (21°04'4S, 43°41'2E), a small wooded islet, which gives access to a coastal route (4.152).
Thence:
 - 3 WNW of Cachalot Bank (4½ miles NNW to 9½ miles N), thence:
WNW of Banc du Vaudreuil (10½ miles N), thence:
WNW of Nosy Andriangory (15 miles NNE) elevation 11 m (charted as 29 ft in 1914) which is bush-covered with a few trees, thence:
 - 4 WNW of banks with a least depth of 7.3 m (24 ft) over them, terminating in Nosy Mutsadiniky (24 miles NNE), thence:
WNW of Nosy Andravoho (20°40'S, 43°51'E), a rock (4.26 m in height) surrounded by a reef with a drying height of 1.8 m.
 - 5 The track then continues NNE, passing (with positions from Nosy Andravoho):
WNW of Bancs de la Nacre (1¼ miles NW to 5½ miles N), thence:
 - 6 WNW of the Emeraude Banks (6½ miles N to 10¼ miles NNE), thence:
WNW of Jais Bank (14½ miles NNE), thence:
WNW of Imerina Bank (20 miles NNE) (4.177), thence:
 - 7 To a position W of the approaches to the entrances of South Pass (20°15'S, 43°59'E) (4.177) and North Pass (4 miles NNE) (4.178) which are the principal approach channels to Morondava.

Useful marks**4.151**

- 1 See 4.153 for marks which may be useful when making the offshore passage.
(Directions for offshore passage continue at 4.192.
Directions for Morondava are given at 4.176)

Directions for coastal route**4.152**

- 1 **Caution.** Navigation of the coastal route from Baie d'Ampasilava to Morondava is difficult. Between the line of offshore dangers and the coast there are many detached dangers and discharges from rivers also cause patches of discoloured water. Although the known dangers rarely cause discolouration, this should always be regarded as an indication of potential danger; sounding and a good lookout are the best guides.
- 2 From Andranopasy (21°17'S, 43°44'E) the route leads generally NNE, passing (with positions from Andranopasy):
About 5 cables ESE of Malin Bank (5½ miles N) (4.136), thence:
About 6 cables W of Bancs d'Ankoba (not charted) (9½ miles NNE) with a least depth of 4.2 m (14 ft) over it, thence:
- 3 To a position about 5 miles NNE of Pilier Nord (11¼ miles N), at which point it is joined by the route approaching the coast from the passage N of Nosy Andriamitaroka which passes SSE of Maheloholo Reef (16½ miles N).
The track then continues NNE, passing:
- 4 About 3¼ miles ESE of Maheloholo Reef which dries 4.0 m (13 ft), thence:
Close WNW of a 5.5 m (18 ft) shoal (20 miles NNE) with a depth of 5.5 m over it, thence:
WNW of a 4.3 m (14 ft) shoal (20 miles NNE), thence:
ESE of Angarahoka Reef (21½ miles S).
- 5 From E of Angarahoka Reef the track leads NNE on a line of bearing 211°, astern, of Nosy Andriamitaroka (21°04'5S, 43°41'0E) (4.150), passing (with positions from Nosy Andriamitaroka):
ESE of Nosy Andriangory (14¾ miles NNE), thence:
WNW of a depth of 3.0 m (10 ft) (17 miles NNE), on the edge of the coastal bank, thence:
- 6 WNW of Hautfond de Kirindy (18 miles NNE), a sandbank with a least depth of 0.3 m (1 ft) over it, on the edge of the coastal bank, thence:
ESE of Nosy Tania (19 miles NNE), thence:
1 mile NW of Hautfond de Belo (23 miles NNE).
- 7 From NW of Hautfond de Belo the track leads NE on a line of bearing 235°, astern, of Nosy Andriangory, passing SE of Bawden Shoal, 12 miles NE of Nosy Andriangory, whence a vessel bound for Morondava should proceed generally NNE to a position about 5 miles W of Morondava, care being taken to avoid (with positions from Nosy Andravoho (20°40'S, 43°51'E)):
 - 8 Shoals on the Bancs d'Ankevo (10¼ miles NE) with a least depth of 4.0 (13 ft) over them.
Ankarana Bank (17 miles NNE).
Ankaramay Bank (22¼ miles NNE).

Useful marks**4.153**

- 1 Some of the following marks on the coast may also be useful when navigating offshore:
Iataka (21°15'S, 43°48'E), a hillock near the coast, 53 m high.
- 2 Sand dune (white, conspicuous), 3 miles NNE of Iataka.
Belo-sur-Mer (20°44'S, 44°00'E), a fishing village which stands on a sandy point and can be identified at a distance by a white chapel and, about 2 miles ENE, a prominent clump of tall trees.

Pointe Ambatomisiotaka (20°38'S, 44°04'E) which is backed by a line of trees and is prominent from N.

Pointe Andriambe, 8 miles N of Pointe Ambatomisiotaka, is black, rocky and resembles an islet from some directions.

Cap Ankarana (20°29'S, 44°07'E) which is a wooded hill with black clumps of stunted bush, showing up well from N.

Butte de Betaolampia Light (two white horizontal rectangular shapes on a wall, 13 m in height) (20°25'S, 44°14'E).

Morondava Light (4.175), 8 miles NNE of Butte de Betaolampia Light.

(Directions for coastal passage continue at 4.193.

Directions for Morondava are given at 4.176)

Anchorage

Baie d'Ampasilava

4.154

- 1 There is good holding ground throughout the bay but navigation within the line of offshore dangers requires local knowledge and the bay is accessible only to coasters.

Anchorage at the N end of the bay is in depths of 6 to 7 m (20 to 23 ft), in positions 1 and 1½ miles off the coast near Ankoba village (21°07'S, 43°52'E) (4.144). There is no shelter from onshore winds but these seldom raise a heavy sea.

Nosy Andriamitaroka

4.155

- 1 Coasters can anchor off the island, (21°04'·5S, 43°41'·0E) (4.150), with shelter from W and SW winds.

Tidal streams. see 4.148.

Directions. The anchorage can be approached through the passage N of the island, and from N or S within the line of offshore dangers; see 4.152 for details.

- 2 **Anchorage** is indicated on the chart, about 8 cables NE of the island.

Anchorage can also be obtained about 7½ cables E of the island, with the N extremity bearing 280° and the S extremity 254°, in depths of 16 to 17 m (53 to 56 ft).

Nosy Andriangory

4.156

- 1 In fine weather, coasters can anchor E of Nosy Andriangory (20°50'S, 43°45'E) (4.150) with moderate shelter from heavy W to SW seas.

Directions. The anchorage can be approached from N or S within the line of offshore dangers.

- 2 **Anchorage** is in a depth of 18 m (60 ft), sand and shell, moderate holding ground, with the S extremity of the island bearing 232° and the N extremity bearing 270°.

Belo-sur-Mer

4.157

- 1 Coasters can anchor off Belo-sur-Mer (20°44'S, 44°00'E) (4.153) seaward of banks fronting the estuary of Belo River (4.144)

Tidal streams. See 4.149.

Directions. From a position 2 miles W of Nosy Andriangory (4.150) the track leads generally ENE to anchorage off Belo-sur-Mer, passing (with positions from Nosy Andriangory):

- 2 1 mile W of Nosy Tania (4½ miles NE), thence: About 1¼ miles NNW of Hautfond de Belo (10 miles ENE).

Anchorage is in a depth of 13 m (43 ft), sand and mud, good holding ground, with the white chapel in the village bearing 165°.

Small craft

4.158

- 1 **Belo River.** Passages navigable by small craft exist between sandbanks, which dry and are liable to change, fronting the estuary of Belo River (20°44'S, 43°59'E) (4.144) to a distance of 1½ miles. Local knowledge is required.

- 2 **Repairs.** Assistance may be available from a schooner building yard at Belo-sur-Mer on the E side of the estuary.

Other names

4.159

- 1 Éponge Shoal (20°58'S, 43°44'E).
Perle, Récif de la (20°57'S, 43°50'E).
Pilier Sud (21°06'S, 43°42'E).
Puy, Bancs du (21°07'S, 43°40'E).

MORONDAVA AND APPROACHES

General information

Chart 3855

Position

4.160

- 1 Morondava (20°17'S, 44°17'E) is situated on the N side of the Canal de Béthania, a tributary of the Andravavava River, between the mouths of the Morondava River, to the N, and the Betsimananate River, to the S.

Function

4.161

- 1 Morondava is the capital and the entry port for the rich province of Menabé which produces cattle and rice. It is only a small commercial port, however, and large vessels must anchor off.

Topography

4.162

- 1 From NNE to E of Morondava, the foothills of the Plateau de Bemaraha, about forty miles inland, dominate the area, with heights of over 500 m. South-east, Mont Mirafy (21°01'S, 44°33'E) (not charted) is the only notable landmark.

- 2 The coastal plain around Morondava is low, sandy, bordered by mangroves and indented with the mouths of numerous rivers. The topography here is frequently changing due to frequent flooding and storms.

Approach and entry

4.163

- 1 Morondava is approached through South Pass (4.177), 17 miles W, or through North Pass (4.178), 15 miles WNW.

The anchorages off the port are approached from NW, on the alignment of leading beacons.

- 2 Port Bébé, on the SW side of Morondava, is approached through the mouth of the Andravavava River, about 1 mile SSW of Morondava, whence the Canal de Béthania (4.160) leads to a small craft harbour. Local knowledge is required for transit of Canal de Béthania.

Traffic

4.164

- 1 Traffic is mainly coastal and, in 2002 Morondava was used by four vessels totalling 9424 dwt.

Port Authority**4.165**

- 1 Morondava Port Authority, Subdiv des Ponts et Chassees, Morondava.

Limiting conditions**Controlling depths****4.166**

- 1 South Pass (4.177): 22.0 m (12 fm).
North Pass (4.178): 15.0 m (49 ft).
Anchorages: see (4.179) and (4.180) for details.
Canal de Béthania (4.160): 1.5 m (5 ft) in 1964. In 1982 the channel was less than 10 m wide and dried in places.

Deepest and longest berth**4.167**

- 1 Quays in Port Bébé (4.183).

Mean tidal levels**4.168**

- 1 At Morondava the mean spring range is about 3.4 m; mean neap range about 1.2 m. For further information see *Admiralty Tide Tables Volume 3*.

Maximum size of vessel handled**4.169**

- 1 Vessels drawing 2.0 m (6½ ft) can use Port Bébé at HW spring tides.

Arrival information**Port operations****4.170**

- 1 There are no restrictions on arrival at or departure from the anchorages (4.179) off Morondava where all cargoes, including oil products, are worked. The latter are discharged from lighters via a submarine pipeline to storage tanks, see also 1.36.
Onshore, cargoes are handled in the small craft harbour at Port Bébé or on a beach where craft dry out.

Pilots**4.171**

- 1 None are available.

Tugs**4.172**

- 1 A tug is available for towing barges.

Harbour**General layout****4.173**

- 1 The harbour comprises of a roadstead, off Morondava, and Port Bébé (4.163), a small craft harbour on the Canal de Béthania (4.160), SW of Morondava.

Natural conditions**4.174**

- 1 **Current.** Winds from SW cause a NE-going surface current which attains a rate of 1 kn and continues for several days after the winds have ceased.
Swell is often heavy in the anchorages.

- 2 **Flow** makes navigation of Canal de Béthania difficult.
Tidal streams at the anchorage are:

<i>Interval from HW</i>		<i>Remarks</i>
<i>Local</i>	<i>Dar es Salaam</i>	
−0100	−0500	Stream, setting N on a rising tide, attains a rate of about ¾ kn at spring tides.
+0100	+0110	Stream slack.
+0500	+0510	Stream, setting SW on a falling tide, attains a rate of about ½ kn at spring tides.
−0500	−0450	Stream slack.

- 3 At neap tides the streams are weak and variable, setting N or S at rates from ¼ to 1 kn.

Local weather. From December to March the weather is characterised by a light land breeze in the morning and calm nights. During the rest of the year, sea breezes blow from mid-morning until nightfall, attaining their greatest strength around midday.

- 4 Cyclones are occasionally experienced; they may lose some of their strength before reaching Morondava but the port suffered damage from one such storm in 1979.

Principal marks**4.175**

- 1 **Landmarks:**

Water tower (white) (20°17'6S, 44°16'9E), from which Morondava Light is exhibited, near the centre of the town.

Oil storage tanks (aluminium) standing 275°, distant 5.6 cables from the water tower, on N side of Port Bébé.

Directions for approaches**Caution****4.176**

- 1 The low coast in the vicinity of Morondava does not show up very well on a radar display. It should not, therefore, be approached unless certain of a vessel's position.

South Pass**4.177**

- 1 **Leading mark.** From seaward, the line of bearing 098° of Morondava water tower, or light (4.175), leads through South Pass (Ararano Atsimo) (20°15'S, 44°00'E) across Morondava Deep (4.145) passing:
N of Imerina Bank (20°17'S, 44°00'E), thence:
S of Median Bank 6 miles NE of Imerina Bank, over which a heavy swell breaks.

North Pass**4.178**

- 1 The track through North Pass (Ararano Avarata) (20°12'S, 44°01'E) leads generally E, passing:
S of Cordelière Bank (20°10'S, 44°01'E), thence:
S of Mitaine Bank, 3 miles E of Cordelière Bank.
A heavy swell breaks over these banks.

Directions for anchorages**South anchorage****4.179**

- 1 **Leading beacons.** The alignment (132°) of leading beacons, 1¾ miles SW of Morondava water tower (4.175), leads to the S anchorage.

Front beacon (white, 4 m in height).

Rear beacon (white pyramid, 13 m in height)
(3 cables from front beacon).

- 2 The anchorage lies at the intersection of the alignment (080°) of a beacon (white, 6 m in height), 7½ cables W of Morondava water tower, with the water tower, and the alignment (132°) of the above leading beacons.

North anchorage

4.180

- 1 **Leading beacons.** The alignment (129½°) of leading beacons (white pyramids, 2½ cables apart, each with a black band) (front beacon 4 cables NNW of Morondava water tower), leads to the N anchorage. The anchorage lies on this alignment (129½°), about 11 cables from the front beacon, with a third beacon (white, 6 m in height), 7½ cables W of the water tower, bearing 165°.

Useful mark

4.181

- 1 Butte de Betaolampia Light, 8 miles SSW of Morondava (4.153).

Berths

Anchorage

4.182

- 1 **South Anchorage** is situated 1¼ miles W of the mouth of Andravavava River, in a depth of about 10 m (33 ft); the berth lies on the approach leading line (132°) and on the bearing 080° of a beacon (white, 6 m in height) (7½ cables W of Morondava water tower) in line with the water tower.
- 2 **North anchorage** is good and is situated 1¾ miles N of the mouth of Andravavava River in a depth of 8 to 9 m (28 ft), muddy sand. The berth lies on the approach leading line (129½°), about 11 cables from the front beacon.

Alongside berths

4.183

- 1 **Port Bébé.** There is one quay 50 m in length with a depth of 2.0 m (6½ ft) alongside, and two more quays, 57 and 50 m in length, both of which dry.

Port services

Repairs

4.184

- 1 Assistance with mechanical repairs may be obtained through a French-operated fishing business in the town with good workshops.

Other facilities

4.185

- 1 Hospital in Morondava.

Supplies

4.186

- 1 Water is available, fresh provisions are plentiful except in the dry season; fuel is not available.

Communications

4.187

- 1 Airfield 2½ miles E of Morondava with flights to Antananarivo, Majunga and Tuléar.

MORONDAVA APPROACHES TO CAP KIMBY

General information

Chart 3855

Routes

4.188

- 1 **Offshore route.** From a position W of the entrances (20°13'S, 44°00'E) to the approach channels for Morondava the route leads NNW, for about 80 miles, to a position about 25 miles W of Cap Kimby (18°52'S, 44°14'E).

Coastal route. From Morondava (20°17'S, 44°17'E) the route leads generally N, inside the outer banks of the coastal shelf, to a position about 10 miles W of Cap Kimby.

Topography

4.189

- 1 There are few navigational marks along this coast. Between Morondava and the Tsiribihina River (19°42'S, 44°32'E) (4.196) the coast is low and bordered by mangroves, being cut by numerous river mouths, the topography of which is continually changing due to flooding and weather. Beyond Passe d'Ambozaka (19°37'S, 44°24'E) (4.196), a mouth of the Tsiribihina River, the coast is low and featureless.

Depths

4.190

- 1 Between Morondava (20°17'S, 44°17'E) and Cap Kimby (4.194), a distance of 85 miles, the coastal shelf continues N, extending seawards for a considerable distance in a gentle slope, giving depths of 33 m (18 fm) 30 miles from the shore.
- 2 **Caution.** The charted line of banks, shoals and reefs (4.150) at the edge of the coastal shelf continues N to latitude 19°48'S, beyond which the area surveys are old and incomplete. It is therefore necessary to navigate these waters with caution, also when approaching the W edge of the coastal shelf, particularly the N part, as there may be more dangers than those charted.
- 3 According to local knowledge, schools of fish frequenting shoal areas cause disturbances in the water while further indication may be given by flocks of birds pursuing the fish.

Natural conditions

4.191

- 1 **Current** within 5 miles of the coast generally sets in the direction of the wind at rates from ¼ to ¾ kn.
With a light NNW breeze a current has been observed setting S at 1 kn.
- 2 **Tidal streams** described at 4.174 increase in strength towards Delta de la Tsiribihina.
Discoloration of the sea is caused, at times, by muddy water from Delta de la Tsiribihina, which has a reddish colour and can extend up to 8 miles offshore.

Directions

(continued from 4.151)

Offshore passage

4.192

- 1 From a position W of the entrances (20°13'S, 44°00'E) to the approach channels for Morondava the route leads generally NNW, keeping in depths over 180 m (100 fm) (see caution at 4.190), passing the following dangers, composed of coral, over which a heavy swell breaks (with positions from Anakio Bank (19°59'.0S, 43°58'.5E)):

- 2 WSW of Cordelière Bank (4.178) (11 to 9½ miles SSE), thence:
WSW of Pelerin Bank (6 miles SSE), thence:
WSW of Ruby Shoal (2½ miles SE), thence:
WSW of Anakio Bank, thence:
WSW of Rivomena Bank (2½ to 6½ miles NNW), thence:
- 3 WSW of Indien Bank (10 miles N), thence:
WSW of a shoal (existence doubtful) (19 miles NNW) with a depth of 11.9 m (39 ft) over it, thence:
WSW of D'Estaing (position doubtful) (28½ miles N), thence:
- 4 WSW of Vacluse (3¾ miles N).
From W of Vacluse the route continues N passing well W of a chain of dangerous rocks and shoals, with a least depth of 8.8 m (29 ft) over them, between 30 miles SSW and 15½ miles W of Cap Kimby (4.194), thence:
To a position 25 miles W of Cape Kimby.
(Directions continue at 4.214)

Coastal passage

(continued from 4.153)

4.193

- 1 The coastal route from Morondava to the vicinity of Cap Kimby proceeds generally N, between the shore and the offshore dangers (4.192). A heavy swell breaks on the chain of shoals charted S of latitude 19°48'S. North of this caution should be exercised, as advised in 4.190. Vessels should pass (with positions from Cap Ambozaka (19°40'S, 44°25'E)):
- 2 W of Banc de Bosy (28 miles S) which lies 6 miles WSW of Bosy village (4.195), thence:
E of Moines Bank (31 miles SW), thence:
E of Marjolaine Bank (26½ miles SW), thence:
W of Bayadère Bank (16½ miles S), composed of coral, and:
- 3 Across Tsiribihina Deep which extends WNW from the vicinity of Bayadère Bank, thence:
E of Andambo Bank (26½ miles WSW), thence:
W of Îlot Indien (9 miles S) (4.195), in the S part of the Delta de la Tsiribihina (see 4.191 regarding discoloration of the sea), thence:
- 4 W of a 10.1 m (33 ft) patch (6 miles SW), thence:
W of Cap Ambozaka, in the N part of the Delta de la Tsiribihina (4.196), and:
E of an 11.9 m (39 ft) shoal (existence doubtful) (27 miles W), thence:
E of D'Estaing (position doubtful) (28 miles NW).

4.194

- 1 The route then continues N, passing (with positions from Cap Kimby (18°52'S, 44°14'E)):
W of Sahazo (29½ miles SSE) (4.195), a lookout post on the coast, and;
E of two dangerous rocks (30 and 31 miles SSW), thence:
- 2 E of a line of shoals (between 32 miles SW and 15 miles W) with a least charted depth of 8.8 m (29 ft) over them, and:
W of a 4.6 m (15 ft) shoal (15 miles S) off the S mouth of Manambolo River, thence:
- 3 To a position well W of Cap Kimby so as to pass seaward of a depth of 3.0 m (10 ft) (6 miles W), at the S end of a narrow shoal, and, depending on draught, clear of an 11.0 m (36 ft) patch (8 miles W). Cap Kimby (18°52'S, 44°14'E), is a relatively high promontory, dark in colouring but with noticeable white markings. Seawards, a long,

narrow sandbank extends SSW from the coast N of the cape to a position 6 miles off the headland with depths of 1½ to 2 m (4 to 6 ft) over it.

Useful marks

4.195

- 1 Bosy (20°04'S, 44°26'E), a village, is noticeable as it stands on a sandy point surrounded by coconut palms.
Îlot Indien (19°49'S, 44°24'E), in the Delta de la Tsiribihina (4.196), has a conspicuous seasonal fishing village at its N end.
- 2 Tsimanandrafozana (19°47'S, 44°25'E) village coconut plantation, recognisable from seaward.
Lookout post at Sahazo (19°20'S, 44°24'E) is conspicuous by its galvanized roofing and the lookout tower which projects above the trees.
(Directions continue at 4.224)

Tsiribihina River

General information

4.196

- 1 Tsiribihina River flows into the sea through Delta de la Tsiribihina which extends from position 19°55'S, 44°29'E to the village of Andramasay, about 24 miles N. The river has six mouths but, due to the obstruction caused by the shifting banks of the delta, only one mouth, the Passe d'Ambozaka (19°37'.5S, 44°23'.0E) is navigable.
- 2 The coast of the delta is low and bordered with mangroves. The village of Belo-sur-Tsiribihina (19°42'S, 44°32'E), where there is a wharf, is situated on the river at the head of the delta, about 10 miles from the sea.

Limiting conditions

4.197

- 1 **The bar** of Passe Ambozaka can nearly always be crossed at HW, in fair weather.
- Depths** in the river restrict navigation during the dry season from April to October.
- 2 **Largest vessel** which can reach Belo-sur-Tsiribihina, outside the dry season, is a small coaster drawing 2.1 m (7 ft), at HW spring tides.
In the dry season, only boats drawing not more than 0.6 m (1½ ft) can ascend the river, after half tide on a rising tide.

Arrival information

4.198

- 1 **Outer anchorages.** Vessels can anchor WSW of the village of Tsimanandrafozana (4.195), off Îlot Indien, on which there are some huts, in depths from 13 to 22 m (42 ft to 12 fm), good holding ground, with a clump of coconut palms 5 cables S of the village bearing between 060° and 075°.
- 2 Small vessels can anchor W of Tsimanandrafozana, 2 miles offshore or 1 mile from breakers, in depths from 6 to 8 m (19 to 25 ft).
Coasters can anchor WNW of Tsimanandrafozana, in a depth of 11 m (36 ft) W of the bar at the mouth of Bras de Tsimanandrafozana (19°46'S, 44°23'E) with the clump of coconut palms S of the village bearing 122°.
- Pilots** are not available but local knowledge is essential.

Directions

4.199

- 1 The line of bearing 152° of Cap Ambozaka (19°40'S, 44°25'E) (4.193) leads to the entrance of Passe Ambozaka.

Berths**4.200**

- 1 **Wharf** at Belo-sur-Tsiribihina (4.196); length 20 m, depth alongside 2 m (6½ ft). Vessels secure to trees.

Landing place. In front of Tsimanandrafozana village.

Port services**4.201**

- 1 **Supplies.** Provisions are available in limited quantities.

Anchorage**Bosy****4.202**

- 1 Anchorage has been obtained in a depth of 7 m (23 ft) WNW of the village of Bosy (20°04'S, 44°26'E).

Sahazo**4.203**

- 1 There is good anchorage in a depth of 11 m (36 ft), 3½ miles off the lookout station at Sahazo (4.195).

A vessel has also anchored in a depth of 9 m (30 ft) with the lookout station bearing 075°.

Manambolo River**4.204**

- 1 Anchorage has been obtained off the Manambolo River in a depth of 8 m (26 ft) about 2 miles outside breakers with the middle of the N mouth (18°59'S, 44°14'E) bearing 055° and a military station bearing 114°.

Small craft**Bosy****4.205**

- 1 Small boats can reach the village of Bosy (20°04'S, 44°26'E) (4.195) through Bosy River, entered about 8 cables N of the village.

CAP KIMBY TO CAP AMPARAFKA**GENERAL INFORMATION**

Charts 3868, 3871

Description**4.206**

- 1 In this section are described the offshore and coastal routes from Cap Kimby (18°52'S, 44°14'E) to Cap Amparafaka (15°56'S, 45°16'E), round Cap Saint André (Tanjona Vilanandro) (16°12'S, 44°27'E), a total distance of about 220 miles. Also described are Maintirano (18°04'S, 44°01'E) and anchorages available.
- 2 This section is arranged as follows:
Offshore passage (4.211).
Cap Kimby to Maintirano approaches (4.219).
Maintirano and approaches (4.233).
Maintirano approaches to Beravina (4.259).
Beravina to Cap Saint André (4.269).
Cap Saint André to Cap Amparafaka (4.278).

Depths**4.207**

- 1 Between Cap Kimby and Cap Saint André the coastal shelf makes a wide sweep seawards, forming the Pracel Bank which extends as much as 56 miles offshore with depths of less than 37 m (20 fm) over it.
- 2 **Caution.** Soundings in many parts of Pracel Bank indicate a very uneven bottom, mainly sand and coral; there are also numerous dangers, mostly coralline, lying on it but, for the reasons given at 4.210, they cannot be distinguished with certainty. Unless a vessel is bound for some part of the coast within the Pracel Bank area it is advisable to keep outside it altogether, following the route directions commencing at 4.214. If necessity requires crossing Pracel Bank, caution should be exercised, sounding continually.

4.208

- 1 Near the edge of the shelf, to the E of Grenouille Bank (15°44'S, 44°19'E) which lies at the N end of Pracel Bank, there is a chain of coralline shoals having depths less than 18.0 m (60 ft) over them, with patches of sand and weed. Over this chain, and in its vicinity, the water is sufficiently clear that the bottom may be seen at depths of 29 m (16 fm) and the outer edge is distinctly indicated by a

change in the colour of the water. The surveys of this area are, however, old and incomplete and mariners should navigate with caution.

Natural conditions**4.209**

- 1 **Currents** on Pracel Bank vary in direction, ranging from NW to SW, with occasional changes to SE and, on occasions, attain rates of 1½ kn.
- 2 **Tidal streams** on Pracel Bank, between Cap Saint André (16°12'S, 44°27'E) and Chesterfield Island, 30 miles WSW, are usually regular, setting S on a rising tide and N on a falling tide. Occasionally, however, a current overcomes the tidal streams, giving rise to a flow which sets steadily in one direction for some time.
- 3 Observations of the tidal streams between Chesterfield Island and Beravina (Antsify) village (17°12'S, 44°06'E) were made in the summer of 1901. Results were not very satisfactory but it was found that:

The maximum rate of the streams was 1¼ kn.

The stream set N on a rising tide, attaining its maximum rate 4 hours after HW.

- 4 The stream set SW on a falling tide, attaining its maximum rate 3 hours before HW.

Caution. Tidal streams around the Îles Barren and adjacent banks can be very strong.

4.210

- 1 **Discoloration.** The water over the Pracel Bank is discoloured by the muddy discharge from numerous streams and this often prevents the dangers on the bank from being seen.

An early survey noted that dangers seldom existed where water discoloration suggested, but that sounding constantly revealed dangers not detected visually.

- 2 Between Cap Saint André and Cap Amparafaka, 50 miles ENE, at certain seasons and in calm weather, the sea is often found covered with a yellowish oily substance which, under the action of a breeze, breaks up into large patches. From the changes thus caused in the colour of the water, this might be thought to indicate a danger. The cause, however, is the oily residue from mangrove seed washed out of rivers. The substance has a strong aroma resembling linseed.

OFFSHORE PASSAGE

General information

Charts 3868, 3871

Routes

4.211

- 1 From a position about 25 miles W of Cap Kimby (18°52'S, 44°14'E) (4.194) the offshore route leads NW and NNW to a position NE of Île Juan de Nova (17°03'S, 42°43'E) (2.55) in the vicinity of latitude 16° 40'S. The route then leads NE and thence E to a position about 20 miles N of Cap Amparafaka (15°56'S, 45°16'E).

Depths

4.212

- 1 Between Cap Kimby (18°52'S, 44°14'E) and Cap Amparafaka (15°56'S, 45°16'E) waters beyond the edge of the coastal shelf described in 4.207 are deep and the only charted danger within 25 miles of the shelf is D'Estaing Bank (18°10'S, 43°16'E) (4.216).

Current

4.213

- 1 Between Cap Kimby and Îles Barren, at distances over 5 miles from the coast, the current generally sets in the direction towards which the wind is blowing.
- 2 For those in the Mozambique Channel, beyond Pracel Bank, see 1.170.

Directions

(continued from 4.192)

Chart 3868

Cap Kimby to Emile Héloise Bank

4.214

- 1 From a position about 25 miles W of Cap Kimby (18°52'S, 44°14'E) (4.194) the offshore route continues generally NW, keeping in depths in excess of 180 m (100 fm) and passing (with positions from Cap Kimby):
- 2 SW of Purdy Sand (Torak' Atsimo or South Reef) (17½ miles WNW) (4.224), thence:
SW of a 4.9 m (16 ft) shoal (22 miles NW), thence:
SW of an 8.5 m (28 ft) shoal (31 miles NW), thence:
SW of Récif Lockwood (34 miles NW), over which the sea breaks heavily, thence:
- 3 SW of a 10 m (33 ft) patch (37 miles NW), thence:
SW of Boursaint Shoal (40 miles NW), which is often marked by a swell, thence:
SW of Mpanjaka Shoal (Îles Barren) (18°17'S, 43°37'E) over which the sea breaks in bad weather, thence:
SW of an 11 m (36 ft) shoal, 1 to 3 miles NNW of Mpanjaka Shoal, thence:
- 4 To a position SW of Emile Héloise Bank (18°12'S, 43°34'E).

4.215

- 1 **Useful marks:**
Nosy Lava (18°35'S, 43°56'E) (4.224).
Nosy Adrano, 2½ miles NW of Nosy Lava.
Nosy Dondosy, 4½ miles WNW of Nosy Lava, (4.231).
Nosy Androtra, 9 miles NW of Nosy Lava, (4.223).
Nosy Mavony (18°19'S, 43°44'E) (4.226).
(Directions for approaches to Maintirano through Îles Barren are given at 4.226, and N of Îles Barren continue at 4.227)

Emile Héloise Bank to latitude 16° 40'S

4.216

- 1 From SW of Emile Héloise Bank the offshore route turns NNW to latitude 17°30'S and thence N to latitude 16°40'S, keeping in depths greater than 180 m (100 fm) and passing:
Clear of D'Estaing Bank (18°10'S, 43°16'E), (position doubtful), over which the sea rarely breaks, thence:
- 2 WSW of a dangerous rock (reported 1915) (18°02'S, 43°25'E), (position doubtful), thence:
WSW of a 15.9 m (52 ft) patch (17°48'S, 43°22'E), thence:
WSW of Vaucluse Bank (17°27'S, 43°20'E), thence:
W of a 15.9 m (52 ft) patch, 5 miles NW of Vaucluse Bank, thence:
- 3 W of a 15.9 m (52 ft) patch, 12 miles NNW of Vaucluse Bank, thence:
Well W of an 11.9 m (39 ft) shoal (17°03'S, 43°25'E), and:
E of Île Juan de Nova (17°03'S, 42°43'E) (2.55), thence:
To a position NE of the island.

Latitude 16° 40'S to Grenouille Bank

4.217

- 1 From a position NE of Île Juan de Nova, in Latitude 16° 40'S, the offshore route leads NE, keeping in depths in excess of 180 m (100 fm) and passing:
NW of a 0.9 m (3 ft) patch (position approximate), reported (1990) to lie about 7 miles WSW of Grenouille Bank (15°44'S, 44°20'E), thence:
To a position to seaward of Grenouille Bank.

Grenouille Bank to Cap Amparafaka

4.218

- 1 From seaward of Grenouille Bank the offshore route proceeds generally E, giving a wide berth to numerous offshore banks, with depths less than 18.0 m (60 ft) over them and relatively deep passages between, which lie on the edge of the coastal shelf. In particular the route passes:
N of a shoal (15°39'S, 44°30'E) reported (1990) to have a depth of 12.8 m (42 ft) over it, thence:
- 2 N of a shoal (15°37'S, 44°37'E) reported (1990) to have a depth of 10.1 m (35 ft) over it, thence:
N of a shoal (15°39'S, 44°50'E) (position approximate) reported (1990) to have a depth of 8.8 m (29 ft) over it, thence:
N of Émile Bank (13 miles NNW of Cap Amparafaka), thence:
- 3 To a position N of a shoal, lying 11 miles N of Cap Amparafaka (15°56'S, 45°16'E) (4.282), reported (1990) to have a depth of 4.9 m (16 ft) over it.
(Directions continue at 5.17)

CAP KIMBY TO MAINTIRANO APPROACHES

General information

Chart 3868

Routes

4.219

- 1 Three routes lead round or between numerous dangers which lie as much as 27 miles from the coast between Cap Kimby (18°52'S, 44°14'E) and Maintirano (18°04'S, 44°01'E), on Pracel Bank. These dangers are detached from the coastal bank which has depths of 11.0 m (36 ft) or less over it and extends up to 8 miles offshore. They include

Îles Barren, seven small islands scattered over the S part of Pracel Bank.

- 2 All three routes lead into the NW approach to Passe du Sud (18°08'S, 43°57'E) (4.248), the main approach channel to Maintirano; they are:

A coastal route from S (4.224), which passes E of Nosy Lava (18°35'S, 43°56'E), the S-most island of Îles Barren, thence outside the coastal bank. This route is the most difficult for access but is convenient for a vessel making a coastal passage.

- 3 A route through Îles Barren from the SW (4.226), which passes NW of Récif Lockwood (18°32'S, 43°46'E).

A route passing N of Îles Barren (4.227), which passes N of Emile Héloïse Bank (18°12'S, 43°34'E).

- 4 **Caution.** The S part of Pracel Bank is dangerous, as many of the underwater dangers cannot be distinguished in fine weather.

Topography

4.220

- 1 The coast between Cap Kimby and the village of Maintirano-Maty (18°10'S, 44°02'E) (4.257), on the S side of the approaches to Maintirano, is low and wooded with no salient features other than the mouths of several rivers beside which some villages are located.

- 2 **Îles Barren** are sandy and surrounded by coral reefs. Each island appears as a strip of white sand surmounted by a dark knoll and may be seen at a distance of 10 to 12 miles.

Least charted depths

4.221

- 1 Coastal route (4.224) — 11.9 m (39 ft) in the fairway E of Nosy Lava, where it is about 8 cables wide.
Route through Îles Barren (4.226) — 10.1 m (33 ft) over a patch in the middle of the channel NW of Récif Lockwood, where it is about 5 miles wide.
Depths are greater on either side.
Route N of Îles Barren (4.227) — 12.8 m (42 ft) over a shoal but depths are greater on either side.

Natural conditions

4.222

- 1 **Current.** Between Cap Kimby and Nosy Androtra, 34 miles NW, within 5 miles of the coast, is similar to that described at 4.191.

Between Nosy Androtra and Maintirano the coastal current is much influenced by the wind. In calm weather it sets SE at a rate of ½ kn. With a light NE breeze it sets SSW at a rate of 2 kn. With a light SSW to SW breeze it sets NNE at a rate of 1¼ kn.

- 2 See 4.209 for a description of currents on Pracel Bank.

Caution. Tidal streams around the Îles Barren and adjacent banks can be very strong and mariners should proceed with caution.

Discoloration of the sea. See 4.210.

Principal mark

4.223

- 1 **Landmark:**

Nosy Androtra (18°30'S, 43°48'E), the most remarkable of the Îles Barren, being the only wooded island, with a clump of trees 31 m (102 ft) high on its N part; it has often been mistaken for a vessel under sail. The island can be readily identified on a radar display.

Directions for coastal route

(continued from 4.195)

4.224

- 1 From a position W of Cap Kimby (18°52'S, 44°14'E), outside the coastal bank (4.219) and, depending on draught, clear of an 11.0 m (36 ft) patch, 8 miles W of the cape, the coastal route to Maintirano approaches leads generally N, to seaward of the coastal bank, passing (with positions from Nosy Maroantaly (18°25'S, 43°55'E)):

- 2 E of Purdy Sand (or South Reef) (18½ miles S), a coral reef which is the S-most known danger on Pracel Bank and on which the sea breaks heavily, thence:

E of a 4.9 m (16 ft) shoal (14½ miles S), thence:

- 3 E of Nosy Lava (10 miles S). The S-most and largest of the Îles Barren, it is partially covered with bushes and some trees while the N part is rocky. There are also a number of huts on the island. And:

- 4 Clear of Banc Simpson (10¼ miles SSE), an above-water reef, which lies 2 miles E of Nosy Lava. There is a channel with about 1 mile width and a limiting depth of 12 m (39 ft) between Nosy Lava and Banc Simpson while the channel to the E of Banc Simpson, bordering on the coastal bank, is about 2 miles in width with a limiting depth of 17 m (56 ft) at the inner end. Caution is required as there are very few visible points of reference in the immediate area. Thence:

- 5 E of an 11.0 m (36 ft) patch (7 miles S), thence:
E of a 10.1 m (33 ft) coral patch (6¼ miles SW), thence:

W of Nosy Maroantaly, which is sparsely covered in vegetation, thence:

- 6 W of Récif Croissant (2½ miles N), a drying reef on a limb of the coastal bank over which the sea nearly always breaks. Vessels should make no attempt to pass E of this reef. Thence:

E of Surprise Shoal (10½ miles NNW), for indications of which a lookout must be kept, thence:

- 7 W of a rock (11 miles NNE) with a depth of 1.5 m (5 ft) over it (charted as a dangerous rock), close within the edge of the coastal bank, thence:

E of Banc Bayfield (14 miles NNW), an extensive drying reef with a sandbank near the E end, which may be seen at a distance of 5 to 6 miles, thence:

W of Santon Rock (16½ miles N) (4.248), thence:

- 8 To a position S of Banc du Nord (21½ miles NNW) (4.227) near the NW approach to Passe du Sud (4.248).

4.225

- 1 **Useful marks:**

Nosy Andrano (18°33'S, 43°53'E) (4.231).

Nosy Dondosy (4.231), 2¼ miles W of Nosy Andrano.

Nosy Mavony (18°19'S, 43°44'E) (4.226).

Sarodrano Beacon (18°10'S, 44°02'E) (4.248).

Marks in Maintirano (18°04'S, 44°01'E) (4.247).

(Directions for passage N continue at 4.262.

Directions for Maintirano are given at 4.248)

Directions for route through Îles Barren

4.226

- 1 From a position about 5 miles SW of Boursaint Shoal (18°26'S, 43°42'E) (4.214) the route leads NE, (with positions from Boursaint Shoal):

Between Récif Lockwood (6½ miles SE) and Boursaint Shoal, keeping clear of, depending on draught, a 10·1 m (33 ft) patch, 3 miles NW of Récif Lockwood; the breakers over Récif Lockwood assist to identify the channel. Thence:

- 2 NW of Nosy Androtra (5½ miles SE) (4.223), thence: SE of a reef (6 miles N) at the NE end of which lies Nosy Mavony, the N-most of Îles Barren, covered with bushes, thence:
SE of Banc du Milieu (Toraka Afovoany) (7½ miles NNE), thence:
- 3 SE of Banc Amarella, 1 mile farther NNE, which dries and consists of coral covered, in places, with sand, and:
NW of Nosy Maroantaly (12 miles E) (4.224), thence:
NW of Récif Croissant (13 miles ENE) (4.224), thence:
- 4 SE of Surprise Shoal (13 miles NE) (4.224), to join the coastal route (4.224).

The track then leads to a position S of Banc Du Nord (23½ miles NNE) (4.227).

(Directions for coastal route continue at 4.262.

Directions for Maintirano are given at 4.248)

Directions for route north of Îles Barren (continued from 4.215)

4.227

- 1 From a position between Emile Héloïse Bank (18°12'S, 43°34'E) and a dangerous rock (4.216), 12½ miles NW, the route to Maintirano approaches leads generally E, passing (with positions from Emile Héloïse Bank):
Clear of 18·0 m (59 ft) patches (6 and 7 miles NNW), depending on draught, thence:
- 2 Clear of a 12·8 m (42 ft) shoal (4 miles NE), depending on draught, thence:
N of Vaudreuil Shoals (5½ miles ESE and 7 miles E), thence:
S of West Shoal (Toraka Andrefana) (11 miles NE), thence:
- 3 To a position SE of Banc du Nord (Toraka Avaratra) (18 miles ENE), a drying reef on the N side of the approach to Passe du Sud (4.248); Nosy Marify, a drying sandbank on the E side of the reef is always visible, except at HW.

Caution. A current, often strong, sets E towards Banc du Nord.

4.228

- 1 **Useful marks:**
Banc Bayfield (18°13'S, 43°48'E) (4.224).
Marks in Maintirano (18°04'S, 44°01'E) (4.247).
(Directions for passage N continue at 4.262.
Directions for Maintirano are given at 4.248)

Anchorage

Îles Barren

4.229

- 1 **General information.** There are several sheltered anchorages among the Îles Barren; in bad weather they are to be preferred to the roadstead off Maintirano.

4.230

- 1 **Nosy Lava.** Anchorage can be obtained 8 cables N of Nosy Lava (18°35'S, 43°56'E) (4.224) in a depth of about 10 m (33 ft), sand, with the E extremity of the island

bearing 180° and the N extremity of Nosy Andrano (4.231), 2½ miles NW, bearing 294°.

Landing is easy on Nosy Lava.

- 2 **Nosy Maroantaly.** Anchorage can be obtained NE of Nosy Maroantaly (18°25'S, 43°55'E) (4.224) in a depth of 13 m (42 ft), mud, good holding ground, with the NW extremity of the island bearing 219° and the SW extremity of Récif Croissant (4.224), 2¼ miles N, bearing 335°.
- 3 Coasters can anchor closer to Nosy Maroantaly in a depth of about 10 m (33 ft), in the position shown on the chart, W of an 8·5 m (28 ft) patch. This anchorage affords the best shelter in Îles Barren.
- 4 **Nosy Androtra.** Anchorage can be obtained E of Nosy Androtra (18°30'S, 43°48'E) (4.223) in a depth of 13 to 15 m (42 to 49 ft), sand, about 1½ cables from the shore. The island, being a relatively high sandy ridge covered with thin scrub and casuarinas, gives shelter from SW to NW winds.

Small craft

4.231

- 1 **Boat channel.** There is a channel navigable by boat between Nosy Dondosy (18°33'S, 43°51'E) covered with bushes, to the W and Nosy Manghily, 1½ miles ESE, and Nosy Andrano (18°33'S, 43°53'E), 2 miles E, to the E. A drying sandbank joins Nosy Manghily and Nosy Andrano and, on the SE part of Nosy Andrano, there are trees and huts.

Other names

4.232

- 1 Albatross Shoal (18°18'S, 43°41'E).
Antsavaky, Pointe (18°31'S, 44°07'E).
Bevoay, Banc (18°16'S, 44°01'E).
Namakia, Pointe (18°36'S, 44°09'E).

MAINTIRANO AND APPROACHES

General information

Chart 2461, plan of Maintirano and approaches

Position

4.233

- 1 The town of Maintirano (18°04'S, 44°01'E) stands on a plateau overlooking the estuary of the Namela River.

Function

4.234

- 1 Maintirano is a Prefecture for local government and a sub-district for Naval Administration. It is also a small commercial port with an open roadstead in which vessels anchor to work cargo.

Topography

4.235

- 1 Between the village of Maintirano-Maty (4.257) and Cap Bepoaka (4.263), 6½ miles S and 11½ miles N of Maintirano respectively, a high, narrow sandbank fronts the low coastline, behind which the local river estuaries form lagoons. With the exception of the immediate vicinity of Maintirano, these are surrounded by mangroves. The bank is broken in several places allowing access to the lagoons from seaward via the Passe Maintirano-Maty and the Passe de la Kinandrano, 6 and 3 miles S of Maintirano respectively, and the Passe d'Andolopanahy, 5 miles N of Maintirano. There is also a small boat channel (4.253), 5 cables SW of the town, and the mouth of the Namela River, 5 cables N.

Approach**4.236**

- 1 The roadstead of Maintirano is approached through Passe du Sud (4.248), entered 4¾ miles SW of the town. Passe du Nord (4.250), entered 6 miles NNW of the town, is convenient when approaching from the N but is only suitable for coasters.

Numerous charted dangers encumber the approaches, with heavy swell breaking over most of them.

Port Authority**4.237**

- 1 See 1.88 for general information.

Limiting conditions**Controlling depths****4.238**

- 1 Passe du Sud: 8.2 m (27 ft).
Passe du Nord: 4.6 m (15 ft) but, in 1970, less water than charted was reported in the fairway.

Mean tidal levels**4.239**

- 1 At Maintirano the mean spring range is about 3.7 m; mean neap range about 1.3 m. For further information see *Admiralty Tide Tables Volume 3*.

Local weather and sea state**4.240**

- 1 **Sea.** After generally calm mornings the wind increases from S in the afternoon, raising a sea that may restrict cargo operations and communication with the shore.
Swell from SW may make the roadstead untenable. See 4.252 for alternative anchorage.

Arrival information**Arrival time****4.241**

- 1 It is advisable to arrive at the anchorage off the town in the afternoon when the coast and landmarks are easier to see. Vessels should not make, or leave, the anchorage at night.

Outer anchorage**4.242**

- 1 There is good anchorage in a depth of 18 m (60 ft), 5 cables NE of Banc du Nord, 9 miles SW of Maintirano; it is well sheltered from SW swell.

Pilots and tugs**4.243**

- 1 Pilots and tugs are not available, the only local craft known to be available being dug-out canoes.

Local knowledge**4.244**

- 1 Local knowledge is required for the Passe du Nord.

Harbour**General layout****4.245**

- 1 The port is comprised of a roadstead, where cargoes are worked, and a small wharf, 5 cables S of Maintirano, on the E side of Namela River.

Natural conditions**4.246**

- 1 **Tidal streams** in the roadstead usually set N, attaining a rate of 1½ to 2 kn.

Discoloration of the water over the shoals off Maintirano is usually of a reddish-grey colour.

Principal marks**4.247**

- 1 **Landmarks:**
Maintirano Lighthouse (white eight-sided tower, 12 m in height) (18°04'S, 44°01'E). From Passe du Nord only the lantern can be seen above the trees.
Customs house (white with red roof), 168° distant 4.6 cables from Maintirano Light, near the wharf.
Residency, close ESE of Maintirano Light.
Flagstaff, 1¼ cables NNW of Maintirano Light.

Directions**Approach to Passe du Sud****4.248**

- 1 **Leading mark.** From a position about 8½ miles WSW of Maintirano Light (18°04'S, 44°01'E), SE of Banc du Nord (4.227) the line of bearing, 117°, of a beacon (black and white) at Sarodrano, 6½ miles S of Maintirano Light, leads to the entrance of Passe du Sud, passing (with positions from Maintirano Light):
2 About 1¾ miles SSW of Banc du Milieu (7 miles W), thence:
7½ cables SSW of Banc du Sud-Est (Toraka Atsimo Atsinanana) (5½ miles WSW) over which a heavy swell breaks, thence:
3 8¼ cables NNE of (Banc) Santon Rock (6½ miles SW), a coral head over which the sea breaks in bad weather.

Caution. Sarodrano Beacon is difficult to see, except in the afternoon.

Passe du Sud**4.249**

- 1 **Leading mark.** From NNE of Banc Santon the line of bearing 042° of the flagstaff in Maintirano leads to a deep draught anchorage (4.252); other vessels proceeding to anchorage closer to Maintirano should continue NE, holding exactly to the leading line so as to pass SE of a shoal, with a depth of 5.8 m (19 ft) over it, 3 miles SW of the flagstaff.
2 **Clearing bearing.** The line of bearing, 146°, of Sarodrano Beacon passes close NE of the shoal, above. When clear of this shoal the track leads N to the anchorage (4.252), clearing two further shoals, each with a depth of 5.8 m (19 ft) over it, close W of the track, 2½ and 3 miles WSW of the flagstaff respectively.

Passe du Nord**4.250**

- 1 **Leading mark.** From a position 6½ miles NNW of Maintirano Light the bearing 156° of the flagstaff in Maintirano leads through the N part of Passe du Nord, passing about 5 cables ENE of the inner end of Banc d'Andolopanahy, 5¾ miles NNW of the light.
2 When a large grey dune, 4½ miles N of Maintirano Light, bears 047°, off the village of Anokao, the track leads SSW between the coast and Banc Est d'Anokao, 2½ miles NW to 2½ miles WNW of the light, to anchorage (4.252).
Caution. The track through Passe du Nord passes over or close to a patch (position approximate) reported 1970 to

have a depth of 1·6 m (5 ft) over it, 3¼ miles NNW of Maintirano Light.

4.251

1 Useful marks:

- Conical sand dune (8½ miles N of Maintirano Light).
- Large white dune (5¾ miles N of Maintirano Light).

Berths

Anchorage

4.252

- 1 Anchorage may be obtained, for vessels of suitable draught, as shown on the chart, in a depth of 7 m (22 ft), good holding ground, with the flagstaff (4.247) bearing 070° distant 2·1 miles. Deeper draught vessels can anchor in depths from 9 to 11 m (30 to 36 ft), mud, about 3½ miles SW of Maintirano.
- 2 The roadstead off the town is only recommended in good weather. In bad weather, or with a heavy swell, the anchorages in Îles Barren (4.229) or off Banc du Nord (4.227) are to be preferred.

Landing places

4.253

- 1 **Namela.** A beach in front of the village of Namela, 7 cables SW of Maintirano, affords a landing place, but there is some surf and local boats should be used.
Maintirano. There is an easier landing at Maintirano, reached through one of the boat channels leading into the estuary of Namela River, but the channel is tortuous and local knowledge is necessary.

Port services

Facilities

4.254

- 1 A small hospital in Maintirano.

Supplies

4.255

- 1 Limited provisions are available.

Communications

4.256

- 1 Airfield, 1 km NE of Maintirano, with connections to the capital, Antananarivo, and Majunga.

Small craft

4.257

- 1 **Passe de Maintirano-Maty** (18°10'S, 44°02'E) may be used by boats entering the coastal lagoon. The abandoned village of Maintirano-Maty lies about 5 cables S, among trees.
Off Maintirano-Maty the outgoing tidal stream attains a rate of about ½ kn at half-tide on a falling tide, then sets SW. The in-going stream attains about the same rate a little before half-tide on a rising tide and then sets E.
- 2 **Local knowledge** is advisable since a bar which obstructs the passage changes but can be crossed at or near HW in fair weather.

Other names

4.258

- 1 Anakao, Banc Ouest (18°01'·5S, 43°57'·5E).
Namela, Banc de (18°04'·0S, 43°58'·0E).

MAINTIRANO APPROACHES TO BERAVINA

General information

Chart 3868

Routes

4.259

- 1 From seaward of Banc du Nord (18°04'S, 43°51'E) the coastal route leads initially NNE, for about 50 miles, to a position NW of Philomel Shoal, then NE for an additional 25 miles to a position NW of Beravina (17°12'S, 44°06'E).
An inshore route through Passe de Nossy Vao (17°30'S, 43°47'E) is also described.

Depths

4.260

- 1 Between Maintirano (4.233) and the village of Beravina (17°12'S, 44°06'E) (4.264), a distance of about 55 miles, the Pracel Bank coastal shelf extends for about 50 miles seawards with depths of 20 m (11 fm) or less over it and isolated dangers. The coast is bordered by a bank which extends 2 to 3 miles offshore but, off the village of Tambohorano (17°30'·0S, 43°57'·5E) it extends to about 9 miles and forms the Banc de Tambohorano from which a broken ridge of scattered shoals and reefs extends farther WNW for a distance of about 20 miles. These include the island of Nosy Vao (4.265) and Vulla Sand (4.263) which dries to 4 m (13 ft). Elsewhere there are depths of less than 2 m (6½ ft) in places.

Flow

4.261

- 1 In the coastal waters between Maintirano and Nosy Vao (4.265) there is generally a S to ESE flow with a rate of ½ to ¾ kn on a rising tide; on a falling tide there is a SW flow.
With a light S to SW breeze there is little flow while, with a stronger S breeze, there is a NW flow at a rate of ¾ kn.
- 2 In coastal waters between Nosy Vao and Beravina there is usually a SW flow with a rate of ¼ to 1 kn; the rate is greater on a rising tide. With a light NW breeze the flow sets SE and with a SE breeze it sets NW; the rate can exceed 1 kn.
See 4.209 for the currents on Pracel Bank.

Directions

(continued from 4.225, 4.226 and 4.228)

Caution

4.262

- 1 On passage between Maintirano approaches and Beravina over Pracel Bank, caution should be exercised, as advised at 4.207.
Deep draught vessels should avoid the shoals and patches with depths from 14 to 18 m (46 to 60 ft) over them, charted on the bank, while passing clear of the dangers described below.

Maintirano approaches to Philomel Shoal

4.263

- 1 **Caution.** Mariners without local knowledge should keep well clear of Banc de Tambohorano (4.260).
- 2 From seaward of Banc du Nord (4.227) or from the entrance to Passe du Nord (4.250) if leaving Maintirano by this passage, the route proceeds generally NNE to the vicinity of Philomel Shoal (17°23'S, 43°48'E), passing (with positions from Cap Bepoaka (17°52'S, 44°01'E)): ENE of West Shoal (21 miles SW), thence:

- 3 Clear of Lorho Shoal (19½ miles WSW), composed of coral, thence:
W of Cap Bepoaka (Tanjona Mandatsakora), a steep cliff in an area of lowland, it appears dark against the background but, in a good light, is clearly visible as reddish-white, thence:
- 4 Clear of Taunton Castle Shoal (23 miles WNW), thence:
W of Nosy Vao (27 miles NNW), situated on the W side of Passe de Nosy Vao (4.265) which is only recommended for coasters, thence (with positions from Nosy Vao (17°29'S, 43°46'E)):
W of a shoal (1¼ miles W to 4 miles WNW), with a least depth of 2.7 m (9 ft) over it thence:
- 5 W of a 1.5 m (5 ft) shoal (4½ miles NW), thence:
W of Vulla Sand, (6 miles NW) which dries and, consisting of white sand, can be seen in clear weather, thence:
- 6 E of Vacluse Bank (24½ miles W) (4.216), thence:
W of Philomel Shoal (10 miles NW) over which the sea breaks. This is the shoalest part of a bank extending 2½ miles E and 1½ miles NW.

Philomel Shoal to Beravina

4.264

- 1 Once clear of the dangers between Banc de Tambohorano and Philomel Shoal the route turns NE. Without local knowledge it is advisable to keep outside the coastal bank (4.260), passing (with positions from Philomel Shoal (17°23'S, 43°38'E):
Clear of a dangerous rock (6 miles N), marked by breakers, thence:
- 2 Clear of Flying Fish Shoal (12 miles NE), thence:
To a position NW of the village of Beravina (Antsify) (17°12'S, 44°06'E) which is situated on a plateau near the mouth of Ranobe River and, with its high coconut trees, makes a good landmark.
(*Directions continue at 4.274*)

Inshore passage

Passe de Nosy Vao

4.265

- 1 Coasters using Passe de Nosy Vao between Nosy Vao and the W edge of Banc de Tambohorano (4.260) should pass (with positions from Nosy Vao (17°29'S, 43°46'E)):
WNW of a 4.6 m (15 ft) patch (6 miles ESE) over which the sea breaks, thence:
ESE of Nosy Vao, which is low-lying, covered with grass and fringed by a white sandy beach, thence:
- 2 Clear of a 3.3 m (11 ft) patch (3 miles NE), the NW termination of Banc de Tambohorano, over which the sea breaks, thence:
WNW of a light-buoy (black and white) (6¼ miles ENE), moored on Banc de Tambohorano, seaward of the 5.5 m (18 ft) contour.
- 3 Vessels intending to continue on to Beravina, a farther 21 miles, should then pass:
SE of Flying Fish Shoal (13½ miles NE), with a least depth of 4 m (13 ft) over it, thence:
To a position NW of the village of Beravina (4.264).
(*Directions continue at 4.274*)

Anchorage

Coastal

4.266

- 1 There is good anchorage, with good holding ground, all along the coast between Cap Bepoaka (4.263) and Beravina (4.264) but no shelter in case of bad weather. In Baie de Koraraika (Helodrano Ankoririki) anchorage can be obtained NW of Cap Bepoaka.

Nosy Vao

4.267

- 1 Anchorage can be obtained in a depth of 15 m (48 ft) with the centre of Nosy Vao (17°29'S, 43°46'E) (4.265) bearing 192°, distant 1 mile, as shown on the chart. This anchorage affords good shelter from winds between S and W.

Landing can be made in a cove formed by a tongue of sand at the E extremity of Nosy Vao; the island is uninhabited but frequented by fishermen.

Small craft

4.268

- 1 **Tambohorano** anchorage, which is well sheltered, can be reached, with local knowledge, by small craft drawing not more than 1.8 m (6 ft), within a bar at the mouth of a river (17°31'S, 43°56'E), SW of the village of Tambohorano (4.260).

BERAVINA TO CAP SAINT ANDRÉ

General information

Chart 3868

Route

4.269

- 1 From a position seaward of the village of Beravina (17°12'S, 44°06'E) the coastal route leads generally N for about 60 miles to a position W of Vulture Rock (16°13'S, 44°20'E) from whence it continues about a further 10 miles NE to a position NW of Cap Saint André (16°12'S, 44°27'E).

Topography

4.270

- 1 Between Beravina and the mouth of Maratondro River, 28 miles NNE, the coast is low, backed by wooded ridges and fringed here and there with mangroves which indicate the mouths of rivers.

From Maratondro River to the village of Marofototra (4.276), 6 miles NE, the coast is formed by high cliffs which are notably red on the upper part and white lower down. These are the Falaises d'Ambatosarotra, though not marked on the chart.

- 2 The Sambao River flows into the sea on both sides of Nosy Voalavo (16°37'S, 44°27'E) but both mouths are obstructed by a bar, which dries in parts, and are bordered by mangroves.

S of Cap Saint André the coast is generally low, wooded and fringed with sandy beach.

Depths

4.271

- 1 Between Beravina (4.264) and Cap Saint André (16°12'S, 44°27'E), a distance of about 63 miles, the coast is bordered by a bank with depths of 11.0 m (36 ft) or less over it, which extends from 3 to 11½ miles offshore, being widest towards Cap Saint André. This is fronted by Pracel Bank (4.207), the coastal shelf, which extends as far as

Grenouille Bank (4.208), 29 miles NNW of Cap Saint André. A number of dangers are charted on the bank, as much as 38 miles from the coast, the outermost being described at 4.216.

Flow

4.272

- 1 In coastal waters between Beravina and Cap Saint André the flow is similar to that described at 4.261.

See 4.209 with regard to the currents on Pracel Bank.

Principal mark

4.273

- 1 **Landmark:**

Ambohitosy (16°47'·8S, 45°00'·4E) and Petit Ambohitosy (16°51'·5S, 45°00'·0E) are the two distinctive conical summits of one mountain, the N and higher of which is 783 m high. Both can be seen in very good visibility but neither summit is charted.

Directions

(continued from 4.264 and 4.265)

Beravina to Cap Saint André

4.274

- 1 A vessel on passage from the vicinity of Beravina (4.264) to that of Cap Saint André (4.275) over Pracel Bank (4.207) should proceed generally N, with caution as advised at 4.207. Without local knowledge it is advisable to keep outside the coastal bank (4.271) and deep draught vessels should avoid the shoals and banks with depths from 14·0 to 18·3 m (46 to 60 ft) over them, charted on Pracel Bank, while passing (with positions from Dart Rocks (16°38'S, 44°05'E)):

- 2 Clear of a shoal (30 miles SW), with a least known depth of 11·0 m (36 ft) over it, thence:

Either between a buoy (radar reflector) moored close E of Kiakala Reef (17½ miles S) and the mouth of Tsarapitsaha River (21 miles SSE), on the S side of which there is a beacon, or:

- 3 W of Mpanjaka Shoal (14 miles S), thence:
Well clear of Dart Rocks (16°38'S, 44°05'E) which are difficult to identify, thence:

Clear of Vestal Shoal (12 miles WNW), thence:
Clear of 10·1 m (33 ft) patch (12 miles NE), thence:
Clear of Flying Fish Bank (10 miles NNW), with a least depth of 14·9 m (49 ft) over it, thence:

- 4 Well clear of Chesterfield Island (20 miles NNW) and the adjacent dangerous rock, 1½ miles SW of the island, on which the sea breaks heavily. This group is visible by day from about 6 to 8 miles but gives poor radar responses and may not be detected by night. It consists of a reddish bank of sand with a chain of dark rocks on its W part and a large black rock in its centre. Thence:

- 5 W of a buoy (black and white) moored close W of Milanja Shoal (22 miles NNE). Vessels should not pass E of this bank. Thence:

To a position NW of a buoy (radar reflector) moored close W of Vulture Rock (29 miles NNE).

Charts 3868, 3871

Cap Saint André

4.275

- 1 Cap Saint André (Tanjona Vilanandro) (16°12'S, 44°27'E) consists of level sandy ground, covered with palm trees and other vegetation, terminating in a low sandy

point. A light (white truncated triangle on white pylon, black top, 15 m in height), is exhibited from the cape.

- 2 A vessel rounding Cap Saint André should do so at a distance of 12 to 15 miles, keeping outside the coastal bank as the current in this vicinity sets towards the coast and the sea breaks heavily on the bank (4.271), in depths of 9·0 m (30 ft) or less, passing (with positions from Cap Saint André):

- 3 From a position NW of a buoy (black and white) marking Vulture Rock (6½ miles W), thence:
Well to seaward of the dangerous wreck (9 miles WNW) of a landing craft containing explosives, thence:

- 4 Clear of a patch (position approximate) (20 miles NW) with a reported (1970) depth of 18·3 m (60 ft) over it, thence:

Between Cap Saint André and Grenouille Bank (29 miles NNW) (4.208).

(Directions continue at 4.283)

Anchorage

Coastal

4.276

- 1 Anchorage with good holding ground can be found nearly everywhere along the coast between Beravina and Cap Saint André but no shelter is available in the event of bad weather. One such anchorage is in a depth of 12 m (39 ft) about 5 miles off the S mouth of Sambao River (16°38'S, 44°26'E) (4.270) with the N summit of the mountain, Ambohitosy, (4.273) bearing 105°.

- 2 **Communications.** The village of Marofototra (16°43'S, 44°26'E) has road communication with Besalampy (about 5 miles E) where there is an airfield.

Chesterfield Island

4.277

- 1 Anchorage can be obtained, as indicated on the chart, in depths from 15 to 18 m (48 to 60 ft), sand and shell, moderate holding ground, about 1 mile SW of Chesterfield Island (16°19'·5S, 43°58'·0E) (4.274).

Landing is possible at HW and in very fine weather on the ESE side of the island, but surf is often very heavy.

CAP SAINT ANDRÉ TO CAP AMPARAFKA

General information

Chart 3871

Route

4.278

- 1 From a position between Cap Saint André (16°12'S, 44°27'E) and Grenouille Bank, 29 miles NNW, the coastal route leads generally ENE for about 56 miles to a position N of Cap Amparafaka (15°56'S, 45°16'E).

Topography

4.279

- 1 Between the villages of Vitamatsaha (Vilamatsa), 1½ miles E of Cap Saint André, and Belobaka, 11½ miles farther E, the coast is covered with mangroves.

From Belobaka to Behara River (Kapiloza River), 15 miles E, the coast is broken by several river estuaries which are fringed with mangroves.

- 2 Beyond Behara River to Cap Amparafaka the coast is formed by moderately high, sandy, yellow cliffs with beaches between, backed by sandhills.

Depths**4.280**

- 1 Between Cap Saint André (4.275) and Cap Amparafaka (15°56'S, 45°16'E) (4.282), a distance of about 50 miles, the coast is bordered by a bank with depths of 11.0 m (36 ft) or less over it, which is up to 6 miles wide. It is fronted by the coastal shelf with depths less than 37 m (20 fm) over it, described at 4.208.

Natural conditions**4.281**

- 1 **Flow.** In calm weather a current is said to set generally W to SSW along the coast. With a light WNW to NW breeze it has a rate of ¼ to ½ kn. With a WSW breeze the current turns towards S but is very weak. With a falling tide there is a flow to seaward.

Discoloration. See 4.210.

Principal marks**4.282**

- 1 **Landmarks:**

Ambohitrosy (16°47'·8S, 45°00'·4E) (4.273).

Cap Amparafaka (15°56'S, 45°16'E) formed by red cliffs, prominent from the W.

Directions

(continued from 4.275)

4.283

- 1 From a position between Cap Saint André (16°12'S, 44°27'E) (4.275) and Grenouille Bank, 29 miles NNW (4.208), outside the coastal bank, the route over the coastal shelf, Pracel Bank (4.207), to the vicinity of Cap Amparafaka proceeds generally ENE, passing (with positions from Cap Saint André):
- 2 NNW of a bank of sand and coral extending 2½ miles seawards from river estuaries (2 miles ENE); the sea almost always breaks on the bank and it is reported that there is no distinctive change in colour of the water over its steep-to N edge, thence:
- Clear of a wreck (18 miles NNE) with a least depth of 3 m (10 ft) over it, and:
- 3 NNW of Banc du Lynx (7¼ miles E) over which the sea only breaks at intervals, when it is covered,

and of which no indication is given by change in colour of the water, thence:

NNW of a coral patch (9½ miles E of Cap Saint André Light) which dries 0.9 m (3 ft), thence:

- 4 Clear of a 14.0 m (46 ft) shoal (12 miles NW of Cap Amparafaka), thence:

SSE of Emile Bank, 13 miles NNW of Cap Amparafaka, thence:

To a position NNW of Cap Amparafaka.

Useful marks**4.284**

- 1 Vitamatsaha (16°11'·5S, 44°29'·3E), a village 1½ miles E of Cap Saint André Light, near which are two low white sand dunes surmounted by clumps of trees, on the SW side of Vilamatsa River (not charted). This village, and that of Belobaka, 11 miles E, on the S side of an unmarked river mouth, are the most easily identifiable features on this coast.
- 2 Colline de l'Arbre Jaune (16°15'S, 45°04'E), a hillock 100 m (321 ft) high, on which is a yellow tree, 22 miles SSW of Cap Amparafaka.
- 3 Dunes Mamelles, 10 miles WSW of Cap Amparafaka, some dark yellow sandhills which are liable to be mistaken for Cap Amparafaka (4.282) when approached from the W as the mouth of Marokafiry River, 1½ miles NE of Dunes Mamelles, appears, when first sighted, to be wider than charted.

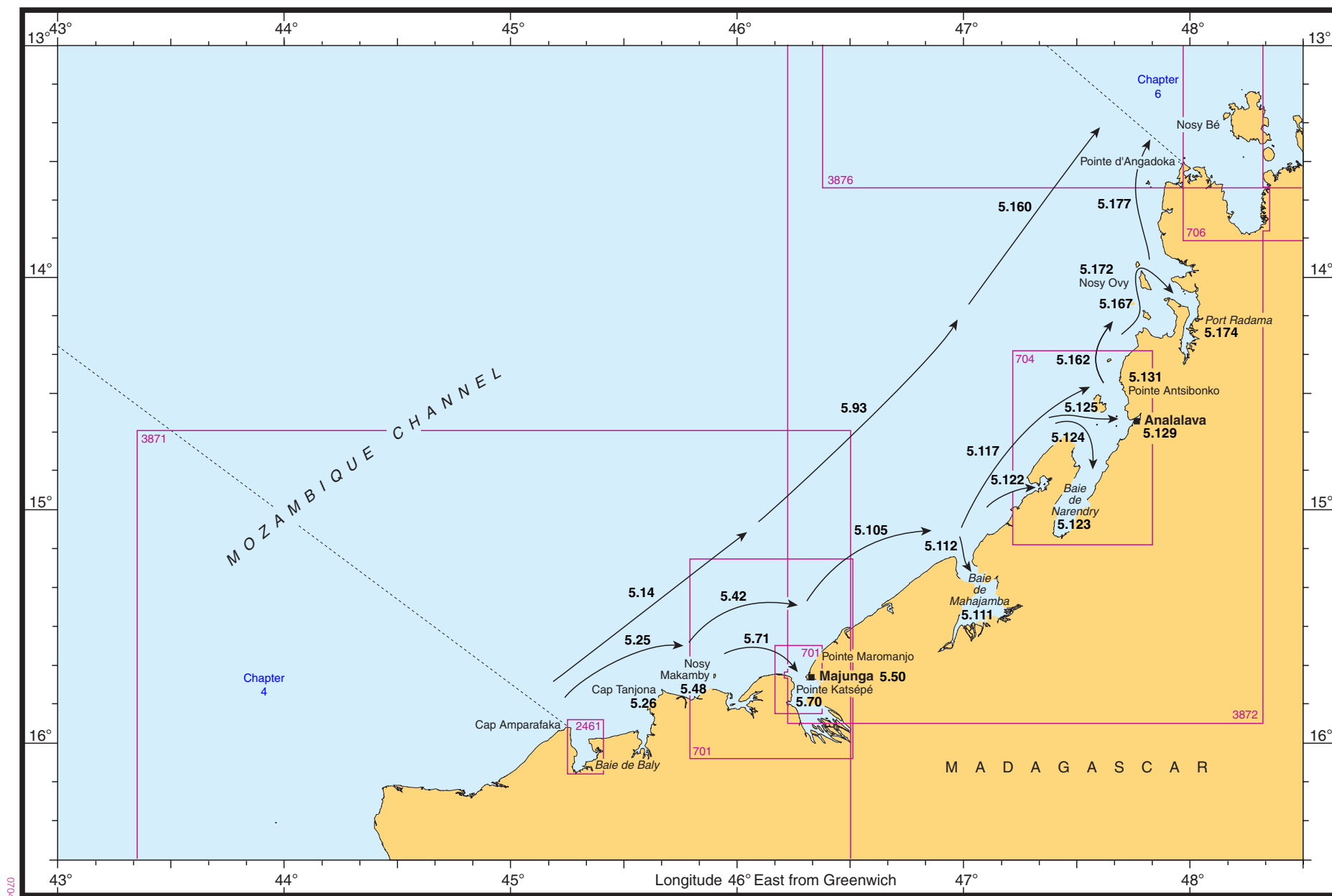
(Directions continue at 5.31)

Anchorage**4.285**

- 1 Vessels can anchor anywhere along the coast between Cap Saint André and Cap Amparafaka, outside the 9.1 m (30 ft) fm; there is good holding ground of sand and mud.

Small craft**4.286**

- 1 Vilamatsa River (entrance) (16°11'S, 44°29'E) and Belobaka River, 10 miles E, are used by local craft at HW.



CHAPTER 5

MADAGASCAR - CAP AMPARAFKA TO POINTE D'ANGADOKA

GENERAL INFORMATION

Charts 3871, 3872

Scope of the chapter**5.1**

- 1 This chapter covers the coastal and offshore waters of the NW coast of Madagascar between Cap Amparafaka (15°56'S, 45°16'E) and Pointe d'Angadoka (13°30'S, 47°58'E), a distance of about 220 miles. It includes a description of the offshore, coastal and inshore routes in the area. Also described is Majunga (Mahajanga) (15°43'S, 46°19'E) (5.50), the largest port on the NW coast of Madagascar, and the minor port of Analalava (14°38'S, 47°45'E) (5.129) together with other anchorages, bays and passages through the coastal reef along the coast.

- 2 It is divided into the following sections:

Cap Amparafaka to Pointe Maromanjo (5.13).

Pointe Maromanjo to Pointe Antsibonko (5.91).

Pointe Antsibonko to Pointe d'Angadoka (5.154).

Topography**5.2**

- 1 The entire coast is fronted by a coastal shelf with depths less than 37 m (20 fm) over it, this being a continuation of the shelf described at 4.207. On the edge of the shelf, roughly parallel to, and at distances from 5 to 20 miles off the coast, there is a steep-to coral reef mostly covered with sand and seaweed. The shallower parts of the reef have depths of 11.0 m (36 ft) or less over them and, lying in a chain, they form a barrier with some deep passages through it, beyond which the depth increases rapidly beyond 200 m (110 fm).
- 2 In the vicinity of the reef the water is sufficiently clear for the bottom to be seen in depths of 29 m (16 fm). The outer edge of the shelf, where depths increase rapidly to seaward, is distinctly indicated by a change in the colour of the water.

On Thétis Bank (15°37'S, 45°42'E) (5.17) the coral appears to be alive and the bottom very irregular; elsewhere the bottom is less irregular, the coral being dead.

Positions**5.3**

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions obtained from some charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation, and are advised to use alternative methods of position determination, especially when closing the shore or navigating near dangers. See notes on charts.
- 2 **Charted positions.** Positions obtained from charts in this chapter differ by varying amounts, and therefore positions should be transferred by bearing and distance from common charted objects and not by latitude and longitude. See notes on charts.

Navigational information**5.4**

- 1 Because of insufficient information it is not possible to ensure that Admiralty Charts covering the waters of Madagascar are up to date for new dangers or changes to navigational aids. Mariners are advised to exercise particular caution when navigating in these waters. See also 1.7 for information on navigational marks.

Offshore fishing**5.5**

- 1 Fishing with traps, handlines, gillnets, longlines, purse seine nets and by trolling and trawling is carried out off the coast; see 1.10 for further information.

Piracy**5.6**

- 1 An incident of piracy has been reported off the NW coast of Madagascar. For possible preventative measures see 1.58.

Weather**5.7**

- 1 Off this part of the coast, NW winds prevail from November to April when the weather is hot and wet. The South-east Trade Wind (1.198) blows for the rest of the year, when the weather is cooler and drier, but the coast is sheltered by high land from the full force of this wind so that land and sea breezes (1.203) are more significant. However, the land breeze, although possibly strengthened by SE winds, does not raise a sea in the anchorages.
- 2 Thunderstorms, which may be intense with violent squalls, are common in this area particularly from December to March. They normally occur in the afternoon and last for some time, during which visibility may be severely restricted. See 1.207 and 1.211.

Flow**5.8**

- 1 Over the coastal shelf the flow is similar to that W of Cap Amparafaka, see 4.209. In calm conditions the current is generally W to SSW. With a light WNW to NW breeze the rate is from 0.2 to 0.6 kn. With a breeze from the WSW the current shifts to the S and the rate drops to almost nil. In this region the current direction often varies with an ebb tide.

Regulations**5.9**

- 1 See 1.40 to 1.42 for regulations concerning pollution of the sea, prohibited fishing areas and health requirements on entry.

Landfall

5.10

- 1 Landfall and identification of navigational marks on this part of the coast of Madagascar may be affected by the glare of the sun or reduced visibility during thunderstorms in the latter part of the day.

The reef on the edge of the coastal bank is steep-to and should not be approached closely from seaward unless certain of the vessel's position.

- 2 Soundings over the reef have been taken primarily to determine the best passages through it but some of the surveys are old and incomplete. Due to the irregular nature of the bottom uncharted dangers may exist and, over the banks, there may be less water than charted. In particular, the shoals and channels surrounding the area W of Îles Radama (14°03'S, 47°49'E) (5.168) should be approached with caution.
- 3 Passage through the reef should only be made through

the recommended channels described in the text.

The coastal shelf within the reef is navigable throughout its length although, without local knowledge, it may be advisable to proceed offshore for passage N of Analalava (14°38'S, 47°45'E) (5.129).

Anchorage

5.11

- 1 Anchorage is generally good on the coastal shelf off any part of the coast as far N as Pointe Maromanjo (14°40'S, 47°28'E) (5.120), the bottom being soft adhesive mud and the depths fairly regular and not too great.

Rescue

5.12

- 1 See 1.54 and *Admiralty List of Radio Signals Volume 1(1)* for details of a reporting system designed to provide information for SAR operations.

CAP AMPARAFAKA TO POINTE MAROMANJO

GENERAL INFORMATION

Chart 3871

Routes

5.13

- 1 In this section are described the offshore and coastal routes between Cap Amparafaka (15°56'S, 45°16'E) and Pointe Maromanjo (15°30'S, 46°29'E), about 74 miles ENE. Also included are descriptions of the passes through the reef on the seaward edge of the coastal shelf. They are arranged as follows:
- 2 Offshore passage (5.14).
Cap Amparafaka to Nosy Makamby (5.25).
Nosy Makamby to Pointe Maromanjo (5.42).
Majunga and Baie de Bombetoke (5.50).

OFFSHORE PASSAGE

General information

Chart 3871

Route

5.14

- 1 From a position NNW of Cap Amparafaka (15°56'S, 45°16'E) the route leads ENE through open water, with no known detached dangers, to a position off Pointe Maromanjo, about 70 miles ENE.

Depths

5.15

- 1 Charted depths are more than 18.3 m (60 ft) in the channels through the reef passes, the narrowest being Makamby Pass with a least width of 1¼ miles.

Principal marks

5.16

- 1 **Landmark:**
Nosy Makamby (15°43'S, 45°54'E) (5.27).
Major light:
Katsépé Light (15°43'S, 46°13'E) (5.70).

Directions for offshore passage

(continued from 4.218)

5.17

- 1 From a position NNW of Cap Amparafaka (15°56'S, 45°16'E) the track leads ENE to Pointe Maromanjo, passing (with positions from Nosy Makamby (15°43'S, 45°54'E)):
NNW of Emile Bank (42 miles W), thence:
NNW of Barker Bank (27 miles W), which is readily identifiable by day due to bright green water with large yellow patches, most noticeable near mid-day, thence:
- 2 NNW of Thétis Bank (13½ miles NW), thence:
NNW of Turquoise Bank (14 miles NNE), thence:
NNW of an isolated shoal patch (19¼ miles NNE) with a depth of 15.9 m (52 ft) over it, thence:
NNW of Euryalus Bank (25½ miles NE), thence:
- 3 To a position NNW of Mariner Bank (15°23'S, 46°21'E), 10 miles NW of Pointe Maromanjo.

Useful marks

5.18

- 1 Ambohitrosy (16°47'·8S, 45°00'·4E) (4.273) (not charted).
Colline de l'Arbre Jaune (16°15'S, 45°04'E) (4.284).
Cap Tanjona (15°46'S, 45°40'E) (5.27).
Massif de Katsépé (5.70), the summit, 5 cables S of Katsépé Lighthouse (15°43'S, 46°13'E).
- 2 Ampajony cliffs (15°37'·6S, 46°21'·5E) (5.70).
Sarodrano (15°30'S, 46°38'E) (Chart 3872) (5.95).
(Directions for offshore passage continue at 5.97)

Side channels

Charts 3871, 701

Pass south-west of Barker Bank

5.19

- 1 **Caution.** This passage, SW of Barker Bank, is 1½ miles wide but navigation is made difficult by the lack of good marks.
Leading mark. From seaward the line of bearing 149°, of Sommet Boteler (15°59'S, 45°32'E) leads SSE through the passage, passing:
- 2 WSW of Barker Bank (5.18), thence:
ENE of a chain of shoals with a least depth of 4.3 m (14 ft) over them, about 13 miles NW of Sommet

Boteler. The position of the SE shoal is approximate.

Useful marks:

Ambohitrosy (16°47'·8S, 45°00'·4E) (not charted). See (4.273).

Colline de l'Arbre Jaune (16°15'S, 45°04'E) (4.284).

Cap Tanjona (15°46'·4S, 45°40'E) (5.26).

Tanjona Pass

5.20

- 1 **Leading mark.** From seaward the line of bearing 204° of the NW extremity of Cap Tanjona (15°46'·4S, 45°40'E) leads SSW through the centre of Tanjona Pass, 11 miles NNE, which is 3 miles wide and lies between Thétis Bank (5.17), on the W side, and another bank with a least depth of 5·5 m (18 ft) over it to the E.

Makamby Pass

5.21

- 1 **Leading mark.** From seaward the line of bearing 195° of the summit of Nosy Makamby (15°43'S, 45°54'E) (5.28) leads SSW through Makamby Pass, 11 miles N, which is 1 mile wide and lies between Turquoise Bank (5.17) on the E side and another bank with a least depth of 5·2 m (17 ft) over it to the W.
- 2 **Useful marks:**
 - Cap Tanjona (5.26), 14 miles WSW of Nosy Makamby.
 - Massif de Katsépé (5.70) with Katsépé Lighthouse (5.70) on the N slope.

Katsépé Pass

5.22

- 1 **Leading mark:** The line of bearing 163° of Massif de Katsépé summit (15°43'·4S, 45°13'·0E) (5.70) leads SSE through Katsépé Pass (15°25'S, 46°07'E) which lies between a shoal, 2 miles WSW of Euryalus Bank (5.17), with a least charted depth of 7 m (23 ft) over it, and another shoal, 6 miles NE of Turquoise Bank (5.18), with a least charted depth of 4 m (13 ft) over it, the pass being 2 miles wide.
- 2 **Useful marks:**
 - Marks between Massif de Katsépé and Ampajony cliffs, 9½ miles NE, listed at 5.18.

Ampajony Pass

5.23

- 1 **Leading mark.** From seaward the line of bearing 182° of Massif de Katsépé summit (15°43'·4S, 45°13'·0E) (5.70) leads through Ampajony Pass (15°23'S, 46°15'E) between Euryalus Bank on the W side, and Mariner Bank to the E. The track passes W of Banc Milieu which lies in the middle of the pass with a least charted depth of 9·1 m (30 ft) over it. A swell occurs on this bank which should always be avoided. An isolated shoal patch with a depth of 3·7 m (12 ft) over it, the position of which is doubtful, lies close W of Mariner Bank.
- 2 It is reported that this pass has been navigated by day and at night on a visual bearing and radar range of Katsépé Light (5.70).

5.24

- 1 **Useful marks:**
 - Marks between Massif de Katsépé and Ampajony cliffs, 9½ miles NE, listed at 5.18. Both Massif de Katsépé and Ampajony cliffs are visible from outside Ampajony Pass, appearing as two islands

separated by a wide opening; they may be identified by their red colour, the former being especially easy to identify.

(Directions for Majunga and Baie de Bombetoko are given at 5.71)

CAP AMPARAFAKA TO NOSY MAKAMBY

General information

Chart 3871

Route

5.25

- 1 From a position N of Cap Amparafaka (15°56'S, 45°16'E) the coastal track leads ENE for about 39 miles to a position NNW of Nosy Makamby (15°43'S, 45°54'E).

Topography

5.26

- 1 The coast between the entrances to Baie de Baly (15°57'S, 45°19'E) and Baie de Maroambitsy, 17 miles E, is low and covered in brushwood but rises to Sommet Boteler on the W side of the latter bay. A reef fringes the coast from Pointe de Sada, the E entrance to Baie de Baly, for about 4 miles E, consisting of coral flats. Nearly all the coral heads dry but it cannot always be distinguished by discoloured water, nor does the sea always break over it.
- 2 Farther E, the entrance to Baie de Maroambitsy is almost blocked by a shallow coral reef which extends 5½ miles offshore. The reef is steep-to at its W end and is not marked by any change in colour of the water.
- 3 Cap Tanjona (15°46'S, 45°40'E), 6 miles NE of the entrance to Baie de Maroambitsy, is fringed with white rocks, is scored horizontally with white streaks and rises to a flat summit covered with trees. From the summit, at the extremity of the cape, the land slopes gently S at first then more steeply. The land within the cape is a plateau with a cleft in it so that, from a distance, it resembles two islands close together, the N being the higher. A chain of small hills forms the S end of the cape.

5.27

- 1 E from Cap Tanjona, the coast falls gradually to the mouth of the Namakia River, 6¾ miles ESE, this being the W arm of the Mahavary River. From this position to Nosy Makamby the coast is broken by the numerous mouths of the Mahavary River, bordered by mangroves. A delta of drying alluvial mud banks has formed, extending more than 4 miles from the shore to Nosy Makamby and beyond.
- 2 Nosy Makamby (15°43'S, 45°54'E) consists of a long plateau, terminating in a gentle slope to the N while being steep-sided to the E and W. In the N part of the island there is a deep V-shaped gap. From a distance the island appears reddish in colour.

Depths

5.28

- 1 From Cap Amparafaka to Nosy Makamby the coastal shelf extends seawards for 10 to 15 miles in a gentle slope. Depths in the navigable channel, which has a minimum width of 2 miles, vary considerably from about 33 m (18 fm) to a charted minimum of 11·9 m (39 ft).

Natural conditions

5.29

- 1 Discolouration of the sea occurs between Cap Amparafaka and Cap Tanjona. See 4.210.

Principal marks**5.30****1 Landmarks:**

Cap Tanjona (15°46'S, 45°40'E) (5.27).

Nosy Makamby (15°43'S, 45°54'E) (5.28).

Major light:

Katsépé Light (15°43'S, 46°13'E) (5.70).

Directions

(continued from 4.284)

5.31

- 1 From a position NNW of Cap Amparafaka (15°56'S, 45°16'E) to the vicinity of Nosy Makamby, a distance of about 39 miles, the track leads generally ENE, keeping in the deepest water and passing (with positions from Cap Amparafaka):

SSE of a chain of shoals (11½ miles NE), the S of which the position is approximate, thence:

- 2 SSW of Barker Bank (16 miles NE), thence:

NNW of Cap Tanjona (25 miles ENE), thence:

NNW of a light-buoy (non-IALA) (32 miles ENE),

moored in the approach to Namakia River, and:

SSE of Thétis Bank (31 miles NE), thence:

- 3 NNW of a 5.5 m (18 ft) shoal, 5¼ miles WNW of Nosy Makamby, thence:

To a position NNW of Nosy Makamby.

5.32**1 Useful marks:**

Ambohitrosy (16°47'·8S, 45°00'·4E) (4.273) (not charted).

Colline de l'Arbre Jaune (16°15'S, 45°04'E) (4.284).

Pointe de Sada (15°59'S, 45°21'E) (5.34).

(Directions continue at 5.46)

Baie de Baly

Chart 2461, plan Baie de Baly

General information**5.33**

- 1 **Description.** Baie de Baly (16°02'S, 45°19'E) is entered between Cap Amparafaka (15°56'S, 45°16'E) and Pointe de Sada, 5½ miles SE. The shores and head of the bay are heavily encumbered by reefs and extensive shoals with a narrow deep water area in its central part. A number of villages lie on its shores, the largest of which is Baly, on the W side of the bay, 8 miles S of Cap Amparafaka. The village of Taranta lies 6½ miles E.

- 2 Tidal streams in the bay attain a rate of 2 kn at spring tides; in the entrance the in-going stream sets E.

Winds blow from W or NW during the day in the dry season.

5.34

- 1 **Topography.** Pointe de Sada on the E side of the entrance to the bay is dominated by 2 hills which have white cliffs on the W side. The water surrounding the point is very shallow and a narrow peninsula, on the S side of the headland, curves round to the SE to form a shallow lagoon surrounded by mangroves SE of the point. The village of Marotia stands on the end of this peninsula.

- 2 The shores of the bay are generally covered with vegetation except, notably, on the E side of the head of the bay where there is a stretch of low red cliffs, crowned with a group of trees, between the villages of Ampampamena and Soalala, 2 miles SW. The coast on the W side of the bay rises gradually from Cap Amparafaka (4.282).

Directions**5.35**

- 1 **Leading marks.** The line of bearing 209° of a wooded hill 68 m (218 ft) high, 7 miles S of Cap Amparafaka (4.282), leads SSW through the entrance, passing:

- 2 ESE of Banc du Vigilant, which borders Cap Amparafaka, thence:

WNW of a shoal with a least depth of 5.2 m (17 ft) over it, 1¼ miles NW of Pointe de Sada, thence:

WNW of a shoal with a least depth of 4.3 m (14 ft) over it, 2 miles W of Pointe de Sada.

- 3 From a position on the above bearing, about 3 miles W of Pointe de Sada, the bearing 161° of a conspicuous tree leads through the fairway to anchorage in the bay, passing WSW of an 8.8 m (29 ft) patch, 2½ miles WSW of Pointe de Sada.

Useful mark:

Flagstaff (16°04'·6S, 45°16'·5E) at Baly (5.33).

Anchorage**5.36**

- 1 Sheltered anchorage may be obtained in the middle of the fairway, about 3 miles SW of Pointe de Sada, in depths of 9 to 13 m (30 to 43 ft), stiff mud. Small craft can obtain anchorage 1¼ miles SE of Pointe Tranofotaka (16°04'S, 45°17'E).

Landing places**5.37**

- 1 Landing can only be effected at Baly around HW or, at other times, near a rocky projection SSE of the village. Soalala, 3¼ miles E of Baly, is the best landing place.

Landing can be effected at HW at a cattle loading point on the S bank of the Anomavo River, entered S of Soalala.

Services**5.38**

- 1 **Supplies** of meat and fish can be obtained at Baly, Soalala and Taranta.

Anchorage

Chart 3871

Baie de Maroambitsy**5.39**

- 1 **Description.** Baie de Maroambitsy (15°57'S, 45°35'E) affords anchorage for small craft.

Local knowledge is essential. The bay is entered from WNW through a narrow tortuous unmarked channel, across a bar which should only be crossed at HW.

- 2 **Anchorage** can be obtained, about 3¼ miles E of Sommet Boteler (15°59'S, 45°32'E) (5.26), in a well-sheltered trench in the middle of the bay in depths from 10 to 16 m (33 to 52 ft)

Namakia River approaches**5.40**

- 1 Anchorage can be obtained about 6½ miles NE of Cap Tanjona (15°46'S, 45°40'E), close N of a light-buoy (non IALA) (15°45'·1S, 45°46'·5E) moored in the approach to Namakia River

Small craft**Namakia River****5.41**

- 1 Local knowledge is essential for transit of the Namakia River (15°49'S, 45°47'E), as the channel is not marked. The river affords access for towed barges to a sugar refinery 4 miles inland.

NOSY MAKAMBY TO POINTE MAROMANJO

General information

Chart 701

Route

5.42

- 1 From a position NNW of Nosy Makamby (15°43'S, 45°54'E) the coastal route leads about 35 miles ENE to a position NNW of Pointe Maromanjo (15°30'S, 46°29'E).

Topography

5.43

- 1 The coast SW of Nosy Makamby is low, being formed by the numerous mouths of the Mahavary River (5.27) and partially bordered by mangroves. From the W side of Baie Boina (15°49'S, 45°59'E) (5.49) the land rises to low, wooded hills E of the bay.

Depths

5.44

- 1 Depths in this fairway are greater than 11.0 m (36 ft).

Principal marks

5.45

- 1 **Landmarks:**
Katsépé Lighthouse (15°43'S, 46°13'E) (5.70).
Pointe de Katsépé (5.70), 1 mile ESE of Katsépé Light.
Massif de Katsépé, 5 cables S of Katsépé Light.
- 2 Radio mast (15°43'S, 46°18'E).
Ampajony cliffs (15°37'S, 46°21'E) (5.70).

Major light:

Katsépé Light (5.70).

Directions

(continued from 5.32)

5.46

- 1 From a position NNW of Nosy Makamby (15°43'S, 45°54'E) the track leads generally ENE to Pointe Maromanjo, a distance of about 35 miles, passing (with positions from Katsépé Light (15°43'S, 46°13'E)):
SSE of Turquoise Bank (18 miles NW), thence:
NNW of the NW limit of Banc du Cavalier (8 miles NW) (5.52), thence:
SSE of Euryalus Bank (19 miles NNW), and:
NNW of Banc du Narcissus (7 miles NNE) (5.52), thence:
SSE of Banc Milieu (19 miles N), thence:
SSE of an obstruction (20¾ miles NE), the existence of which is doubtful.
- 3 Thence the track leads to a position NNW of Pointe Maromanjo (15°30'S, 46°29'E).

5.47

- 1 **Useful mark:**
Amborovy aero light (15°40'S, 46°21'E).
(Directions for coastal passage continue at 5.109)

Anchorage

Nosy Makamby

5.48

- 1 Good anchorage can be obtained in a depth of 10 m (33 ft), mud, with the N extremity of Nosy Makamby (15°42'3S, 45°54'3E) bearing 309° distant 1½ miles; there is good shelter here from SW winds.

Baie Boina

5.49

- 1 **Description.** Baie Boina (15°49'S, 45°59'E) affords anchorage for small craft but the entrance to the bay is encumbered by reefs and shoals.

Local knowledge is essential.

Directions for entry. A narrow unmarked channel, with a least charted depth of 4.9 m (16 ft), leads generally S through the shoals to the bay. It is difficult to follow due to muddy water.

- 2 **Useful mark:**

Prominent clump of trees on N end of Nosy Antseranandava (15°47'5S, 45°57'5E) which is only visible from the inner part of the bay.

MAJUNGA AND BAIE DE BOMBETOKE

General information

Chart 701 and plan of Baie de Bombetoke

Position

5.50

- 1 Majunga (Mahajanga) (15°43'S, 46°19'E) stands on the E side of Baie de Bombetoke (15°45'S, 45°16'E), close within the entrance at Pointe Anorombato (15°42'9S, 46°18'0E).

Function

5.51

- 1 Majunga is a commercial port, including among its activities the transhipment of cargoes for coastal trading ports on the W coast of Madagascar, the principal cargoes being rice, salt and containers. It is also a fishing port and a port of entry.

The town is the seat of administration for Mahajanga province and has a population of 100 807 (1993).

Topography

5.52

- 1 On the W side of the approaches a high, reddish-coloured cliff forms Pointe de Katsépé (15°43'S, 46°14'E), which is the E extremity of the Massif de Katsépé.
- 2 Here, the coastal reef narrows to within 3 cables of the shore while, from the point, the Banc du Cavalier extends NW for approximately 10 miles with depths of 5.5 m to 10 m (18 to 32 ft) over it; there are, however, two patches of coral heads with less than 2 m and 5 m (6½ ft and 16 ft) 5 miles and 9 miles NW of the point respectively.
- 3 Banc du Narcissus, 3 miles N of Pointe de Katsépé, is separated from Banc du Cavalier by a channel. The bank virtually spans the entrance to the bay and has depths of less than 4 m (13 ft) except in the SW part where there are coral heads with a depth of 2.7 m (9 ft) over them.
- 4 The coast in the NE approach, between Pointe Maromanjo (15°30'S, 46°29'E) (5.46) and Pointe Anorombato, 16 miles SW, consists of comparatively low cliffs rising from a sandy beach. The cliffs are mostly wooded and, where visible, are of a reddish colour.
- 5 Closer to the entrance, the coast rises to a plateau, Colline de Rova (not charted) on which the town of Majunga is built. The town extends across the S slope to Pointe de Sable (15°43'6S, 46°18'3E), 7½ cables SSE of Pointe Anorombato.

Marine exploitation

5.53

- 1 It was reported (1998) that gas and oil exploration would shortly be taking place in the waters off Majunga.

Approach and entry**5.54**

- 1 There are three channels to Majunga, as follows:
Chenal du Nord-Ouest (entrance 15°36'S, 46°11'E) (5.71), which is the principal channel, suitable for ocean-going vessels.
Chenal du Nord-Est (entrance 15°30'S, 46°22'E) (5.74), which can be used by coasters approaching from the NE.
- 2 Chenal de l'Ouest (entrance 15°40'S, 46°06'E) (5.75), used by coasters approaching from the W.
The harbour is entered through a channel leading from the SE end of Chenal du Nord-Ouest.

Traffic**5.55**

- 1 **Traffic.** In 2003, 144 vessels with a total dwt of 790 785 used the port.

Port Authority**5.56**

- 1 Majunga Port Authority, Maritime District of Mahajanga, PO Box 36, Mahajanga, Madagascar.

Limiting conditions**Depths****5.57**

- 1 Least charted depths:
Chenal du Nord-Ouest: 8.5 m (28 ft) over several shoals in the S part of the channel.
Chenal du Nord-Est: 10.1 m (33 ft), with Pointe Anorombato bearing 347° distant 2½ miles but, at this position, the channel is narrow with shoal depths of 4.9 m (16 ft) close-to on the landward side.
- 2 Chenal de l'Ouest: 7 m (23 ft) bearing 300° distant 5½ miles from Katsépé Light, 6.6 m (21½ ft) (not charted) in position 305° distant 3½ miles from Katsépé Light (5.70).
- 3 **Caution.** It was reported (1977) that Banc du Narcissus extends farther W and S than charted, reducing depths to 3.7 m (12 ft) in the vicinity of the 11 m (6 fm) contour, as indicated on the plan. In addition, uncharted deposits of mud have been reported in certain parts of the channel.
- 4 It was reported (1991) that the harbour is subject to severe shoaling.

Deepest and longest berths**5.58**

- 1 Deepest: Quai Orsini (5.78).
Longest: Quai Barriquand (5.78).

Mean tidal levels**5.59**

- 1 At Majunga the mean spring range is about 3.8 m; mean neap range about 1.2 m. For further information see *Admiralty Tide Tables Volume 3*.

Maximum size of vessel handled**5.60**

- 1 A vessel of 20 000 dwt and maximum draught 9.5 m (31 ft).

Arrival information**Port operations****5.61**

- 1 Vessels can arrive and sail during both day and night but, due to the difficulty of identifying the leading light structures for the anchorage, the best time is late in the day or when the leading lights are exhibited, bearing in mind their unreliability.
- 2 Cargoes of vessels larger than coasters are worked by lighters in the anchorage or at moorings.
Departing from the anchorage, it is better to sail after the in-going stream has made, as there is little room for turning a vessel.

Signal station is situated on Pointe de Sable (5.52).

Anchorage**5.62**

- 1 Anchorage can be obtained in an area about 4 cables SW of Pointe Sable, as indicated on the plan, in depths of about 8.8 m (29 ft). There are greater depths farther SW.
Anchorage is prohibited on the approach leading lines.

Pilots**5.63**

- 1 Pilotage is reported as being optional for the anchorages. If requested at least 12 hours prior arrival the Harbour Master will board 3½ miles NW of Katsépé Light and pilot a vessel to anchorage, otherwise the anchorage will be indicated by radio.

Tugs**5.64**

- 1 Small tugs are available.

Quarantine**5.65**

- 1 Vessels arriving from another port in Madagascar are granted free pratique. Other vessels are boarded by the Port Health Officer, between sunrise and sunset only, and such vessels may not proceed beyond Majunga, into Baie de Bombetoke, until pratique has been granted.

Harbour**General layout****5.66**

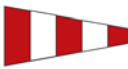
- 1 The harbour consists of a sheltered open roadstead, SW of the town, with a number of anchorage berths used by ocean-going vessels for working the main volume of import and export cargoes. The area lies at the SE end of the entrance channel.
- 2 The old harbour, which fronts the town, is protected on the W side by Port Sable. It contains a number of quays with shallow depths suitable for small vessels in the coastal trade.

- 3 In the NW part of the harbour a partially curved mole extends 620 m W from the shore which, together with Pointe Anorombato, close S, form Port Schneider. The inner part of this small harbour is shallow and used by fishing boats. Close S of the head of the mole there is a mooring berth for larger vessels, normally used by tankers.

Traffic signals

5.67

- 1 **Traffic signals** are shown at the signal station, as follows:

Day Signal	Night Signal	Meaning
		Roadstead closed to launches and boats.
		Roadstead closed to tugs, lighters and boats.
		Small craft may not leave harbour.

Traffic signals (5.67)

Storm signals

5.68

- 1 Signals indicating the locality threatened by a cyclone and international storm signals are shown at the signal station, see 1.48.

Natural conditions

5.69

- 1 **Tidal streams.** Off the entrance to the Baie de Bombetoke the out-going stream sets NW at a rate of about ½ kn in the dry season and up to 2 kn in the rainy season, from November to April. The in-going stream sets E at rates from ¼ to 1 kn.
- 2 Tidal streams are also strong in the anchorage off Majunga. See detailed information on the plan. The outgoing stream from Rivière d'Amparihingidro, 2 miles E of Pointe de Sable, meeting the out-going stream from the inner part of Baie de Bombetoke, off Pointe de Sable, sometimes causes vessels to swing at right angles to one another. The streams also change direction very rapidly so that a vessel at anchor can swing through 180° in less than ten minutes. The closer to the shore that a vessel can anchor, the less the tidal streams will be felt.
- 3 Off the quays at Majunga the streams set alternately E and W and may attain rates of 2 kn at spring tides.
- Discoloration of the sea.** During the out-going stream, it is not unusual to see numerous red or discoloured patches of water in the approach channels, whilst the water over the shoals and banks in the neighbourhood appears much clearer. This is caused by muddy water from the rivers flowing into the sea.
- 4 **Local weather.** See 5.7. During the season of NW winds these are reinforced by afternoon sea breezes making lighterage difficult in the anchorage. Mornings are usually calm, although SE winds may be augmented by land breezes.
- In the rainy season, swell from the WNW with an average height of about 0.5 m affects the anchorage for a few weeks.

Principal marks

5.70

Landmarks:

- 1 Katsépé Lighthouse (white tower, black band and cupola, 40 m in height) (15°43'S, 46°13'E), standing on the N slope of Massif de Katsépé. Massif de Katsépé with its summit 5 cables S of Katsépé Light; this is the highest land in the vicinity of the entrance to Baie de Bombetoke.
- 2 Pointe de Katsépé, 1 mile ESE of Katsépé Light, the E extremity of Massif de Katsépé. On the seaward face of the point is a conspicuous white patch resembling a sail.
- Massif de Kandrary, 4½ miles S of Katsépé Light, which has a well-defined summit with wooded slopes.
- 3 Radio mast on Pointe Anorombato (15°42'·9S, 46°18'·2E). The mast may be seen at a distance of about 20 miles by day.
- Ampajony cliffs, 6 miles NNE of Pointe Anorombato, which can easily be distinguished from other red cliffs by adjacent white cliffs, 1 mile SW.

Major light:

Katsépé Light (15°43'S, 46°13'E)).

Directions for entering harbour

Chenal de Nord-Ouest

5.71

- 1 **Main channel.** From a position (15°31'S, 46°08'E), N of Banc du Cavelier, the line of bearing 152° of Pointe Antanandava (15°50'·1S, 46°18'·7E), open E of Pointe de Katsépé, 8½ miles NNW, leads 3 miles SSE into Chenal du Nord-Ouest to a position 9 miles NNW of Katsépé Light (15°43'S, 46°13'E).
- 2 Thence, on the line of bearing 161° of the light, the track leads a farther 5½ miles SSE through the channel to a position 3½ miles from the light, passing close W of the SW limit of Banc du Narcissus, 4½ miles NNW of Katsépé Light.
- 3 Thence, from this position the line of bearing 120° of Pointe Anorombato Light (white metal tower, black band and lantern, 11 m in height) (15°42'·9S, 46°18'·0E) by night in the white sector (116°-122°) of the light, leads 3½ miles ESE through the channel to the alignment of leading lights.

5.72

Nosy Beza Leading Lights:

- 1 Front light (truncated triangle on white metal framework tower, black top, 18 m in height) (15°46'S, 46°20'E) exhibited from Nosy Beza, a low wooded islet.
- 2 Rear light (white tower, 19 m in height) (3 miles SE of front light).
- From a position 2½ miles NE of Katsépé Light SW of the S end of Banc du Narcissus, the alignment (132½°) of these lights leads 4 miles SE to the anchorage and harbour, passing (with positions from Pointe Anorombato Light):
- 3 SW of Digue Schneider (3¾ cables NW) (5.77), from the head of which a light (white 6-sided tower, red lantern, 5 m in height) is exhibited, thence:
- NE of a shallow bank (1 mile SW) which borders the S side of the anchorage, thence:
- SW of a buoy (9 cables SSE) close S of Pointe Sable.
- 4 **Caution.** The leading lights are difficult to identify in the early morning, especially from November to January, with the sun behind them. The front light structure blends with background vegetation; the rear light is particularly

difficult to see and care must be taken not to be confused by the rear beacon of the alignment described at 5.86 which is reported to be visible to seaward of the anchorage off Majunga.

Useful marks

5.73

- 1 Positioned from Pointe Anorombato Light (15°42'9S, 46°18'0E) (5.71):
 - Amborovy (4 miles NNE), a wooded hill 18.9 m (62 ft) high, on the coast.
 - Water tower (4 miles NE), obscured from NW by trees.
- 2 Amborovy aero light, close SW of water tower.
 Pointe de Sable Light (white tower, black cupola, 10 m in height) (8 cables SSE) exhibited from the point.
 Flagstaff, close NE of Pointe de Sable Light.

Chenal du Nord-Est

5.74

- 1 **Local knowledge** is required.
Secondary channel. From a position about 7 miles W of Pointe Maromanjo (15°30'S, 46°29'E), off the entrance to Chenal du Nord-Est in the vicinity of a buoy (non-IALA), the line of bearing 194° of Pointe Anorombato Light (15°42'9S, 46°18'0E) leads SSW through the N part of the channel, between Banc du Narcissus and a bank with depths of 5.5 m (18 ft) or less over it that fringes most of the coast SW from Pointe Maromanjo.
- 2 Thence, the line of bearing 217° of Massif de Kandranjy (15°47'S, 46°12'E) leads through the S part of the channel, passing NW of the coastal bank on which is a drying reef and NW of (with positions from Pointe Anorombato):
 - A detached 5.5 m (18 ft) patch (2¼ miles N);
 - Roche Antsahambingo (1¾ miles NNW);
 - Digue Schneider (3¾ cables NW), thence:
 Into the inner end of the main channel.

Chenal de l'Ouest

5.75

- 1 **Local knowledge** is required.
Secondary channel. From the entrance to Chenal de l'Ouest (15°40'S, 46°06'E) the track leads E through the channel, over the S part of Banc du Cavalier, passing (with positions from Katsépé Light (15°43'S, 46°13'E)):
 - N of a depth of 4.9 m (16 ft) (6 miles WNW) on the coastal bank, thence:
- 2 S of a 3.4 m (11 ft) shoal (5¼ miles NW) on Banc du Cavalier, thence:
 - N of a depth of 4.3 m (14 ft) (3 miles WNW) on the coastal bank, thence:
 Into the inner end of the main channel.

Berths

Anchorage and moorings

5.76

- 1 Vessels generally anchor 3 to 4 cables SW or S of Pointe de Sable (5.52) but care must be taken to allow for the effects of the tidal streams described at 5.69.
- 2 The main anchorage area, indicated on the chart and containing 7 berths, has depths of 8 to 9 m (26 to 29 ft). This is marked by the intersection of the bearing 003° of a beacon on Pointe Anorombato in line with Pointe Anorombato Light and the bearing 062° of a light (red pylon, 4 m in height), 4 cables E of Pointe de Sable, in line

with another light (red column, 8 m in height), 220 m ENE but which is obscured by buildings.

- 3 With local knowledge coasters can anchor a little farther E in a depth of 5 m (16 ft).

5.77

- 1 Vessels with the maximum draught of 10 m can obtain anchorage about 8½ cables NW of Pointe de Sable in depths of about 11.9 m (39 ft), hard mud, good holding ground.
- 2 **Mooring berth.** Digue Schneider, a mole 640 m in length, extends WSW from the shore, 4½ cables NE of Pointe Anorombato (15°43'S, 46°18'E). Close S of the mole head there is a berth between mooring buoys which can accommodate ocean-going vessels. Small tankers berth here to discharge petroleum products to pipelines on the mole.

Alongside berths

5.78

- 1 There are four quays suitable for coasters on the S side of Majunga:
 - Quai Orsini, 2½ cables ENE of Pointe de Sable, originally dredged to 2.7 m (9 ft) this is now reported to dry at low water.
- 2 Quai Barriquand, 5 cables E of Pointe de Sable, 180 m in length, is the longest berth. There is reported to be a varying depth of 0.2 m alongside at low water.
- 3 The lights exhibited at the extremities of the quays were reported (1999) to be obscured by buildings on certain bearings.
 Steps at the various quays provide landing places.

Port services

Repairs

5.79

- 1 Minor only; slipway for vessels up to 300 tonnes, 9 cables E of Pointe de Sable.

Other facilities

5.80

- 1 Deratting Exemption Certificates; hospital; no facilities for the reception of oily waste.

Supplies

5.81

- 1 Fresh water, 200 m³/day can be supplied by lighter; fresh provisions are possible; fuel oil, diesel and petroleum are available by pipeline at Digue Schneider (5.77).

Communications

5.82

- 1 Airport, Aérodrome d'Amborovy, 7 km NE, with regular services to Antananarivo and the Comores, plus occasional flights to Mombasa.

Baie de Bombetoke

Chart 701, with plan of Baie de Bombetoke

General information

5.83

- 1 From its entrance between Pointe de Katsépé (15°43'S, 46°14'E) (5.70) and Pointe Anorombato, 3¼ miles E, Baie de Bombetoke extends about 8 miles S and then opens out into the delta of Betsiboka River (5.90) which is shallow and encumbered with banks.
 Anchorage can be obtained at the entrance to, and within the delta.

Topography

5.84

- 1 The coast on the W side of Baie de Bombetoke is wooded and slopes from the high cliffs at Pointe de Katsépé to the village of Katsépé on lower ground, 2¾ miles SSE. On the E side, beyond Nosy Beza (15°46'S, 46°20'E), the SE shore of a shallow bay which indents the coast between Pointe de Sable (15°43'6S, 46°18'3E) and Pointe Ampirimpirina, 5 miles S, is bordered by mangrove swamp with wooded high ground behind.
- 2 S of the village of Katsépé, on the W side of the delta mentioned in 5.83, between Pointe Maroloha (15°52'S, 46°16'E), and Pointe Antahotsanaomby, 2 miles S, the coast is backed by hills. Further SE, the delta of the Betsiboka River is marked by frequently shifting shoals and banks fringed with mangroves.

Directions

5.85

- 1 From Majunga anchorage area the alignment (132°), astern, of Nosy Beza Leading Lights leads about 2½ miles NW to open water, clearing all dangers.
Thence, from a position 2 miles W of Pointe Anorombato Light (15°42'9S, 46°18'0E) the track leads initially 5¾ miles S through the fairway to a position W of Pointe Ampirimpirina (15°49'S, 46°18'E), passing (with positions from the light):
- 2 E of Pointe de Katsépé (4 miles W), thence:
W of Nosy Beza (3½ miles SSE), thence:
E of a buoy (non IALA) (5 miles SSW), marking the E limit of the coastal shoal, thence:
E of Pointe Matesanaomby (6¼ miles SSW).
The track then leads to a position about 2 miles W of Pointe Ampirimpirina (6 miles S) and onto the alignment of leading marks.
- 3 **Leading marks.**
Beacon (white) (15°45'8S, 46°14'6E) standing close E of the village of Katsépé.
Katsépé Light (15°43'S, 46°13'E) (¾ miles NNW of beacon).
- 4 The alignment (333°), astern, of these marks leads 2½ miles SSE towards the anchorage area off Pointe Antanandava (15°50'1S, 46°18'7E) where they intersect the alignment of further leading marks.

5.86

- 1 **Leading marks.**
Front beacon (white octagonal masonry beacon, black band, 6 m in height) (15°49'8S, 46°21'6E), standing on Pointe Besiska (5.90).

Rear beacon (white octagonal structure, 12 m in height) (8½ cables ENE of front beacon).

- 2 The alignment (079°) of these beacons leads ENE to the anchorage area from the intersection.

Caution. These latter beacons are obscured by Pointe Boanamary (15°50'1S, 46°19'1E) and Pointe Amboanio, 6 cables E, until clear S of the transit of these points.

5.87

- 1 **Useful marks:**

Wooded hill (62 m (203 ft) high) (15°47'3S, 46°13'5E).

Chimney (15°50'1S, 46°19'1E), on Pointe Boanamary.

Chimney, conspicuous, 1½ miles ENE of above chimney.

Anchorage

5.88

- 1 Vessels may anchor on the approach leading line in a depth of about 8 m (26 ft) with a factory chimney on Pointe Boanamary bearing 037°; the holding ground of hard mud is good but in the rainy season, the outflow from Betsiboka River, together with the outgoing tidal stream, is strong.
- 2 With local knowledge, small vessels can anchor SW of Pointe Amboanio in depths of 5 m (16 ft), but in this position the outflow from the river sets strongly onshore.

Berths

5.89

- 1 There are small quays at Boanamary and small jetties fronting Amboanio village which are accessible from 2 hours before to 2 hours after HW.

Small craft

Betsiboka River

5.90

- 1 **Description.** Betsiboka River, Madagascar's main river, flows into the S end of Baie de Bombetoke through a shallow delta formed by marshy islets and drying mud banks separated by constantly changing narrow channels. The only navigable arm of the river is Marovoay River which is reached through Bouche de Manana, entered S of Pointe Besiska (15°50'S, 46°22'E).
- 2 **Local knowledge** is required. The river is navigable by craft of 60 tonnes as far as Maévarano (15°57'S, 46°30'E), the first landing place, about 12 miles upriver, and thence for another 15 miles to Marovoay, an important centre for agricultural trade.

Caution. The river is infested with crocodiles.

POINTE MAROMANJO TO POINTE ANTIBONKO

GENERAL INFORMATION

Chart 3872

Scope of section

5.91

- 1 In this section are described the offshore and coastal passages between Pointe Maromanjo (15°30'S, 46°29'E) and Pointe Antsibonko (14°29'S, 47°42'E), about 83 miles NE. The offshore route also includes a description of the passes through the reef on the outer edge of the coastal shelf.
- 2 Also described are Analalava (14°38'S, 47°45'E) (5.129) and other bays and anchorages along the coast.

The section is arranged as follows:

Offshore passage (5.93).

Pointe Maromanjo to Pointe Ambatomifoko (5.105).

Pointe Ambatomifoko to Pointe Antsibonko (5.117).

Analalava and approaches (5.129).

Natural conditions

5.92

- 1 **Current and flow.** See 1.170 for a description; the rate of the SW-going current may be less off this part of the coastal shelf. With a light W or NW breeze it is reported to set between E and N at a rate from ¼ to ½ kn. At neap tides there appears to be a S to SE set.

- 2 **Local weather.** The South-east Trade Wind (5.7) blows with considerable strength through the gorges of the hills between Baie de Mahajamba (entrance 15°11'S, 47°00'E) and Baie de Narendry (entrance 14°41'S, 47°35'E), raising a heavy sea offshore.

OFFSHORE PASSAGE

General information

Chart 3872

Route

5.93

- 1 From a position NNW of Pointe Maromanjo (15°30'S, 46°29'E) the track leads NE for about 83 miles, through clear water, to a position NW of Pointe Antsibonko (14°29'S, 47°42'E). Along this route six passes lead through the offshore reef.

Depths

5.94

- 1 There are depths more than 18.3 m (60 ft) in the passes; the narrowest is Andranolava Pass (5.99) where the least width is 1½ miles.

Principal marks

5.95

- 1 **Landmarks:**
 Sarodrano (15°30'S, 46°38'E), a hill with a yellowish plateau.
 Angoakoa (15°24'S, 46°43'E), a hill with a conspicuous tree on the summit.
 Red cliffs at Namakia (15°19'S, 46°46'E), prominent in sunlight.
- 2 Pain du Sucre (15°13'S, 46°54'E), a red hill shaped like a sugar-loaf, distinctive from the NW.
 Masiaposa (15°13'S, 47°08'E), a hill.
 Fausse Table (15°08'S, 47°15'E).
 Sommet Cône (15°03'S, 47°15'E).
 Parasol Tree (14°50'S, 47°18'E), on the summit of a hill.
- 3 Tombée de Marotaolana (14°44'S, 47°45'E).
 Nosy Soy (14°38'S, 47°46'E), a bluff-sided islet covered with trees, seen from NW the island appears like a saddle with the pommel pointing NE.

5.96

Major light:

- 1 Nosy Lava Light (14°33'S, 47°35'E) (5.119).

Directions for offshore passage

(continued from 5.18)

Chart 3872

5.97

- 1 From a position NNW of Pointe Maromanjo (15°30'S, 46°29'E), the track leads NE, passing (with positions from Pointe Maromanjo):
 NW of Forfait Bank (10 miles NNW), thence:
 NW of Vaudreuil Bank (11 miles N), thence:
 NW of Romanche Bank (16½ miles NNE), thence:
 NW of Boursaint Bank (30 miles NNE), thence:
- 2 NW of an 8.2 m (27 ft) shoal (40 miles NE), on the W side of North Pass, thence:
 NW of Pointe de Marolahy (14°52'S, 47°17'E). A line of shoals, best seen on the chart, fronts the

point from North Pass, extending about 30 miles NE. Thence:

- 3 NW of Pointe Maromony (14°40'S, 47°28'E) (5.120), thence:

To a position about 22 miles NW of Pointe Antsibonko (14°29'S, 47°42'E).

5.98

- 1 **Useful mark:**

Pointe Komany (15°29'S, 46°33'E). The point is marked by two triangular red cliffs close NE of a line of red cliffs.

(Directions for offshore passage continue at 5.160)

Side channels

Charts 701, 3872

Andranolava Pass

5.99

- 1 Andranolava Pass (15°22'S, 46°24'E), lies between Mariner Bank and Forfait Bank. It is 2½ miles wide with depths in excess of 10 m (33 ft) but is best entered in the afternoon when the cliffs at Ampajony (5.70) and Pointe Komany (5.98) are prominent.
- 2 There is a charted obstruction at the S end of the channel, 2 miles SE of Mariner Bank, the existence of which is doubtful.

Tsimanenoakoho Pass

5.100

- 1 Tsimanenoakoho Pass (15°17'S, 46°32'E), lies between Vaudreuil Bank (5.97), and Romanche Bank (5.97). It is less than 2 miles wide, but with depths in excess of 20 m (66 ft), and may be identified as lying nearly opposite a very marked dip in the hills bordering the coast in the vicinity of position 15°23'S, 46°40'E.
- 2 **Leading mark.** The line of bearing 155° of the summit of Sarodrano (15°30'S, 46°38'E) (5.95), leads SSE through the passage, passing WSW of Romanche Bank which is composed of broken red coral. In fine weather the position of this bank is indicated by a bright green tint on the water.

Namakia Pass

5.101

- 1 Namakia Pass (15°09'S, 46°39'E), lies between the NE end of Romanche Bank (5.97) shoal area and Boursaint Bank, 6 miles NE.
- Leading marks.** From seaward the alignment (097°) of a white mark (15°12'S, 47°03'E) (5.112) and the summit of Masiaposa (5.111), 5¼ miles E, leads through the pass, passing NE of Vigilant Bank, 1½ miles SSE of the NE end of Romanche Bank.

Grand Pass and North Pass

5.102

- 1 Grand Pass (15°00'S, 46°48'E), and North Pass (14°55'S, 46°54'E), provide the main access through the reef to Baie de Mahajamba (5.111), about 17 miles SE. They lie between Boursaint Bank (5.97) and the SW end of an unnamed bank, 15 miles NE, and are separated by a shoal with a least depth of 8.2 m (27 ft) over it, 16 miles NNW of Pointe Ambararata (15°12'S, 46°57'E).
- 2 **Leading marks:**
 From seaward, the summit of Masiaposa (15°13'S, 47°08'E) bearing about 127°, leads through Grand Pass.

Alternatively, the white mark (15°12'S, 47°03'E), mentioned at 5.112 and bearing about 152°, will lead through North Pass.

Narendry Pass

5.103

1 **Leading marks:**

Nosy Soy summit (14°38'S, 47°36'E) (5.95).
Tombée de Marotaolana (5.119), 10½ miles SE of Nosy Soy.

- 2 The alignment (123½°) of these marks leads through Narendry Pass (14°30'S, 47°23'E), towards the approaches to Analalava, passing (with positions from Nosy Soy):
NE of a 8.5 m (28 ft) shoal (15 miles NW), thence:
SW of a depth of 11.9 m (39 ft) (7 miles NW), thence:

SW of SW Rocks, 2½ miles NW.

5.104

1 **Useful marks** (with positions from Nosy Soy):

Pointe Maromony (7½ miles WSW).

Ballon Loza Peak (12 miles E).

Nosy Lava Lighthouse (5 miles N).

(Directions for Analalava are given at 5.139)

POINTE MAROMANJO TO POINTE AMBATOMIFOKO

General information

Chart 3872

Route

5.105

- 1 **Coastal route.** From a position NNW of Pointe Maromanjo (15°30'S, 46°29'E), the coastal route leads about 43 miles NE to a position 10 miles NW of Pointe Ambatomifoko (15°06'S, 47°07'E), on the E side of the approach to Baie de Mahajamba.

Topography

5.106

- 1 Between Pointe Maromanjo and the entrance to Baie de Mahajamba the coast consists of a series of relatively high reddish cliffs rising to a range of partially wooded hills farther inland. When the sun shines on the cliffs two large red patches are visible, the NE patch being larger and darker. With the sun behind the land a red water-course, formed by a torrent in the W stretch of cliffs, can be seen when bearing more than 165°.

Anchorage

5.107

- 1 In fine weather off this coast anchorage can be obtained almost anywhere, according to draught.

Principal marks

5.108

1 **Landmarks:**

Sarodrano (15°30'S, 46°38'E) (5.95).

Red cliffs, Pointe Komany (15°29'S, 46°33'E) (5.98).

Angoakoa (14°24'S, 46°43'E) (5.95).

Remarkable sand dunes (15°20'S, 46°44'E).

Red cliffs, Namakia (15°19'S, 46°46'E) (5.95).

- 2 Pain du Sucre (15°13'S, 46°54'E) (5.95).

Ambohitsambo (15°19'S, 46°56'E) a rugged, wooded hill.

Major light:

Katsépé Light (15°43'S, 46°13'E) (5.70).

Directions

(continued from 5.47)

5.109

- 1 From a position about 5 miles NNW of Pointe Maromanjo (15°30'S, 46°29'E) (5.46) the coastal route leads generally NE, keeping in the deepest water and passing (with positions from Pointe Maromanjo):

SE of a 2.7 m (9 ft) patch (6½ miles N) the position of which is doubtful, thence:

NW of Pointe Komany (5 miles NE) (5.98), thence:

SE of Vaudreuil Bank (10 miles N), thence:

- 2 SE of Vigilant Bank (19½ miles NNE), thence:

SE of Boursaint Bank (28 miles NE), thence:

NW of Pointe Ambararata (33 miles NE) (5.111), thence:

NW of Banc de la Lyra (34 miles NE), thence:

- 3 To a position about 10 miles NW of Pointe Ambatomifoko (15°06'S, 47°07'E) (10½ miles ENE) which is rocky.

5.110

1 **Useful mark:**

White mark (15°12'S, 47°03'E) (5.112).

(Directions continue for coastal route at 5.120.

Directions for Baie de Mahajamba are given at 5.112)

Anchages

Baie de Mahajamba

5.111

- 1 **Description.** Baie de Mahajamba (15°11'S, 47°00'E) lies on the NW coast of Madagascar, about 50 miles NE of Majunga. It is entered between Pointe Ambararata (15°12'S, 46°57'E) and Pointe Ambozoména, 5 miles ENE, providing sheltered anchorage for most types of vessels in varying depths. The S part of the bay forms the estuary of several rivers. Less water than charted has been reported close S of the narrows.

- 2 **Topography.** NE of the entrance to Pointe Ambatomifoko, 6 miles NNE, the coast is backed by thickly wooded hills. From the entrance the bay extends 9 miles SSE where it narrows, then opens out into a large shallow basin. From the entrance to the narrows the coast is high and wooded but, beyond this, the coast opens out and becomes low and marshy, filled with mud flats and sandbanks covered in mangroves through which flow numerous rivers.

3 **Landmarks:**

Pain du Sucre (15°13'S, 46°54'E) (5.95).

Pointe Ambararata (15°12'S, 46°57'E), which is easily recognised under all conditions by the striking contrast its regular aspect presents to the rugged outlines of Ambohitsambo hill (5.108) and Antranonaomby hill.

- 4 Masiaposa (15°13'S, 47°08'E), a hill which appears as a wooded plateau from seaward.

5.112

- 1 **Directions.** From a position to seaward, 8 miles N of Pointe Ambararata, the track leads about 18 miles generally SSE into and through the bay, passing (with positions from Pointe Ambararata):

ENE of Banc de la Lyra (4½ miles NNW), thence:

ENE of Banc Intermédiaire (1¾ miles NNW), thence:

- 2 ENE of Banc de la Thétis (8 cables NNE), and:

WSW of Pointe Ambozoména (5 miles ENE). A

white mark stands 1½ miles S. Thence:

ENE of Pointe Ampasilava (1¾ miles SSE), thence:

WSW of Pointe Amboliboza (5 miles ESE), Pointe

Amboaniho lies 8 cables SSE. Thence:

- 3 WSW of Nosy Longany (10 miles SE), an islet. Pointe Manja, the E point of the narrows, lies close ESE. Thence:

ENE of Pointe Tsinjomantsy, the W point of the narrows, thence:

Into the lower part of the bay.

- 4 Alternatively, smaller vessels with less draught may approach from W, passing between Banc Intermédiaire and Banc Thétis, on the alignment (096°) of the white mark (15°12'S, 47°03'E) and Masiaposa, 5½ miles E.

Useful mark:

Conspicuous tree (15°22'S, 47°02'E).

5.113

- 1 **Anchorage.** Anchorage may be obtained about 1¼ miles NW of Pointe Ambarata in depths of 13 to 15 m (43 to 49 ft), mud. Within the bay large vessels can obtain anchorage almost anywhere in the N part, N of the narrows, in depths as shown on the chart, coral.

Vessels with lesser draughts can obtain anchorage:

- 2 Close NE of the village of Ambenja (15°17'S, 46°58'E) on the W side of Ambenja River entrance.

Close W of the village of Mangoaka on the E side, 6 miles NE of Ambenja.

- 3 Close SW of Tombée Manja (15°18'·7S, 47°06'·5E), a high point on the W side of Baie de l'Est, but tidal streams are strong.

5.114

- 1 **Small craft.** Local knowledge is necessary. Sofia River, on the E side of the head of the bay, is navigable by boats for 10 miles, as far as the village of Antsakoabe. It is entered over a bar, with a depth of 2·5 m (8 ft) over it.

Small craft

Andranolava River

5.115

- 1 At LW a boat passage leads into Andranolava River, close E of Pointe Maromanjo. The entrance is encumbered by a drying reef and sandbanks.

Tsimanenoakoho River

5.116

- 1 Tsimanenoakoho River affords anchorage but the entrance (15°25'S, 46°38'E), is fronted by a bar with a depth of 1·8 m (6 ft) over it, between extensive sandbanks. An approach should not be made without local knowledge.

Anchorage with good shelter from W winds can be obtained off the village of Marosakoa, on the S side of the entrance.

POINTE AMBATOMIFOKO TO POINTE ANTIBONKO

General information

Chart 3872

Route

5.117

- 1 From a position NW of Pointe Ambatomifoko (15°06'S, 47°07'E) (5.109) the coastal route leads generally NE for about 34 miles to a position N of Pointe Maromony (14°40'S, 47°28'E), in the approaches to Baie de Narendry and Analalava. Thence a further 10 miles NNE to a position WNW of Pointe Antsibonko (14°29'S, 47°43'E).

Topography

5.118

- 1 Thickly wooded hills back the coast from Pointe Ambatomifoko (15°06'S, 47°07'E) to Pointe de Majambo, 12½ miles NE, the S entrance point of Baie de Moramba.

Between Pointe de Marolahy (14°52'S, 47°17'E), on the N side of the entrance to Baie de Moramba, and Pointe Maromony, the coast consists of sandy beaches backed by scattered trees except, about midway, where the coast rises in isolated white cliffs. The general background is a series of plateaux, from about 60 to 90 m high, with some vegetation, separated by wooded valleys.

- 2 Nosy Lava (5.125) and some smaller islands and reefs lie on the N side of the approaches to Baie de Narendry.

Principal marks

5.119

- 1 **Landmarks:**

Masiaposa (15°13'S, 47°08'E) (5.111).

Fausse Table, 8¼ miles ENE of Masiaposa.

Sommet Cône, 11½ miles NNE of Masiaposa.

Pointe de Marolahy (14°52'S, 42°17'E), which is formed by a prominent circular red cliff.

- 2 Tombée de Marotaolana (14°44'S, 47°45'E), a steep hill.

Ballon Loza Peak (14°38'S, 47°49'E), a prominent peak, 6¾ miles NNE of Tombée de Marotaolana.

- 3 **Major light:**

Nosy Lava Light (14°33'·0S, 47°35'·8E) (black and white tower, 18 m in height), exhibited from the summit of the island.

Directions

(continued from 5.110)

Chart 3872

5.120

- 1 From a position NW of Pointe Ambatomifoko (15°06'S, 47°07'E), the coastal track leads generally NE for about 50 miles, keeping in the deepest water, to Pointe Antsibonko, passing (with positions from Pointe Marolahy (14°52'S, 47°17'E)):

NW of Pointe Anjajavy, (9¼ miles SSW). A 1·2 m (4 ft) shoal, the position of which is doubtful, lies close N of the point. Thence:

- 2 NW of Pointe de Majambo (5.118), (5¾ miles SSW). Two wooded islets lie close W. Thence: SE of the offshore bank (6 miles NW) extending NE for about 30 miles parallel to the coast, thence: NW of Pointe de Marolahy, thence: NW of an 8·2 m (27 ft) patch (5½ miles NNE), thence:

- 3 SE of Diamond Bank (11 miles NNE), thence: SE of a wreck (14 miles NNE), with a depth of 15·9 m (52 ft) over it, thence: NW of Pointe Maromony (14°40'S, 47°28'E), the S entrance point of Baie de Narendry, thence: SE of a bank (23½ miles NE) with a depth of 8·5 m (28 ft) over it, thence:

- 4 Clear of a wreck (5½ miles WNW), thence: NW of Nosy Lava (25 miles NE)(5.125), an island which lies in the approaches to Analalava, thence: To a position about 9 miles NW of Pointe Antsibonko (14°29'S, 47°42'E), W of Lyra Bank (32 miles NE).

5.121

1 **Useful marks:**

- Tree (15°01'S, 47°13'E), which is conspicuous.
 Parasol tree (14°51'S, 47°18'E), on the summit of a hill.
 White cliffs (14°46'S, 47°21'E), isolated between low-lying sandy beaches.
- 2 Nosy Lava (14°33'·4S, 47°36'·5E) (5.125), small conical, easily identified peak, 104 m (341 ft) high.
 Nosy Lava Light (14°33'·0S, 47°35'·8E) (5.119).
 White cliffs (charted) on the W side of Nosy Lava, which show up very clearly in the afternoon light.
(Directions for coastal route continue at 5.165.
Directions for Analalava are given at 5.139)

Anchorage

Charts 3872, 704

Baie de Moramba

5.122

- 1 **Description.** Baie de Moramba, entered between Pointe de Majambo (14°57'S, 47°16'E) and Pointe Marolahy, 5½ miles N, is in two parts; the inner part, formed by a shallow basin, connected to the outer part by a relatively deep narrows.
- 2 **Topography.** On the N side, from Pointe Marolahy through to the NW side of the inner basin, the coast is high, rocky and wooded and, within the entrance, the N shore of the outer part of the bay is thickly wooded. The coast on the S side of the entrance and outer bay is undulating and wooded and fringed with drying reefs while the S and E sides of the inner basin are broken by muddy rivers flowing through mangrove swamps.
- 3 On the N side of the narrows there is a group of rocky, tree-covered islets, of which Îlot du Goulet is the SE and highest.

Directions. Local knowledge is required.

The bay is entered across a bar with a least charted depth of about 3·3 m (11 ft). the line of bearing 072° of the S extremity of Îlot du Goulet leads across the bar towards the anchorage area. For the inner part of the bay the chart is sufficient guide.

- 4 **Anchorage** can be obtained in the entrance to the bay, outside the bar, in depths from 12 to 15 m (39 to 49 ft), sand and mud.
 For small vessels anchorage can be obtained close SE of Îlot du Goulet, in depth of about 9 m (30 ft), as indicated on the chart.

Baie de Narendry

5.123

- 1 **Description.** Baie de Narendry deeply indents the coast between Pointe Maromony (14°40'S, 47°28'E) and Pointe Antsamanara, 13½ miles E. The bay is moderately deep with no known dangers between banks with depths of 5·5 m (18 ft) or less over them that extend up to 4¼ miles from its head.
- 2 **Topography.** A range of steep hills runs parallel and close to the W shore of the bay, the E shore is backed by a wooded ridge at the N extremity of which is Tombée de Marotaolana (5.119). Around the bay there are a number of villages, the principal ones being:
- 3 Ankalafa on the NW side, 6 miles S of Pointe Maromony, is hidden by trees but may be identified by boats lying on the beach.

Narendry (15°01'S, 47°34'E), on the SE side, 2 miles within the entrance to Atsinjo River.
 Antonibe, 11 miles SW of Narendry.

5.124

- 1 **Directions.** From the entrance the track through the bay leads generally S, passing (with positions from Pointe Maromony):
 E of Pointe Komatsana (3½ miles SE), distinguished by some white cliffs at its extremity, thence:
 E of Pointe Vatonomby (10 miles SSE).
- 2 **Anchorage.** The bay is very sheltered from local winds and anchorage has been obtained in depths of about 11 m (36 ft) off the mouth of Atsinjo River.

Nosy Lava

Chart 704 (see 1.22)

General information

5.125

- 1 **Description.** Nosy Lava (14°33'S, 47°36'E), fronts the coast N of Analalava, lying between Pointe Antsibonko (14°29'S, 47°43'E) and Pointe Ankorobé, 7½ miles N.
 Salara (14°32'S, 47°37'E), the principal village, lies in a sheltered cove on a strip of land separated from the coast by a mangrove swamp which dries. The island is the site of Madagascar's maximum security prison.
- 2 **Topography.** The island is rugged, but cultivated, with numerous trees. The coast is steep-to with cliffs in places and some sandy beaches. The cliffs to the N and W are white and prominent while those on the S and E are steep and crumbling. A prominent conical peak (14°33'·4S, 47°36'·5E), 104 m (341 ft) high, lies in the central part of the island.

5.126

- 1 **Anchorage.** Sheltered anchorage is obtainable off Salara, about 1½ miles NNE of Nosy Lava Light (14°33'S, 47°36'E), in depths of about 12 m (39 ft), mud. Larger vessels may anchor farther NNE.
 The waters between Nosy Lava and the coast form a large roadstead with a generally sandy or muddy bottom and good holding ground. An approach can be made from S or N but the S approach is suitable only for small vessels.

5.127

- 1 **Directions.** From a position about 2¼ miles S of Nosy Lava, the line of bearing 077° of the N extremity of Nosy Lango (14°36'S, 47°41'E) leads 1½ miles ENE, passing (with positions from Nosy Lango):
 NNW of Nosy Soy (5¼ miles WSW) (5.95), thence:
 SSE of Nosy Toloho (4¼ miles W), an islet sparsely covered with vegetation.
- 2 Thence, the line of bearing 213° of Nosy Soy, astern, leads about 5 miles NE through Nosy Lava Channel, passing (with positions from Nosy Soy):
 SE of Nosy Toloho (1½ miles N), thence:
 NW of West Lango Bank (3½ miles NE), thence:
- 3 SE of the SE point of Nosy Lava (4½ miles NE), thence:
 NW of North-west Lango Bank (5 miles NE), thence:
- 4 To a position about 2¼ miles E of Pilier Point, 8 cables NE of Nosy Lava Light. From this position the track leads about 2 miles WNW to the anchorage area.
- 5 **Northern approach.** The N extremity of Nosy Lava, on the E side of which there are some distinctive white cliffs, should be rounded at a distance of not less than 2 miles to avoid the reef which extends about 8 cables seawards from it; thence the track leads SE across the approach to Salara.

5.128

- 1 **Small craft.** There is a wharf, about 50 m in length, at Salara.

Provisions. Meat, poultry and eggs are available.

ANALALAVA AND APPROACHES**General information**

Chart 704 (see 1.22)

Position**5.129**

- 1 Analalava (14°38'S, 47°45'E) is situated in the middle of the NW coast of Madagascar, on the SE side of the entrance to Loza River.

Function**5.130**

- 1 Analalava is a small commercial port mainly engaged in the export of agricultural products. The population is about 2 000.

Topography**5.131**

- 1 The coast between Pointe Antsamanara (14°42'S, 47°42'E) and Pointe Ankorobé, 7½ miles N, both S and N of the entrance to Loza River, is covered with vegetation; the land N of the river rises steeply and that to the S more gradually.
- 2 From Pointe Ankorobé to Pointe Antsibonko, 5 miles N, the coast is backed by a wooded slope which rises gradually to Mount Antsatramahavelona, 7 miles NE of Pointe Ankorobé. Sandbanks fringe the coast S and N of the river.

Approach and entry**5.132**

- 1 Three channels lead to Analalava between the mainland and islets and reefs which, together with Nosy Lava, encumber the approaches to the port.
- The principal, and only marked channel, is Middle Pass (5.141) which leads between the reefs W of the entrance.
- 2 The other channels are:
- South Pass (5.143), suitable for coasters.
- North Pass (5.144), between Nosy Lava and the coast E.

Limiting conditions**Depths****5.133**

- 1 Minimum charted depths in the channels are as follows:
- Middle Pass: 5.5 m (18 ft).
- South Pass: 5.8 m (19½ ft).
- North Pass: 7.3 m (24 ft).

Mean tidal levels**5.134**

- 1 At Nosy Lava, 9½ miles NW, the mean spring range is about 3.4 m; mean neap range about 1.0 m. For further information see *Admiralty Tide Tables Volume 3*.

Harbour**General layout****5.135**

- 1 The harbour comprises anchorages off Analalava and a small jetty in front of the town.

Storm signals**5.136**

- 1 Signals indicating localities threatened by cyclone activity are displayed at the signal station in Analalava. See 1.48 for details.

Natural conditions**5.137**

- 1 **Tidal streams.** These are strong in the narrows of Middle Pass, 4½ miles W of Analalava, but are less strong in South Pass, 4½ miles WSW of Analalava. Near Analalava, the tidal streams described at 5.150 cause eddies to form in the vicinity of a deep gully in the entrance to, and off the mouth of the Loza River. In the gully itself there is a set in the opposite direction to that in the river entrance, and this effect becomes more pronounced to the S.
- 2 **Local weather.** During the rainy season (5.7) the winds are variable but blow mainly from SW or NW.

Principal marks**5.138**

- 1 **Landmarks:**
- Tombée de Marotaolana (14°44'S, 47°45'E) (5.119).
- False Loza Peak, 4½ miles NNE of Tombée de Marotaolana, which is prominent.
- Ballon Loza Peak, (14°38'S, 47°49'E), which is very remarkable.
- 2 Analalava Lighthouse (white tower, black lantern, 12 m in height) (14°38'S, 47°46'E).
- Nosy Lava Lighthouse (14°33'·0S, 47°35'·8E) (5.119).
- Major light:**
- Nosy Lava Light, see above.

Directions for approach to Middle Pass**South of Nosy Soy****5.139**

- 1 **Leading marks.** Approaching from W, the alignment (088½°) of the following marks leads towards Middle Pass, passing about 3 cables S of Nosy Soy (14°38'S, 47°36'E) (5.95):
- Centre of Nosy Faohina, (14°38'·4S, 47°40'·5E).
- Ballon Loza Peak (14°38'S, 47°49'E) (5.119).
- 2 **Leading beacons:**
- Front beacon (black and white truncated pyramid, 6 m in height) (14°36'S, 47°44'E), near Andronjana South.
- Rear beacon (similar structure, 8 m in height) (1½ miles ENE of front beacon).
- 3 When Mount Antsatramahavelona (14°29'S, 47°49'E) bears 047°, just open SE of Nosy Lango, 10 miles SW, the alignment (068½°) of these beacons leads into Middle Pass, passing SSE of Lango Tail, 3 miles SW of Nosy Lango, to a position 5 cables ESE of the beacon marking the S end of the reef on the N side of Middle Pass.

North of Nosy Soy**5.140**

- 1 **Leading marks.** From the vicinity of SW Rocks (14°36'S, 47°34'E) the alignment (095°) of Analalava Light (14°38'S, 47°46'E) (5.142) and Ballon Loza Peak, 3 miles E, or at night, with Analalava Light bearing 095° on the N edge of the white sector. (092°-095°), leads into the Middle Pass, passing (with positions from Nosy Soy):
- 2 N of Nosy Soy, and:
- S of a reef (1¼ miles N) on which lies Nosy Toloho, thence:
- N of Lango Tail (2½ miles E), thence:

- 3 Close S of a 7.3 m (24 ft) patch ($3\frac{3}{4}$ miles ENE), thence:
To the centre of Middle Pass.

Directions for Middle Pass and harbour

5.141

- 1 **Channels.** There are three channels leading from the central area of Middle Pass (Passe du Milieu) ($14^{\circ}37'.5S$, $47^{\circ}41'.0E$), to the harbour. In each case deviation from the recommended leading lines should be avoided as there are shoal depths close to the lines and strong tidal streams may be encountered.
- 2 **North of Channel Bank.** From a position on the leading line ($068\frac{1}{2}^{\circ}$) described at 5.139, 5 cables ESE of the beacon ($14^{\circ}36'.3S$, $47^{\circ}40'.8E$), marking the S end of the reef on the N side of the pass, the track leads about $3\frac{1}{2}$ miles E to the harbour passing N of Channel Bank. This channel has the greatest depth of water.
- 3 **Over Channel Bank.** From a position on the leading line ($068\frac{1}{2}^{\circ}$) described at 5.139, 5 cables N of the beacon ($14^{\circ}38'.0S$, $47^{\circ}40'.8E$), marking the N end of the reef on the S side of the pass, the alignment (095°) of the leading marks described at 5.140 leads about $3\frac{1}{2}$ miles E to the harbour.
- 4 **South-west of Channel Bank.** Leading beacons:
Table Beacon (white truncated pyramid), ($14^{\circ}39'.7S$, $47^{\circ}44'.4E$), standing at the N end of Plateau de la Table.
Interior Beacon (similar structure) ($2\frac{1}{2}$ miles ESE of Table Beacon).
- 5 From a position in the middle of the pass the alignment (120°) of these beacons leads 1 mile ESE through the channel, passing SW of Channel Bank, to a position about 3 cables NE of Nosy Faohina. From this position the line of bearing 082° of a distinctive house (white with red roof) ($14^{\circ}37'.4S$, $47^{\circ}45'.7E$), La Mon du Docteur, leads E to the harbour.

Useful marks

5.142

- 1 Light (white tower, grey lantern, 4 m in height), ($14^{\circ}37'.4S$, $47^{\circ}45'.5E$), exhibited from the head of the jetty in Analalava.
Ampasikély Light (white metal column on square support, 8 m in height) ($14^{\circ}37'.1S$, $47^{\circ}45'.8E$), exhibited from a hillock.
- 2 Residency, $2\frac{1}{4}$ cables NW of Analalava Light, a distinctive bungalow with a veranda and flagstaff, standing on the summit of a hill.
Distinctive house (white with red roof), $\frac{1}{4}$ cables NNW of Analalava Light.

Directions for South Pass

5.143

- 1 **Leading marks.** The alignment (090°) of the S extremity of Plateau de la Table ($14^{\circ}40'S$, $47^{\circ}44'E$), with False Loza Peak, $2\frac{3}{4}$ miles E, leads through the W approach to South Pass, $3\frac{1}{2}$ miles W of Plateau de la Table, passing (with positions from Plateau de la Table):
S of Nosy Soy ($8\frac{1}{4}$ miles WNW), thence:
S of a reef on which Nosy Faohina ($3\frac{1}{4}$ miles WNW) is situated.
- 2 From the entrance to South Pass, with Nosy Faohina bearing 002° and obscuring Nosy Lango, $2\frac{1}{4}$ miles N, the track leads NE to the anchorage. The fairway is about 5 cables wide between Table Bank and a shoal with a least

depth of 3.0 m (10 ft) over it, off the SE side of Nosy Faohina reef. For useful marks see 5.142.

Directions for North Pass

5.144

- 1 From a position 2 miles SW of Pointe Antsibonko ($14^{\circ}29'S$, $47^{\circ}43'E$) the line of bearing 345° astern of the W summit, 42 m (138 ft), of Nosy Saba ($14^{\circ}21'.5S$, $47^{\circ}38'.5E$), leads SSE through the N part of North Pass, passing WSW of a shoal with a least depth of 8.5 m (28 ft) over it, $3\frac{1}{4}$ miles SSW of Pointe Antsibonko.
- 2 When clear of this shoal the line of bearing 188° of the W extremity of Nosy Faohina ($14^{\circ}38'.4S$, $47^{\circ}40'.5E$) just open E of Nosy Lango ($14^{\circ}36'S$, $47^{\circ}41'E$), $2\frac{1}{4}$ miles N, leads S through the middle part of North Pass, passing (with positions from Nosy Lango):
E of a 7.3 m (24 ft) patch ($2\frac{3}{4}$ miles N), thence:
W of an 8.2 m (27 ft) patch ($2\frac{1}{2}$ miles NNE).
- 3 When clear of the shoals the line of bearing 155° of Table Beacon ($14^{\circ}39'.7S$, $47^{\circ}44'.4E$) leads SSE through the S part of North Pass, passing:
WSW of a 3.7 m (12 ft) shoal, 3 miles N of Table Beacon, off the NW entrance point of Loza River, thence:
WSW of the entrance to the Loza River.
- 4 Thence, the track leads E to the harbour.

Berths

Anchorage

5.145

- 1 The anchorages off Analalava lie between the deep gully in the entrance to Loza River and the steep-to bank which forms the LW mark off the town. In the vicinity of the gully the bottom is sand. Eddies (5.137) cause vessels to swing continuously while at anchor.
- 2 Anchorage, indicated on the chart, can be obtained in depths of about 20 m (11 fm) at the intersection of the alignment (095°) of the leading marks described at 5.140 and the alignment (047°) of uncharted anchorage beacons situated on the banks of the Loza River:
Front beacon (black and white chequered square on concrete support, 4 m in height), 9 cables N of Analalava Light, on the SE bank in front of Ampasikély.
- 3 Rear beacon (similar but larger daymark on concrete support, 6 m in height), $1\frac{1}{2}$ miles NE of front beacon, on NW bank.
The beacons may be difficult to identify, especially in the early morning; the rear beacon can only be sighted from the anchorage.
- 4 An anchorage closer to Analalava, where the eddies are not so strong, is farther NE in a depth of about 26 m (14 fm), on the alignment (047°) of the anchorage beacons described above and $2\frac{1}{2}$ cables WSW of the head of the jetty at Analalava. This berth, however, is only $1\frac{1}{4}$ cables from the coastal bank.
- 5 Small vessels can anchor 1 cable off the jetty in a depth of 18 m (59 ft) on the alignment (047°) of the anchorage beacons, with Analalava Light bearing 129° .

Alongside berth

5.146

- 1 A stone jetty, extending WNW from the shore at Analalava to the edge of the coastal reef, has a berth on its N face with a depth of 2.8 m.

Port services

Facilities

5.147

- 1 Hospital in Analalava.

Supplies

5.148

- 1 Limited supplies of provisions available.

Communications

5.149

- 1 Regular services by sea to other ports in Madagascar. Airport with internal service to Antsiranana and Antananarivo.

Loza River

Charts 704, 3872 (see 1.22)

General information

5.150

- 1 **Description.** Loza River, entered between reefs which fringe the coast in the vicinity of Ampasikély (14°37'S, 47°46'E) and the coast NW, is easily accessible and navigable for about 25 miles.
- 2 **Draught.** At HW the maximum draught for vessels en route between Laguna Panantsopa, 9 miles from Ampasikély, and a quay a little below Antsohihy, 35 miles from Ampasikély, is 3.5 m (11½ ft). Thence to Antsohihy it is reduced to 3.0 m (9¾ ft).
- 3 **Tidal streams.** Off Ampasikély the tidal streams are strong, the out-going stream having the greater rate. This stream becomes stronger and sets towards the SE shore as LW is approached; an eddy then develops between the shore and the main stream, setting back towards the entrance and becoming stronger than the outgoing stream itself. The in-going stream sets uniformly into the river.
- 4 At Antsohihy HW occurs +0250 HW at Dar es Salaam.

Directions

5.151

- 1 **Local knowledge** is required for Laguna Panantsopa and the upper reaches of the river.

The track leads in mid-channel of the river, passing: Between the reefs at the entrance which are steep-to and easily distinguished, thence:

- 2 Close round Pointe Loza, 3½ miles NNE of Ampasikély, a steep-to projecting point covered with dense jungle, so as to avoid a sandbank which fills a bay N of the point, thence:
- 3 Across Laguna Panantsopa, 5 miles SE of Pointe Loza, which has only been cursorily examined and contains some dangerous shoals between low shores covered with mangroves.

Anchorage

5.152

- 1 Anchorage can be obtained in Baie de Bois Sacré, 2 miles within the river entrance, on the N side, in depth of 18 m (60 ft), mud and sand, 1½ cables off the mangroves. The berth is indicated by the intersection of the alignments (060° and 125°) of two pairs of white triangular beacons. This anchorage is better sheltered than that off Analalava and is used by vessels loading logs which are floated down the river.
- 2 Anchorage can also be obtained:
In a depth of about 11 m (36 ft), 4¾ miles SE of Pointe Loza at the entrance to Laguna Panantsopa; a 2.7 m (9 ft) shoal, the position of which is approximate, lies about 2½ cables SE of the berth.
- 3 In a depth of about 10 m (33 ft), 7½ miles ESE of Pointe Loza, in Laguna Panantsopa, about 1¾ cables from the village of Ampanantsova. In the approach to the berth there is a least depth of about 5 m (16 ft).

Berths

5.153

- 1 Quay, slightly below Antsohihy. Two small concrete quays at Antsohihy which dry at LW.

POINTE ANTIBONKO TO POINTE D'ANGADOKA

GENERAL INFORMATION

Chart 3872

Scope of section

5.154

- 1 In this section are described the offshore and coastal passages between Pointe Antsibonko (14°29'S, 47°42'E) and Pointe d'Angadoka (13°30'S, 47°58'E), together with the Îles Radama (5.168) and anchorages along the coast.
- 2 The section is arranged as follows:
Offshore passage (5.157).
Pointe Antsibonko to Pointe Ananalava (5.162).
Pointe Ananalava to Pointe Sangajira (5.167).
Pointe Sangajira to Pointe d'Angadoka (5.177).

Navigation

5.155

- 1 **Caution.** Surveys of the coastal shelf in the area covered by this section are old and incomplete. Depths

over the banks and shoals may be less than charted and uncharted shoals and reefs may exist. In particular, the shoals and channels surrounding Îles Radama (14°03'S, 47°46'E) are imperfectly shown and navigation requires care. Local knowledge is desirable for navigation of the channels around these islands.

- 2 There are no recommended passages through the offshore banks and reefs in this section of coast and those passages which do exist should be avoided as they are generally narrow and completely unmarked.

Flow

5.156

- 1 With a gentle W breeze a current is reported to set E to NE over the coastal shelf. With a light NE breeze it is reported to set S to SE.

In calm weather, with a rising tide, there is said to be a flow between ENE and S with a rate from $\frac{1}{2}$ to $\frac{3}{4}$ kn.

OFFSHORE PASSAGE

General information

Chart 3872

Route

5.157

- 1 From a position NW of Pointe Antsibonko (14°29'S, 47°42'E) the track leads generally NNE for about 62 miles to a position NW of Pointe d'Angadoka (13°30'S, 47°58'E).

Topography

5.158

- 1 Between Pointe Antsibonko (14°29'S, 47°42'E) and Pointe d'Angidoka (13°30'S, 47°58'E) the coastline is irregular and indented by a number of bays and inlets. In the central part it is fronted by Îles Radama, a group of four high islands, covered with grass and trees, the largest of which is Nosy Ovy (14°00'S, 47°48'E). The coastline is backed by high land rising to a number of mountains.

Principal marks

5.159

- 1 **Landmarks:**
 - Antany Mora (14°07'S, 47°45'E), one of the Îles Radama group situated on the coastal shelf.
 - Antsatrotro (14°05'S, 48°23'E) (5.169) (chart 3877).
- 2 Berahodo (13°55'S, 48°05'E) (5.169).
- Ambohimirahavavy (13°45'S, 48°05'E) (5.169).
- Andrano Miserano (13°39'S, 47°59'E) (5.169).
- 3 **Major lights:**
 - Nosy Lava Light (14°33'·0S, 47°35'·8E) (5.119).
 - Nosy Iranja Light (white tower, black top, 20 m in height) (13°36'S, 47°49'E).

Directions

(continued from 5.98)

Charts 704, 3872

5.160

- 1 From a position about 22 miles NW of Pointe Antsibonko (14°29'S, 47°42'E) the offshore track leads NE to Pointe d'Angadoka, passing (with positions from Pointe Analalava (14°13'S, 47°48'E)):
 - WNW of Nosy Saba (12½ miles SW) (5.165), thence:
- 2 WNW of a 1·2 m (4 ft) patch (11 miles W) the position of which is doubtful, thence:
 - WNW of Antany Mora (7 miles NNW), an island of the Îles Radama group, thence:
 - WNW of Nosy Kalakajoro (16½ miles N), an island, thence:
 - WNW of Pointe Komamery (27½ miles NNE), thence:
- 3 WNW of Nosy Iranja (37½ miles N), from which a light (5.159) is exhibited. When viewed from N it appears as two islets. Ambatomilay, an above-water rock, 13 m (35 ft) high, lies close S. Seen from W it has the appearance of a boat under sail. Thence:
- 4 WNW of a 10·1 m (33 ft) patch (reported 1967), the position of which is approximate, thence:

To a position about 10 miles NW of Pointe d'Angadoka (13°30'S, 47°58'E).

5.161

Useful marks:

- Ampombiabo (14°19'S, 47°55'E) (5.164).
 - Ankaramy (14°04'S, 48°05'E) (5.169).
 - Antoanina (13°58'·2S, 48°03'·6E) (5.169).
- (Directions for offshore passage continue at 6.17)

POINTE ANTIBONKO TO POINTE ANALALAVA

General information

Charts 704, 3872

Route

5.162

- 1 **Coastal route.** From a position NW of Pointe Antsibonko (14°29'S, 47°42'E) the route leads generally NE for about 19 miles to a position NW of Pointe Analalava (14°13'S, 47°48'E). The navigable channel lies between the coastal and offshore reefs.

Topography

5.163

- 1 Between Pointe Antsibonko and Pointe Analalava, 17 miles NNE, a reef fringes the coast which appears steep-to and, in places, very irregular with drying areas up to 1 mile offshore. Isolated patches of coral are found beyond the outer edge of the reef.
- The coast is backed by a range of hills with Sommet Antsatramahavelona, a high peak (1084 m), at its S end.

Principal marks

5.164

- 1 **Landmarks:**
 - Ampombiabo (14°19'S, 47°55'E) which has a remarkable group of trees on its summit.
 - Nosy Saba (14°21'·5S, 47°38'·5E) (5.165).
 - Nosy Valiha summit (14°10'S, 47°49'E).
 - Antany Mora summit (14°07'S, 47°45'E).
- 2 **Major light:**
 - Nosy Lava Light (14°33'·0S, 47°35'·8E) (5.119).

Directions

(continued from 5.121)

5.165

- 1 From a position NW of Pointe Antsibonko (14°29'S, 47°42'E), the track leads generally NE, keeping in the deepest water and passing (with positions from Pointe Ankirakanga (14°24'S, 47°41'E)):
 - NW of Lyra Bank (5 miles WSW), thence:
 - NW of Pointe Ankirakanga, thence:
 - 2 SE of Nosy Saba (14°21'·5S, 47°38'·5E), an island which has two small hills covered with trees; the W side is covered in brush and scrub and ends in a sandy beach, bordered by a reef, but the E side is steep-to. Viewed from seaward, the island is hard to discern against the background of the coast. Thence:
 - 3 WNW of Pointe Antsatsiaka (4 miles NNE). A 7·6 m (25 ft) shoal lies 1¼ miles NW. Thence:
 - SE of a 5·2 m (17 ft) patch (6¾ miles N), thence:
 - NW of Pointe Andranomena (10 miles NNE), and:
 - ESE of a 7·0 m (23 ft) shoal (10 miles N), thence:
- To a position about 2 miles NW of Pointe Analalava. A 4·3 m (14 ft) patch lies 2 miles farther NW.

5.166

1 **Useful marks:**

Nosy Lava Lighthouse (14°33'0S, 47°35'8E) (5.119).
White cliffs on Nosy Lava (14°30'S, 47°36'E) (5.125).

Village on Pointe Antsatramahavelona (14°26'S, 47°41'E).

(Directions for coastal passage continue at 5.170)

POINTE ANALALAVA TO POINTE SANGAJIRA

General information

Chart 3872 (see 1.22)

Route

5.167

- 1 From a position NW of Pointe Analalava (14°13'S, 47°48'E) the track leads generally N for about 18 miles to a position W of Pointe Sangajira (13°54'S, 47°54'E).

Topography

5.168

- 1 **Mainland coast** around the bays is described later, in the relevant text. Within the coast the land is generally high, rising to a number of mountains (5.169).

Îles Radama. The group lies between the coastal bank and the offshore reef, N of Pointe Analalava, and consists of four islands, namely:

- 2 Nosy Valiha (14°10'S, 47°49'E).
Antany Mora (14°07'S, 47°45'E).
Nosy Ovy (14°01'S, 47°48'E), the largest in the group.
Nosy Kalakajoro (13°57'S, 47°46'E).

- 3 The islands are hilly, with a covering of grass and trees, and all are partially or wholly surrounded by coastal reefs in addition to several isolated coral heads. Only Antany Mora is uninhabited.

Principal marks

5.169

- 1 **Landmarks:** (with positions from Pointe Analalava (14°13'S, 47°48'E)):

Ampombiabo (9 miles SE) (5.164).

Mount Marotaolana (21½ miles E) which has a bare, flattened, isolated summit with dark-coloured belts, almost horizontal, on the seaward side.

- 2 Ankaramy (18½ miles NE) which is bare.
Antsatrotro (14°05'S, 48°23'E) (chart 3877) 1876 m (6178 ft) high. The summit of Massif du Manongariyo.

Antoanina (13°58'2S, 48°03'6E) (21½ miles NNE), saddle-shaped with two peaks.

- 3 Berahodo (24½ miles NNE), prominent.
Ambohimirahavavy (32 miles NE), has twin peaks and is prominent.

Andrano Miserano (35 miles NNE) (1.22), a massive mountain covered in forest.

- 4 **Major light:**

Nosy Iranja Light (13°36'S, 47°49'E) (5.159).

Directions

(continued from 5.166)

5.170

- 1 **Caution.** See 5.155.

From a position about 2 miles NW of Pointe Analalava (14°13'S, 47°48'E) the track leads generally N, passing (with positions from Pointe Analalava):

W of drying reefs fringing Nosy Valiha (about 3 miles N) (5.168), thence:

- 2 E of Antany Mora (6½ miles NNW) (5.168), avoiding a drying reef that extends 8 cables ESE from the island, and:

E of a bank on which there is a reef that dries 1.5 m, on the E side of Antany Mora, thence:

W of an 11.0 m (36 ft) shoal, (8¼ miles N), thence:

- 3 W of a drying reef which extends up to 6 cables from the W coast of Nosy Ovy (14°01'S, 47°48'E) (5.168), thence:

Through the channel between Nosy Ovy and Nosy Kalakajoro (16½ miles N), keeping nearer to the latter island which is almost steep-to on its SE side, thence:

- 4 W of Banc de Vaudreuil (17 miles NNE), thence:

To a position about 4 miles W of Pointe Sangajira (13°54'S, 47°54'E) (5.176).

5.171

- 1 **Useful marks:**

Fort de Sada (13°54'S, 47°56'E) on the summit of a hill with a flagstaff. A village lies on the W side of the fort.

Nosy Iranja Light (13°36'S, 47°49'E) (5.159).

(Directions for coastal passage continue at 5.180)

Anchorage

Nosy Ovy

5.172

- 1 Shelter from sea breezes may be obtained by anchoring E of Nosy Ovy (14°01'S, 47°48'E) (5.168), in depths of 7 to 18 m (23 to 59 ft), good holding ground.

Baie Ramanetaka

5.173

- 1 **Description.** Baie Ramanetaka, a wide circular bay heavily encumbered with coral reefs and shoals, is entered between Pointe Analalava (14°13'S, 47°48'E) and Pointe Berangomaina, 9 miles NNE. Local knowledge is necessary.

Sheltered anchorage can be obtained by small vessels in an inlet 6 cables SE of Pointe Berangomaina.

Chart 3872 (see 1.22)

Baie de Sahamalaza

5.174

- 1 **Description.** Baie de Sahamalaza, a long narrow inlet, heavily encumbered by shoals on its E side, lies on the E side of Presqu'île Radama, a peninsula. It is entered between Pointe Berangomaina (14°06'S, 47°53'E), identified by an isolated hill, 60 m (201 ft) high, 5 cables E, and Pointe Lavalohalika, 5½ miles NNE, identified by two low but prominent hills which dominate the headland.

- 2 The S part of the bay contains Port Radama which also forms the estuary to Manongarivo River at the head of the bay.

Tidal streams in the entrance to the bay rarely exceed a rate of 2 kn at spring tides but are stronger in the SE part of the bay. Here, during the outgoing tidal stream, the water is fresh.

- 3 **Wind.** A NW sea breeze blows from N in the narrow part of the bay between about 1000 and 1700 and it is sometimes fresh.

5.175

- 1 **Directions.** Local knowledge is necessary as the bay has only been partially examined.

Approach can be made from NW, in the vicinity of Nosy Kalakajoro (13°57'S, 47°46'E), or through a narrow passage NW of Pointe Berangomaina (14°06'S, 47°53'E).

- 2 From a position about 2 miles N of the summit of Pointe Berangomaina the track leads about 7½ miles ESE and ¾ miles S through the deep water between the shoals, passing (with positions from Pointe Berangomaina):

SSE of Île Vert (14°04'0S, 47°58'7E), thence:

- 3 NNE of an unnamed point (6½ miles ESE), and to a position 4 miles SW of the summit of Ankaramy (14°04'S, 48°05'E).

Thence, the track leads S to a position E of Pointe Amboliboso (14°09'7S, 48°00'3E), the E point of the peninsula, passing E of a 1 m (3 ft) shoal, 1½ miles N of the point.

- 4 **Anchorage.** Good anchorage may be obtained, depending on draught, almost anywhere within the bay N of Pointe Aboliboso but mariners should be aware that uncharted dangers may exist.

Chart 3872 (see 1.22)

Baie de Rafaralahy

5.176

- 1 **Description.** Baie de Rafaralahy, close N of Baie de Sahamalaza, lies between Pointe Lavalohalika (14°00'S, 47°55'E) (5.174) and Pointe Sangajira (13°54'S, 47°54'E) (5.178), 7 miles N.

Tides. It has been observed that, in the anchorage, the height of the tide can differ by as much as 2 m (6½ ft) between two consecutive HW or LW tides.

- 2 **Directions.** The bay is entered from W in a position N of Banc Vaudreuil (13°57'S, 46°50'E) and the track leads E into the bay.

Caution is necessary when approaching and entering the bay as, with the sun ahead in the morning, it may make it difficult to estimate the distance from the coast. Also, the position of local boats off the village of Anorontsangana, 2 miles ESE of Pointe Sangajira, seen over the reefs can be very deceptive.

- 3 **Anchorage.** Anchorage may be obtained off the village of Anorontsangana which has a Customs House, marked by a flagstaff. It is reported that a vessel of 940 dwt has anchored off the village in a depth of 16 m (53 ft) with the bearing 015° of the flagstaff at Fort de Sada (13°54'S, 47°56'E) intersected with Pointe Lavalohalika bearing 170° and the S extremity of Nosy Kalakajoro bearing 264°. This anchorage was found to be good although apparently very close to the coastal reef.

- 4 **Landing** can be achieved close within Pointe Lavalohalika and also at Anorontsangana. Small boats can always land at the village, close W of the flagstaff but, at LW, larger boats strand some distance from the beach.

Supplies of beef and poultry can be obtained but vegetables are scarce and expensive.

- 5 **Small craft.** A boat passage exists through the chain of reefs and sandbanks extending from Pointe Lavalohalika (5.174).

Anchorage can be obtained in the E of two bays formed in the coastal reef fronting Anorontsangana, but local knowledge is required.

POINTE SANGAJIRA TO POINTE D'ANGADOKA

General information

Chart 3872 (see 1.22)

Route

5.177

- 1 From a position W of Pointe Sangajira (13°54'S, 47°54'E) the route leads N for about 18 miles to a position W of Nosy Iranja (13°36'S, 47°49'E) then turns NE for a further 9 miles to a position NW of Pointe d'Angadoka (13°30'S, 47°58'E).

Topography

5.178

- 1 From Pointe Sangajira (13°54'S, 47°54'E) to Pointe d'Angadoka (13°30'S, 47°58'E), 24 miles N, a drying reef fringes most of the coast, lying on the coastal bank with depths of 11.0 m (36 ft) over it and extending up to 1½ miles offshore.

- 2 From Pointe Sangajira to the entrance of Baramahamay River (5.184), 11 miles N, the coast is formed by a succession of cliffs and small stretches of sandy beach; thence to Pointe Antangena (13°36'S, 47°54'E), 7 miles farther N, it is backed by low hills, covered in trees, on which patches of red earth can be seen. Within the coast the land is generally high, rising to mountains.

- 3 Pointe d'Angadoka (13°30'S, 47°58'E) is the N extremity of a peninsula which extends N from the mainland. It is bordered by reefs and is dominated by a hill, 88 m in height. A range of hills extends across the peninsula, from Mont Dupuis, 145 m high, 2½ miles SSW of Pointe d'Angadoka, which stands near the W coast, to Sommet de la Compagnie, 146 m high, 2 miles SSE of Pointe d'Angadoka.

- 4 The island of Nosy Iranja, 4½ miles W of Pointe Antangena, situated on the reef on the edge of the coastal shelf, is rocky and 61 m high at its S end which is cliff faced and covered with vegetation. The N end is lower and barren, showing red rock while a chain of red rocks extends towards the island's centre and the summit.

- 5 From the S end of the island a sandy ridge, covered at HW, extends 1 mile SSE with a small islet (5.182) situated on it, 8 cables from the main island.

Principal marks

5.179

Landmarks:

Berahodo (13°55'S, 48°05'E) (5.169).

Ambohimirahavavy (13°45'S, 48°05'E) (5.169).

Andrano Miserano (5.169), 8½ miles NW of Ambohimirahavavy.

Major light:

Nosy Iranja Light (13°36'S, 47°49'E) (5.159).

Directions

(continued from 5.171)

5.180

- 1 **Coastal passage.** From a position about 4 miles W of Pointe Sangajira (13°54'S, 47°54'E) the track leads initially N, keeping to the deepest water, passing (with positions from Pointe Sangajira):

- 2 E of a 1.5 m (5 ft) patch (6 miles NW), thence:
Across the approach to the entrance of Andranomanilika River (5 miles N), which is obstructed by rocks but can be recognized as a distinct break in the coastline, thence:
E of a 6.5 m (21 ft) shoal (8¼ miles NW), thence:

- 3 W of Banc Vestal (9 miles NNW), the NW part of which dries 0.3 m (1 ft), and which lies 2 miles W of Pointe Komamery (8½ miles N), thence:
Across the approach to the entrance of Baramahamay River (11 miles N) (5.184) which appears as a distinct break in the coastline, thence:
- 4 W of detached shoals with a least depth of 0.6 m (2 ft) over them (13 miles N). These lie about 2 miles off the coast in front of Antampolo. Thence:
E of, or across a bank (17 miles N), with depths of 5.8 m (19 ft) over it, between Nosy Iranja and the coast.

5.181

- 1 Thence the track leads NNE, passing:
NNW of Pointe Antangena (18 miles N) (5.178), thence:
NNW of an 8.2 m (27 ft) coral shoal (19½ miles N), thence:
NNW of a rock awash, (20 miles NNE), thence:
- 2 Clear of a 12.8 m (42 ft) shoal, (22 miles N), thence:
NNW of Nosy Kivinjy, 1¼ miles W of Pointe d'Angadoka, a conical islet which rises from nearly vertical cliffs to a summit covered with brushwood, prominent from the W, thence:
- 3 To a position NW of Pointe d'Angadoka (13°30'S, 47°58'E) (5.178) about 2 miles NW of Ankazoberavina, an island covered with brushwood which, from SW, appears as two islets.

5.182

- 1 **Useful mark:**
Islet (13°36'S, 47°50'E), sandy and thickly wooded, lying on the S extremity of the sandy ridge which extends 1 mile SSE from Nosy Iranja.
(Directions continue at 6.24)

Charts 3872, 706 (see 1.22)

Small vessel passage**5.183**

- 1 From a position outside the coastal reef, between a 1.2 m (4 ft) coral shoal, 1¼ miles SW of Pointe d'Angadoka (5.178), and Nosy Kivinjy, 9 cables N of the shoal, the track leads NNE, passing (with positions from Pointe d'Angadoka (13°30'S, 47°58'E)):
WNW of Nosy Antsoha, (6 cables SW) which is 57 m high and covered with vegetation, thence:
- 2 ESE of a bank with a depth of 4.9 m (16 ft) over it extending 1½ cables E from Nosy Kivinjy (1 mile W), thence:
Either WNW of Ankazoberavina (1 mile N), or:
N of the coastal reef fringing Pointe d'Angadoka, and:

S of Ankazoberavina through a channel about 6 cables wide with a depth of 7.9 m (26 ft).

Anchorage**Baramahamay River****5.184**

- 1 **Local knowledge** is required for Baramahamay River (13°43'S, 47°53'E), which is navigable by coasters.
Directions. The navigable channel is narrow; vessels should keep near the middle, passing N of a 4.3 m (14 ft) shoal, 3 cables E of the S entrance point.
- 2 **Anchorage** which is well sheltered, except from W winds, can be obtained:

In the entrance to the river, where there are depths of about 6 m (20 ft).

In a depth of 12 m (39 ft) N of a village with a flagstaff, 6 cables ESE of the S entrance point.

- 3 **Small craft** can anchor in a basin 5 cables above the village; the coastal bank dries in this vicinity.

Boats can ascend Baramahamay River and Tatezambato River which flows into the former river 2 miles within the entrance.

Baie Kakambana**5.185**

- 1 Anchorage, suitable for coasters and sheltered except from NW, can be obtained in Baie Kakambana, which lies between Pointe Antangena (13°36'S, 47°54'E) and Pointe Andrahibo, 2¾ miles ENE, which rises to three wooded hillocks.
- 2 The best berth is in a depth of 6 m (20 ft), muddy sand, good holding ground, with Pointe Andrahibo bearing 343° distant 5 cables, clear of a dangerous rock, 9 cables SSW of Pointe Andrahibo, and Rocher Kiboaboa, 9 cables SSE of Pointe Andrahibo, which dries 0.6 m (2 ft).
- There are villages on the S and E shores of the bay.
- 3 **Small craft.** The mouth of Kakambana River, at the head of the bay, is encumbered by rocks but boats can enter at HW.

Nosy Antsoha**5.186**

- 1 Anchorage, suitable for a small vessel, is reported to have been obtained in a depth of 15 m (49 ft), 2¼ cables SSE of Nosy Antsoha (13°30'6S, 47°58'4E) (5.183).

Small craft**Nosy Antsoha****5.187**

- 1 Landing can be effected at LW on the E side of a drying sandy ridge which extends 8 cables SSE from the island to the islet (13°36'5S, 47°49'5E) at its S end.



Chapter 8



CHAPTER 6

NORTH-WEST COAST OF MADAGASCAR

POINTE D'ANGADOKA TO CAP D'AMBRE

GENERAL INFORMATION

Chart 3876 (see 1.22)

Scope of chapter**6.1**

- 1 This chapter covers the coastal and offshore waters NW of Madagascar between Pointe d'Angadoka (13°30'S, 47°58'E) and Cap d'Ambre (Tanjon'i Bobaomby) (11°57'S, 49°16'E), the N extremity of Madagascar, about 120 miles NE. It contains a description of the sea passages and routes in the area and the ports, harbours and anchorages adjacent to them, including Anse du Cratère (13°24'S, 48°13'E) (6.42), Hell-Ville (Andoany) (13°24'S, 48°17'E) (6.46), and Port Saint-Louis (13°05'S, 48°50'E) (6.101).
- 2 The chapter is divided into the following sections:
 Pointe d'Angadoka to Port Saint-Louis, including Nosy Be (6.11).
 Port Saint-Louis to Cap d'Ambre (6.110).

Topography**6.2**

- 1 From Pointe d'Angadoka to Cap Voailava (Cap Vohilava), 14 miles SW of Cap d'Ambre, the coast is fronted by a shelf with depths less than 90 m (50 fm) over it extending up to 40 miles offshore. The outer edge is steep-to and descends into great depths. On the shelf there are heads of coral, banks and flats, shallow in places, the latter often of great extent and lying mostly on or near the outer edge. From the nature of the shelf and adjacent coast it is considered likely that uncharted dangers may exist.
- 2 **Caution.** Care should be exercised when approaching and navigating over the shelf. A good lookout should be maintained to give warning of any change of colour of the water. Frequent soundings should be carried out, although this is unlikely to give much warning when approaching the steep-to edge.

Positions**6.3**

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions obtained from charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation, and are advised to use alternative methods of position determination, especially when closing the shore or navigating near dangers. See notes on charts.
- 2 **Charted positions.** Positions obtained from charts in this chapter differ by varying amounts, and therefore positions should be transferred by bearing and distance from common charted objects and not by latitude and longitude. See notes on charts.

Navigational information**6.4**

- 1 Because of insufficient information it is not possible to ensure that Admiralty Charts covering the waters of Madagascar are up to date for new dangers or changes to navigational aids. Mariners are advised to exercise particular caution when navigating in these waters. See also 1.7 for information on navigational marks.
- 2 **Caution.** Surveys of many of the banks in this area are old and incomplete. Depths may be less than charted and uncharted areas may exist.
 Buoyage is generally unreliable and lights are frequently reported to be extinguished. See 1.23 to 1.25 and *Admiralty List of Lights Volume D* for details.

Fishing**6.5**

- 1 Fishing with traps, handlines, gillnets, longlines, purse seine nets, and by trolling and trawling, is carried out off this coast; see 1.10.

Piracy**6.6**

- 1 An incident of piracy has been reported off the NW coast of Madagascar. For possible preventative measures see 1.58.

Weather**6.7**

- 1 See 5.7 for general weather conditions on this part of the NW coast of Madagascar.

Current and flow**6.8**

- 1 **Current** off the coast and over the coastal shelf generally sets N at rates from 1 to 2 kn, occasionally 2½ kn. Offshore currents are described at 1.170.
 Flow. Between Passe Lokobé (13°26'S, 48°22'E) (6.84) and Nosy Mitsio, 32 miles NNE (6.121), with a gentle WSW to NW breeze, there is reported to be a NE to E flow with rates from ¼ to 1½ kn; at spring tides the rate is said to be 2 to 2¼ kn.
- 2 From Nosy Mitsio to Nosy Anambo (12°16'S, 48°38'E) (6.149), with a strong E to SE breeze, there is a W set at rates from ½ to 1½ kn; the flow is stronger during a falling tide. With a moderate W to WNW breeze, it is reported that the flow may set anywhere between NNE and S at rates from ¼ to ¾ kn; the maximum rate is experienced at springs during a rising tide.
- 3 From Nosy Anambo to Cap d'Ambre (6.118), 40 miles NE, with E to SE winds, there is reported to be a set which turns to SW on a rising tide and NW on a falling tide, with a rate of about ½ kn. Winds between SW and WNW are said to cause a N to NE set with rates from ½ to 1½ kn; the rate is stronger during a falling tide.

Regulations**6.9**

- 1 See 1.40 to 1.42 for regulations concerning pollution of the sea, prohibited fishing areas and health requirement on entry.

Rescue**6.10**

- 1 See 1.54 and *Admiralty List of Radio Signals Volume 1(1)* for details of a reporting system designed to provide information for SAR operations.

POINTE D'ANGADOKA TO PORT SAINT-LOUIS, INCLUDING NOSY BE**GENERAL INFORMATION**

Chart 3876

Scope of section**6.11**

- 1 In this section are described the sea passages and other routes between Pointe d'Angadoka (13°30'S, 47°58'E) and Port Saint-Louis (13°05'S, 48°50'E) (6.101), about 56 miles ENE; also included are the offshore passages surrounding Nosy Be (13°20'S, 45°55'E), the largest of a group of islands situated off the mainland coast
- 2 Also described are the adjacent ports of Anse du Cratère (13°24'S, 48°13'E) (6.42) and Hell-Ville (13°24'S, 48°17'E) (6.46), together with Port Saint-Louis (6.101), and harbours and anchorages in the area. There is considerable coastal traffic in the area consisting mainly of small craft and barges.
- 3 The section is arranged as follows:
Offshore passage (6.17).
West approaches to Baie d'Ampasindava and south coast of Nosy Be (6.19).
Hell-Ville and approaches (6.46).
North-west approaches to Nosy Be (6.72).
East coast of Nosy Be (6.79).
Port Saint-Louis and approaches (6.93).

Topography**6.12**

- 1 The mainland coast, as far as Baie d'Ambaro (13°21'S, 48°38'E) is mostly dominated, a short distance inland, by moderately high summits which decrease in elevation to the E.
- 2 Nosy Be is a moderately high, rugged island of volcanic origin. The inhabited and cultivated parts are situated near the coast, especially where the shore is sandy and suitable for landing and hauling up boats. Close off its W side, Nosy Sakatia (13°18'S, 48°10'E), a wooded island with prominent white and reddish dunes; from the offing it appears to be part of Nosy Be. It is surrounded by reefs and is separated from the main island by a narrow, shallow channel.

Depths**6.13**

- 1 The W and N coasts of Nosy Be are encumbered by numerous banks and shoals extending up to 13½ miles from the shore near the edge of the coastal shelf with depths of 18.3 m (60 ft) or less over them. Navigable channels lead between these dangers to the harbours and anchorages around Nosy Be, and to Port Saint-Louis.

Tidal streams**6.14**

- 1 Except as described later in the text, tidal streams are generally weak and much influenced by the wind. They turn between 1 and 2 hours after HW and LW at Hell-Ville.

OFFSHORE PASSAGE**General information**

Charts 706, 3872, 3876

Route**6.15**

- 1 From a position NW of Pointe D'Angadoka the route leads NNE for about 35 miles, to a position WNW of Port Saint-Louis, in the vicinity of Le Grand Serpent (13°00'S, 48°17'E).

Principal marks**6.16**

- 1 **Landmarks:**
Mont Maromokotro (14°01'S, 48°55'E) (Chart 3877).
Les Deux Sœurs (Ambohimirahavavy) (13°46'S, 48°05'E) (6.23).
 - 2 Pic du Tanilatsaka (13°19'S, 48°14'E) (6.23).
Andranomatavy (13°39'S, 47°59'E).
Sommet Galoka (13°35'S, 48°44'E).
- Major light:**
Nosy Iranja Light (13°36'S, 47°49'E) (5.159).

Directions for offshore passage*(continued from 5.161)***6.17**

- 1 From a position NW of Pointe d'Angadoka (13°30'S, 47°58'E), the track leads NNE, passing (with positions from Pointe d'Angadoka):
WNW of Grand Banc de l'Entrée (Toraben'ny Fidirana) (10 miles NNE), thence:
WNW of Les Pléiades (17½ miles NNE), thence:
WNW of Le Crabe (20 miles NNE), thence:
WNW of La Tortue (27½ miles NNE), thence:
WNW of Green Bank (30 miles NNE), thence:
To a position WNW of Port Saint-Louis, in the vicinity of Le Grand Serpent (The Great Serpent) (34 miles NNE).

6.18

- 1 **Useful mark:**
Mont Andilah (13°15'3S, 48°11'4W) (13°15'5S, 48°11'5E) (6.73).
(Directions continue for offshore passage at 6.116 and for passages N of Nosy Be at 6.75 and 6.97)

**WEST APPROACHES TO
BAIE D'AMPASINDAVA AND
SOUTH COAST OF NOSY BE****General information**

Charts 706, 2871

Routes**6.19**

- 1 From a position NW of Pointe d'Angadoka (13°30'S, 47°58'E), the route leads initially about 11 miles ESE to Pointe d'Ampoahana (13°31'5S, 48°04'4E) then divides into two.
- 2 **N route.** The N route then leads about 13½ miles ENE to a position S of Hell-Ville, on the S coast of Nosy

Be, passing N of Nosy Tanikely (13°28'9S, 48°14'9E).

- 3 **S route.** The S route leads 10 miles ESE and 6½ miles E, passing S of Nosy Tanikely, to a position S of Nosy Komba (13°28'S, 48°22'E).

Topography

6.20

- 1 The mainland coast is rugged and mountainous, inset with shallow rocky inlets and bays and edged with coral reefs. To seaward, the coastal shelf is reasonably even, rising gently eastward. Northwards, there are some scattered shoals within 5 miles of the coast.

Depths

6.21

- 1 From Pointe d'Ampoahana to Pointe d'Ankify (6.40) the route lies across the entrance to Baie D'Ampasindava, the sea-bed forming part of the coastal shelf with a gentle upward slope from seaward towards the passages between the Massif d'Ankify, Nosy Komba and Nosy Be. In general, the depth rises evenly from 44 m (24 fm) to 12 m (39 ft) during the passage although scattered shoals do exist N and S of the track.

Natural conditions

6.22

- 1 **Tidal streams** set E with a rising tide and W with a falling tide at rates from ½ to 1½ kn.
Flow. Between Pointe Angadoka (13°30'S, 47°58'E) and Nosy Tanikely (13°28'9S, 48°14'9E), during a falling tide with a light NE breeze, there is said to be a WNW flow while, with a gentle SW breeze, a NNE flow. The rates in both cases are from ½ to ¾ kn. During a rising tide with a light SW breeze the flow is reported to set NNE at rates from ½ to 1¼ kn.

Principal marks

6.23

1 Landmarks:

- 1 Andrano Miserano (13°39'5S, 47°59'2E) (2238 m). the highest and W-most peak in a mountain range lying 8 to 10 miles inland, SSE of Pointe d'Angadoka.
 Les Deux Sœurs (13°46'S, 48°05'E) (2454 m). Twin prominent peaks.
- 2 Pic du Tanilatsaka (13°19'S, 48°14'E) (1070 m). The highest peak in the central part of Nosy Be, rising among lesser, but distinctive, volcanic peaks.
 Mont Lokobé (13°24'3S, 48°19'9E) The highest peak on Nosy Be, rising to a granite peak with deep ravines from an area of forest in which there are several lower peaks.

- 3 Nosy Tanikely (13°28'9S, 48°14'9E) (6.26).

Major light:

Nosy Iranja Light (13°36'S, 47°49'E) (5.159).

Directions

(continued from 5.182)

Chart 706

Pointe d'Angadoka to Pointe Ampoahana

6.24

- 1 From a position NW of Pointe d'Angadoka (13°30'S, 47°58'E) the track leads about 7 miles E, passing (with positions from Pointe d'Angadoka):
 N of Ankazoberavina Island (1¼ miles N) (5.181), thence:

N of a 10.7 m (35 ft) shoal (2½ miles NE), and:
 S of a 14.9 m (49 ft) shoal (3¾ miles NNE) (position approximate), thence:

- 2 S of a group of shoals (5 miles NE) with a least depth of 11.9 m (39 ft) over them, thence:

- 3 To a position N of Pointe d'Ampoahana (13°31'5S 48°04'4E).

(Directions for the S coast of Nosy Be continue at 6.26.

Directions S of Nosy Komba continue at 6.27)

Alternative side channel

6.25

- 1 **Minor side channel.** For vessels bound for the W coast of Nosy Be a narrow, deep channel leads ENE between the S part of Grand Banc de l'Entrée (13°22'S, 48°02'E), and Banc de Cinq Metres, about 1½ miles S. Directions are not considered necessary as the chart is the best guide.

Pointe Ampoahana to Hell-Ville or Nosy Komba

(continued from 6.24)

6.26

- 1 **North route.** From a position N of Pointe d'Ampoahana (13°31'5S, 48°04'4E) the track leads ENE, passing (with positions from Nosy Tanikely (13°28'9S, 48°14'9E)):
 SSE of Banc de Cinq Metres (11 miles WNW), thence:
 SSE of Banc Souzy (Banc Suzi) (4 miles NNW).
 Pointe du Cratère lies 8 cables N. Thence:
- 2 NNW of Nosy Tanikely (Ninepin), a distinctive island with a prominent rock off the N extremity, which can be safely approached to within 1 mile from any direction. A light (6.27) is exhibited from the summit, thence:
- 3 SSE of Pointe Mahatsinjo (4¼ miles NNE) (6.42), thence:
 NNW of Banc de l'Heloise (2 miles E), thence:
- 4 To a position in the approaches to Hell-Ville, S of Rade de Hellville (4½ miles NE).
 (Directions for Hell-Ville are given at 6.63
 and for Anse du Cratère at 6.43.
 Directions for Passe Lokobé continue at 6.84)

6.27

- 1 **South route.** (continued from 6.24) From a position N of Pointe d'Ampoahana (13°31'5S 48°04'4E) the track leads initially 10 miles ESE, then 6½ miles E, passing (with positions from Nosy Tanikely):
 SSW of Nosy Tanikely (6.26).
 Thence the track leads E, passing:
 N of Banc du Touareg (3½ miles SSE), thence:
 N of Banc d'Antaimpitili (5 miles SE), and:
- 3 SSW of a rocky patch (5¼ miles ESE), with a least depth of 9.5 m (31 ft) over it, thence:
 NNW of a coral and sand shoal (7 miles ESE), extending W midway between the mainland and Nosy Komba with a least depth of 4.2 m (14 ft) over it, thence:
- 4 To a position about 1½ miles N of Pointe d'Ankify (Pointe d'Ankifi) (13°32'S, 48°22'E), and about 5 cables S of Nosy Komba. A large isolated rock lies close N of the point and a ruined factory lies on the E side. (Anchorage, see 6.40.)

Caution. Further passage E, through the channel S of Nosy Komba, is considered unsafe due to strong tidal streams and isolated shoals. Local knowledge is essential.

5 Useful marks:

Pic Dénudé (13°37'S, 48°03'E).
 Sommet de l'Arbre Mort (13°33'0S, 48°03'7E).
 Sommet de la Compagnie (13°32'0S, 47°59'6E) (6.30).

Nosy Tanikely Light (white tower, black top, 10 m in height) (13°28'9S, 48°14'9E).

Minor harbours and anchorages

Baie d'Ambavatoby

6.28

- 1 **General information.** Baie d'Ambavatoby (13°32'S, 48°01'E), situated 2½ miles SE of Pointe d'Angadoka (13°30'S, 47°59'E) affords sheltered anchorage in depths not less than 11 m (36 ft). The bay is formed by a wide basin off which are three inlets. It is entered between Pointe Antsiraka (13°31'9S, 48°00'9E) and Pointe Makamby, 7 cables E.

6.29

- 1 **Directions for entry.** From a position 1½ miles ENE of Pointe Angadoka the alignment (162½°) of Pic Dénudé (13°37'S, 48°03'E), with the depression between the peaks of Les Deux Sœurs (13°46'S, 48°05'E) (6.23), SSE, leads through the centre of the entrance channel and into the bay. Pointe Marolay (13°33'5S, 48°01'6E) lies close E of this alignment but is difficult to identify. Two greyish hills, overlooking the entrance points, serve to identify the entrance. Within the bay, Roche Dalrymple, awash at LW, lies 3 cables NW of Pointe Amboaboaka (13°33'3S, 48°00'9E), in the centre of the bay.

6.30

- 1 **Anchorages.** Anchorage may be obtained as follows:
On the W side, in Baie d'Andassy Bé. A suitable berth lies at the intersection of Sommet de la Compagnie (13°32'0S, 47°59'6E), the highest peak on the E side of Baie d'Ambavatoby, bearing 287° and Pointe Antsiraka bearing 040° in depths of about 13 m (42 ft), mud. Other berths are available if required.
- 2 Anchorage can be obtained in Baie d'Amboahangy in depths from 11 to 16 m (36 to 52 ft), mud, or sand and mud.
Baie d'Androfiabé, in the S part of the bay, affords limited anchorage as it is encumbered with reefs and mud banks.

Baie d'Ambararata

6.31

- 1 **General information.** Baie d'Ambararata, 2½ miles SSE of Pointe d'Ampoahana (13°31'5S 48°04'4E), is a well-sheltered natural inlet formed between a drying reef, on which there are some remarkable above-water rocks, extending 2 miles NNW from Cap Makamby (Makambi) (13°35'S, 48°07'E) and the mainland coast. The islet of Nosy Kisimany (13°33'7S, 48°06'3E) lies close to the N end of the reef.
- 2 It is approached from NNW and entered between Nosy Kisimany and Ampasimena, a village with a flagstaff, 1 mile W.

6.32

- 1 **Directions.** Approaching from N, the track leads SSE, passing (with positions from Nosy Kisimany):
ENE of a rock (2½ miles NNW) which dries 3-4 m (11 ft), thence:
ENE of the coastal village of Ampasimena (1 mile W), thence:
- 2 ENE of a drying reef which extends 1 cable E from Pointe du Rocher (4½ cables SW), a promontory, 71 m high. The edge of the reef should be marked before entering.

6.33

- 1 **Anchorage** can be obtained in depths from 13 to 15 m (43 to 49 ft), 4 cables S of Nosy Kisimani.
Coasters can anchor near the head of the bay, care being taken to avoid the vicinity of Roche du Confluent, with a least depth of 0.3 m (1 ft), charted as a dangerous rock, 8 cables S of Nosy Kisimany.
- 2 **Supplies.** Fresh provisions can be obtained at a village at the head of the bay. Game and fish are abundant.

Baie d'Ampasindava

6.34

- 1 **General information.** Baie d'Ampasindava is a large indentation in the mainland coast entered between Pointe d'Anjanozano (13°36'S, 48°09'E), which is dominated by a hill, and Pointe d'Antaimpitily (13°33'0S, 48°20'3E), formed by the W slope of the Massif d'Ankify. The bay affords anchorage although too open for shelter.
- 2 The E shore of the bay is low and wooded, forming the estuaries of numerous rivers while, S and W, the mountains slope steeply to the shores.

6.35

- 1 **Directions.** From the vicinity of the area S of Nosy Tanikely (13°28'9S, 48°14'9E), the track through the bay leads generally S, the chart being sufficient guide.

6.36

- 1 **Useful mark:**
Pointe Ambodimadiro (13°48'3S, 48°15'6E), at the head of the bay and dominated by a pointed hill.

6.37

- 1 **Anchorage** can be obtained by large vessels off the W shore of the bay.
Anchorage for smaller vessels may be obtained in depths from 12 to 14 m (39 to 46 ft), as indicated on the chart, in the channel W of Nosy Mamoko (13°43'S, 48°12'E), a small island in the SW part of the bay which forms part of a group including Nosy Lolo and Nosy Keli. An approach can be made from NNE, through a narrow channel between Nosy Mamoko and an islet, 5 cables NW, S of Nosy Lolo; also from SSE, between Nosy Mamoko and the coast.

6.38

- 1 **Supplies** of fresh provisions can be obtained at villages around the bay. Mailaka, a large village, stands on the S shore, 1 mile ESE of Pointe Ambodimadiro.
Except during the dry season, fresh water can be taken from the rivers which flow into the sea W of Nosy Mamoko.

6.39

- 1 **Small craft.** Several rivers enter the bay on the E side, of these Sambirano River (13°42'S, 48°20'E) is not navigable.

Pointe d'Ankify

6.40

- 1 **Anchorage.** Vessels can anchor off Pointe d'Ankify (13°32'S, 48°22'E) (6.27) as shown on the chart, in depths from 10 to 12 m (33 to 39 ft), sand, gravel and coral, with the E peak of Massif d'Ankify, 1¼ miles S of the point, bearing 177° and the isolated rock close N of the point, bearing 240°.
Landing is best effected a little E of Pointe d'Ankify, but tidal streams may be strong in this area.

Nosy Komba

6.41

- 1 **Anchorage** can be obtained W of Nosy Komba (13°28'S, 48°21'E) (6.80) in depths from 15 to 24 m (49 ft to 13 fm),

sand or muddy sand, good holding ground. It is well sheltered here from all except W winds.

Anse du Cratère

Chart 706, 2871

General information

6.42

- 1 **Position.** Anse du Cratère (Crater Bay) (13°24'0S, 48°13'5E) lies on the S coast of Nosy Be, 3½ miles W of Hell-Ville and is entered between Pointe du Cratère (13°24'2S, 48°13'3E) and Pointe Mahatsinjo, 3 miles ESE

Function. The bay contains an oil terminal and a sugar loading facility on the W side which are both privately owned.

- 2 **Topography.** Pointe du Cratère is the SW tip of Nosy Be, projecting S. The point is formed by an ancient volcanic crater which itself forms a lake, open to the sea through a passage on its S side where the crater wall has collapsed. A sand-bank extends 1½ cables ENE from the E side of the point, at the end of which stands a rock which dries to 0.6 m (2 ft).

- 3 On the E side of the bay a wide coral reef extends up to 1 mile from the coast. This is partially covered with silt, shingle and large rocks and dries, in parts. Beyond the reef, wooded hills cover Pointe Mahatsinjo (13°24'9S, 48°16'3E), and separate the bay from Baie d'Hellville Bay, further to the E. To the N, at the head of the bay, the land is low, wooded and forms an estuary for several rivers.

- 4 **Depths.** there is a reported depth of 9 m (30 ft) at the tanker mooring.

Maximum size of vessel handled. It is understood that the tanker mooring berth is suitable for vessels up to 6000 dwt.

- 5 **Pilotage.** Local pilots are not available. Pilotage is recommended for the mooring berth and may be available from other ports with at least 4 days prior notice through the agent in Hell-Ville.

Tugs. Tugs are available from Hell-Ville.

6.43

- 1 **Directions.** From a position about 1 mile SSE of Pointe du Cratère (13°24'2S, 48°13'3E), the track leads N into the bay, passing E of Banc Souzy, 7 cables S of the point, and E of Point du Cratère.

Useful mark:

Signal station above Pointe Mahatsinjo, (13°24'6S, 48°15'7E).

6.44

- 1 **The anchorage.** Anchorage may be obtained, as indicated on the chart, 5 cables E of a beacon (white) (13°23'6S, 48°13'6E) standing close NE of the village of Andampy, in depths of about 17 m (55 ft), mud. Vessels are required to limit their swing to 250 m radius when anchored.

- 2 **Berths.** Mooring buoys are positioned close E of Pointe du Cratère to provide a berthing facility for the oil terminal. Vessels berth heading ESE with two anchors forward and stern lines to the two mooring buoys. Discharge is by pipeline, see 1.36. The tidal stream in the vicinity is reported to seldom exceed a rate of 1 kn and, if required, tug assistance can be provided from Hell-Ville.

- 3 There is a small quay (13°23'9S, 48°13'5E), close S of Andampy, which dries and is used for loading sugar to lighters. A light railway connects this quay with a sugar refinery.

6.45

- 1 **Small craft.** There is a small jetty and hulk in the crater of Pointe du Cratère, used by fishing vessels. It is accessible at HW through a man-made channel on the S side of the crater.

HELL-VILLE AND APPROACHES

General information

Charts 706, 2871

Position

6.46

- 1 Hell-Ville (Andoany) (13°24'S, 48°17'E) stands in the middle of the S coast of Nosy Be, near the head of Baie d'Hellville.

Function

6.47

- 1 It is the principal town of the island with a population of about 8000. A commercial harbour with limited facilities, it is mainly engaged in the coastal trade and fishing, being the centre of a shrimp and crab fishing industry. It is also a port of call for Arabian and Indian dhows which have a considerable trade with the W coast of Madagascar during the NW monsoon season from November to March.

- 2 Principal exports include sugar, coffee, vanilla and perfume oils. Imports are mainly petroleum products. Containers are also handled.

Topography

6.48

- 1 Between Pointe Mahatsinjo (13°24'9S, 48°16'3E) (6.42) and Pointe Lokobé (13°25'4S, 48°19'4E) (6.84), a distance of about 3 miles, the coast in the approaches to Hellville is indented by a bay which forms Rade d'Hellville (Great Road).

- 2 The N shore of Rade d'Hellville is indented by two bays and a cove. Hell-Ville stands on a promontory on the W side of Anse du Plateau, the centre cove. The promontory slopes steeply seaward and numerous buildings can be seen on it. From the SE end of the promontory a mole on which there are some warehouses extends ESE to the edge of a drying reef which fills the head of the cove, the shore of which is covered with mangroves.

Approach and entry

6.49

- 1 Entry is from S, direct from sea, on the alignment of leading lights (6.63).

Traffic

6.50

- 1 In 2003, 59 vessels with a total dwt of 206 675 used the ports of Hell-Ville and Anse du Cratère.

Port Authority

6.51

- 1 Committee Fivondronam-Pokotany, Hell-ville, Nosy Be, Madagascar

Limiting conditions

Controlling depths

6.52

- 1 For ocean-going vessels the controlling depths are the depths in the anchorage or at moorings.

Deepest and longest berth

6.53

- 1 Quay at molehead (6.66).

Mean tide levels**6.54**

- 1 At Hell-ville the mean spring range is about 3-4 m; mean neap range about 1-0 m. for further information see *Admiralty Tide Tables Volume 3*.

Arrival information**Port operations****6.55**

- 1 Ocean-going vessels normally anchor in the roads where cargoes are worked by lighter. Tankers with cargo for the oil terminal in Anse du Cratère (6.44) but which are too large for the terminal berth, normally anchor S of Pointe à la Fièvre (13°24'4S, 48°17'9E) and tranship into smaller vessels.
- 2 Coastal vessels and the larger dhows usually berth alongside.

Port radio**6.56**

- 1 There is a coast radio station at Nosy Be. For details see *Admiralty List of Radio Signals Volume 1(1)*.

Notice of ETA**6.57**

- 1 The Port Agent should be advised of a vessel's ETA, draught, length, tonnage and nationality.

Pilots**6.58**

- 1 Pilotage is not available; see also 6.44 for Anse du Cratère.

Tugs**6.59**

- 1 Small tugs are available.

Regulations concerning entry**6.60**

- 1 No communication with the shore is permitted until pratique has been granted by the Health Officer who boards vessels on arrival.

Harbour**General layout****6.61**

- 1 The harbour comprises an open roadstead SSE of the town where most vessels work cargo in the anchorage. A mole extends 300 m from the SE part of the town with a quay at its head, used by smaller vessels.

Natural conditions**6.62**

- 1 Swell is caused by WSW to W winds in the anchorage off Hell-ville, which is otherwise sheltered.

Climatic table. see 1.235.

Directions for entering harbour**6.63**

- 1 **Leading lights (Anse du Plateau):**
Front light (white beacon, black stripe, 8 m in height) (13°24'0S, 48°17'8E), exhibited on the shore at the head of Anse du Plateau (Plateau Cove).
Rear light (similar structure, 6 m in height), (600 m NNE of front light). Both lights are directional.

- 2 From a position S of Hell-Ville, the alignment (017°) of these lights leads to the anchorages and harbour, passing (with positions from the molehead (13°24'4S, 48°17'5E):
ESE of Pointe Mahatsinjo (1¼ miles SW), thence:
ESE of the reefs extending ½ mile S from Hell-Ville.
- 3 Thence, the track leads to the anchorages and the harbour. The mooring buoy, shown on chart 2871, 1½ cables SE of the molehead, no longer exists.

Useful mark:

Residency with flagstaff (13°24'37S, 48°17'34E). The Residency is a distinctive building at the E end of Hell-Ville sea front.

6.64

- 1 Approaching from SE, a course of 305° leads into the roadstead, passing SW of Pointe à la Fièvre (6.55).

Berths**Anchorage****6.65**

- 1 The main anchorage, indicated on the chart, lies on the leading line (6.63), 2½ cables SSE of the head of the mole. Anchorage is in a depth of 16 m (53 ft), mud, and has a restricted swinging radius of 300 m.
Small vessels may anchor, 1½ cables E of the head of the mole, on the 017° leading line, in depths of about 9 m (30 ft).
- 2 Coasters and large dhows obtain good anchorage in Anse des Antalaoatra (Ambanoro Bay), 9 cables E of the molehead. Local knowledge is required.
Small vessels may also anchor in Baie d'Hellville, SSW of the town, but communication with the town is more difficult due to the reefs.

Alongside berth**6.66**

- 1 Quay at the molehead: length 85 m, depth alongside 2.7 m. A 2.4 m (8 ft) rocky shoal lies ½ cable E of the molehead.
Landing steps for boats on N side of mole which is also used by local ferries.

Port services**Repairs****6.67**

- 1 Minor, in emergency only; slipway with lifting capacity of 200 tonnes in Baie d'Hellville.

Other facilities**6.68**

- 1 Hospital in Hell-Ville; issue of Deratting Exemption Certificates; no facilities for reception of waste oils and residues.

Supplies**6.69**

- 1 Fresh water at Hell-Ville quay. It may also be available by lighter at 48 hours notice but it is reported to be of poor quality; fresh provisions, although vegetables may be scarce; fuel oil is reported to be available at Hell-Ville quay and by lighter.

Communications**6.70**

- 1 Sea ferry service to Antsahampana (6.91); airport, 11 km distant, with daily service to Antananarivo International Airport.

Small craft**6.71**

- 1 **Berths.** Small quay which dries, near the customs house (13°24'2S, 48°17'3E) at Hell-Ville.
Small jetty (13°24'4S, 48°18'1E) on E side of Pointe à la Fièvre (6.55), near an oceanographical station.
- 2 Jetty, 8½ cables ENE of Pointe à la Fièvre, at the head of Anse des Antaloatra in front of Ambanoro village. The jetty is approached by a narrow channel between reefs and shoals which encumber the head of the bay.

NORTH-WEST APPROACHES TO NOSY BE**General information**

Chart 706

Routes**6.72**

- 1 **West coast.** From the vicinity of 13°08'S, 47°59'E, off the NW coast of Nosy Be, the route leads about 22 miles SE, passing SW of Nosy Sakatia (13°18'S, 48°10'E) (6.12) to join the route to the S coast of Nosy Be (6.26), SW of Pointe du Cratère (13°24'S, 48°13'E).
- 2 **North coast.** From the vicinity of 13°08'S, 47°59'E the route leads about 25 miles E to a position NE of Pointe d'Ampilaho (Pointe d'Ankilaho) (13°12'S, 48°19'E), passing along the N coast of Nosy Be.
Other narrow channels lead through the coastal bank in this vicinity.

Landmarks**6.73**

- 1 Mont Andilah (13°15'5S, 48°11'5E), round and wooded.
Mont Ankotaka (13°14'0S, 48°17'6E), (209 m in height), the summit of which dominates the north-most massif of Nosy Be.

Directions for west coast**6.74**

- 1 From the vicinity of 13°08'S, 47°59'E the track leads SE, passing (with positions from Pointe d'Andilah (13°15'4S, 48°01'0E)):
SW of Les Pleiades (6¼ miles NW), thence:
SW of Banc d'Andilah (1½ miles NW) thence:
NE of the NE part of the Grand Banc de l'Entrée (6¼ miles SW), thence:
SW of Nosy Sakatia (2½ miles SSW) (6.12) and:
SW of an 11 m (36 ft) coral patch (6½ miles SW), thence:
NE of Banc de Cinq Metres (11 miles SW), thence,
SW of Banc de Dزاماندزار (6½ miles SSW), thence:
SW of Nosy Tanga (6¾ miles S), thence:
SW of Roche Amandro (7½ miles S), thence:
To a position SW of Pointe du Cratère (13°24'S, 48°13'E) where it joins the route (6.26) to the S coast and Hell-Ville.

Directions for north coast*(continued from 6.18)***6.75**

- 1 From the vicinity of 13°08'S, 47°59'E, the track leads E, passing (with positions from Nosy Fanihi (13°11'S, 48°15'E)):
N of Les Pleiades (10 miles WSW), thence:
N of Le Crabe (6½ miles WSW), thence:
S of La Tortue (6 miles NNW), thence:
2 Clear of an 11.9 m (39 ft) coral shoal (3½ miles NNW), thence:
S of Banc du Goliath (5 miles N). Banc Vert lies 2 miles N. And:
N of a 9.5 m rocky patch (2½ miles NNE), thence:
3 N of Banc Erdwin (3 miles ENE). Pointe Ampanassy (Ampanassi), the N point of Nosy Be, lies 1½ miles SSW.
4 Thence the track leads to a position N of Pointe d'Ampilaho (Pointe d'Ankilaho) of (13°12'S, 48°19'E).
*(Directions for Port Saint-Louis continue at 6.98.
Directions for the outer coastal route N continue at 6.129)*

Alternative channels**6.76**

- 1 **Description.** A narrow channel, about 1 mile wide, leads SE between Les Pleiades (13°13'1S, 48°05'3E), and Le Crabe, 2 miles NE. It is bounded by coral patches and shoals with least charted depth of 8.5 m (27 ft).
Description. A second channel, about 1½ miles wide, leads S or N between Le Crabe (13°12'6S, 48°07'0E), and Banc d'Andilah, 2½ miles SSE. Banks and shoals with a least charted depth of 12.8 m (42 ft), border this channel.
- 2 **Description.** An inshore navigable channel, close off the coast and suitable for local coastal vessels, leads NE and E around the N coast of Nosy Be from Pointe Andilah (13°15'4S, 48°01'0E), to Pointe d'Ampilaho (13°12'S, 48°19'E). It passes through numerous banks and shoals. Local knowledge is essential.
In each case the chart is the best guide.

Anchorage**Nosy Sakatia****6.77**

- 1 Anchorage may be obtained off the SE part of Nosy Sakatia (13°18'S, 48°10'E) (6.12) in depths of 16 to 20 m (52 to 65 ft), soft clay, with good holding ground. This anchorage is sheltered from all but SW and W winds, which rarely blow here.
- 2 **Directions.** From seaward, in a position about 2½ miles NW of Nosy Tanga (13°22'0S, 48°11'5E), the track to the anchorage leads NE, passing NW of Banc de Dزاماندزار.

Baie de Befotaka**6.78**

- 1 **Description.** Baie de Befotaka (13°14'S, 48°14'E), lies on the N coast of Nosy Be and is entered between Pointe d'Amboday (13°12'7S, 48°15'4E), and Pointe d'Andilah, 5 miles SW. The entrance is partially obstructed by rocks and shoals and a strong NW sea breeze usually raises a rough sea in the bay.
- 2 **Anchorage** may be obtained in the central part of the bay, clear of known dangers, in depths of about 18.6 to 22 m (59 ft to 22 fm).

Directions. Dependent on draught, from a position W of Nosy Fanihi (13°11'S, 48°15'E), the track into the bay leads generally S, passing (with positions from Nosy Fanihi):

- 3 W of Pointe d'Ambroday (2 miles SSE), thence:
E of Roche Guibert (¾ miles SSW), thence:
W of Roche Soa (2½ miles S), thence:
E of Antsoibery (4½ miles SSW).

EAST COAST OF NOSY BE

General information

Charts 706, 2871

Route

6.79

- 1 From Rade d'Hellville, in the vicinity of Pointe Lokobé (13°25'4S, 48°19'4E), the route leads initially about 7 miles ENE through Passe Lokobe, N of Nosy Komba, to a position E of Pointe Tafondro (13°24'5S, 48°22'2E), in Baie de Tsimipaika, from whence it turns to lead 17 miles N to a position NE of Pointe d'Ampilaho (13°12'S, 48°19'E).
- 2 **Caution.** The channel through Passe Lokobe, marked by buoys, is narrow and should be used by day only. Larger vessels can use the channel at HW. The buoyage is unreliable and should not be depended upon for safe navigation.
- 3 The channel S of Nosy Komba is considered unsafe due to strong tidal streams and isolated shoals. Local knowledge is essential.

Topography

6.80

- 1 Nosy Komba (Nosy Amberiovato) is relatively high with precipitous coasts, rising to the summit of Antanianaomby, its highest peak near the centre.
Numerous rivers flow into the S part of Baie de Tsimipaika, E of Nosy Komba, which is heavily encumbered by shoal areas and rocky patches in its SW part, including the small islet of Ambato Rano (13°30'8S, 48°23'7E). At the mouth of the rivers the bay is shallow, being filled with alluvial deposits brought down by the rivers.
- 2 Farther N, the E coast of Nosy Be is indented by several bays and fronted by a narrow coastal reef for most of its length. Eastwards, Presqu'Île d'Ambato extends N, forming the E shore of Baie de Tsimipaika and separated by a narrow passage at its N extremity from the island of Nosy Faly (13°19'S, 48°28'E).

Depths

6.81

- 1 The minimum depth in the channel through Passe Lokobe is 8.4 m (28 ft).

Natural conditions

6.82

- 1 **Current.** See 6.8.
Tidal streams. In the passage S of Nosy Komba the tidal streams are strong, attaining a rate of 2½ kn at spring tides. After slack water at the turn of the streams (see 6.14) the streams quickly reach their maximum rate and, if the wind is fresh at this time, the sea rises very rapidly.

Principal marks

6.83

- 1 **Landmarks:**
Sommet Galoka (13°35'S, 48°44'E) (Chart 3876).
Mont Ambato (13°27'S, 48°34'E) (6.94) (Chart 3876).

Mont Lokobe (13°24'3S, 48°19'9E).

Mont Ankotaka (13°14'0S, 48°17'6E) (6.73).

Directions

(continued from 6.26)

Passe Lokobé

6.84

- 1 From a position S of Rade de Hellville (13°25'S, 48°17'E), about 1½ miles SSW of Pointe Lokobé (13°25'4S, 48°19'4E), the track leads ENE with Nosy Vorona Light (white, 8-sided tower, grey lantern, 9 m in height) (13°25'4S, 48°22'5E), exhibited from the summit of the islet, ahead bearing 076°, and by night in the white sector (072°-080°) of the light, passing (with positions from the light):
- 2 SSE of Pointe Lokobe (3 miles W), thence:
SSE of a beacon (2½ miles W) (position approximate).
Thence the track leads to a position 6½ cables NNW of Pointe Ambarionaomby, the N point of Nosy Komba, from whence the track turns NE.

6.85

- 1 **Leading beacons.**
Front beacon, (red and white chequers, masonry) (13°24'6S, 48°22'1E).
Rear beacon, (similar structure) (1¼ cables NE of front). (Both positions approximate).
- 2 From a position 1¼ miles WSW of Nosy Vorona the alignment (040°) of these two beacons leads 5 cables NE through the middle part of Passe Lokobé, passing SE of T3 Buoy (non-IALA), marking the E side of a shoal area on the E side of the channel.
- 3 **Clearing bearing.** The leading beacons are too close together to achieve a good transit but the bearing, about 218°, of the summit of Les Deux Sœurs (13°46'S, 48°05'E) (6.23), a little open of the NW point of Nosy Komba, astern, clears SE of the shoal area described above. Thence the track turns ENE.

6.86

- 1 **Leading beacons.**
Front beacon (white with black band, black rectangular topmark; masonry) (13°25'4S, 48°19'8E), standing close E of Pointe Lokobé (6.84).
Rear beacon (white with black band; masonry) (3½ cables W of front beacon) (position approximate).
- 2 From a position 8 cables WNW of Nosy Vorona Light (13°25'4S, 48°22'5E), the alignment (264°) of these beacons, astern, leads E through the E part of the channel, passing (with positions given from Nosy Vorona Light):
S of T1 Buoy (non-IALA) marking the S side of a bank with a least depth of 1.8 m (6 ft) over it (5 cables NNW), thence:
- 3 Close N of a 5.8 m (19 ft) sand and coral patch (2½ cables N), and:
N of Nosy Vorona, thence:
Close S of a 4.9 m (16 ft) patch (4¼ cables NNE), thence:
- 4 S of a depth of 8.5 m (28 ft) (6½ cables NE), at the E end of a spit extending from Pointe Tafondro, thence:
- 5 To a position E of Pointe Tafondro (13°24'5S, 48°22'2E).

Boat channels.

Narrow channels, suitable for small boats with local knowledge, lie SW and N of Îlots Ambarietelo (13°26'S, 48°22'E), 4 cables S of Nosy Vorona.

Pointe Tafondro to Pointe d'Ampilahoa

6.87

- 1 From a position about 3 miles E of Pointe Tafondro (13°24'5S, 48°22'2E) the track leads N, passing (with positions from Nosy Faly Light (white, 8-sided tower, black lantern, 9 m in height) (13°19'2S, 48°29'0E) exhibited from the central peak of the island):
 - E of Pointe d'Ampassipohé (8¼ miles SW), thence:
- 2 W of Pointe d'Ambahivavy (3 miles S), at the W end of the narrow passage between Nosy Faly and Presqu'île D'Ambato, thence:
 - E of Pointe Andranogoaka (7¼ miles WSW), thence:
 - E of a shoal extending seaward from the coastal reef (5¼ miles N), with a least depth of 4 m (13 ft) over it, thence:
- 3 Across the approach to Baie de Fascène (7½ miles NNW), and:
 - W of Pointe d'Andemby (1¼ miles NW), the NW extremity of Nosy Faly, thence:
 - E of Pointe d'Andranizany (9¼ miles WNW), thence:
 - E of Rocher de Nord-Est (11½ miles NNW), thence:
- 4 E of unnamed rocks (1.2 m high), 7 cables farther N and its surrounding shoal with a least depth of 1.2 m over it, thence:
 - E of a coral shoal, 2½ miles NE of Pointe d'Ampilahoa (Pointe d'Ankilahoa), with a least depth of 6.4 m (21 ft) over it.
- 5 Thence the track leads NW to a position N of Pointe d'Ampilahoa (13°12'S, 48°19'E).

(Directions for Port Saint-Louis and approaches continue at 6.98.

Directions for outer coastal route N continue at 6.129)

Anchorage

Baie d'Ambatozavavy

6.88

- 1 Anchorage may be obtained in the outer part of Baie d'Ambatozavavy, about 1 mile SSE of Pointe Andranogaoka (13°20'8S, 48°21'4E), in depths of 10 to 13 m (33 to 43 ft), soft mud. The anchorage is open to E winds and dangerous in the SE Trade Wind.

Chart 706

Baie de Fascène

6.89

- 1 Anchorage can be obtained at the entrance to the bay, off Pointe Berambo (13°19'S, 48°21'E), the S entrance point, and E of Rocher Noir in the central part of the bay, in a depth of 13 m (43 ft), mud or muddy sand. Depths decrease rapidly inshore and there is usually a swell.

Chart 706

Baie de Mahazandry

6.90

- 1 Anchorage can be obtained in depths from 14 to 18 m (46 to 49 ft), a little E of a line joining Pointe Andranizany (13°16'S, 48°20'E) and Cône d'Ambafaho, 2 miles NNW, the entrance points of the bay.
Care should be taken to avoid Roche Larras, lying close within the entrance, midway between Îlot Tendraka, a tree-covered island in the S part of the bay, and Cône d'Ambafaho.

Small craft

Chart 706

Antsahampana

6.91

- 1 **General information.** Antsahampana (13°35'S, 48°24'E) is a village lying about 3 miles inland from the entrance to Antsahampana River which flows into Baie de Tsimipaika close E of Pointe d'Ankify (13°32'S, 48°22'E). At HW the river is accessible to vessels with a draught of 1.5 m (5 ft).
- 2 **Local knowledge** is required.
Berth. There is a quay at the village, served by a rail track and used by barges.
Communications. Ferry service to Hell-Ville (6.70).

Other names

6.92

- 1 Ambariobé, Îlot (13°26'0S, 48°22'8E).
Ambariomena, Îlot (13°26'1S, 48°21'5E).
Ambariomena-kely, Roche (13°26'1S, 48°21'7E).
Ampangorinana (13°26'4S, 48°21'5E).
Anketsabé (13°28'0S, 48°21'2E).
Sud, Rocher (South Rock) (13°26'3S, 48°22'8E).

PORT SAINT-LOUIS AND APPROACHES

General information

Charts 706, 3876

Routes

6.93

- 1 **From seaward.** From a position NW of Le Grand Serpent (13°00'S, 48°16'E) the route leads generally ESE, passing S of Nosy Mitsio (Îles Mitsio) (6.121), for a distance of about 37 miles, to the vicinity of Port Saint Louis (13°05'S, 48°50'E).
- 2 **Coastal route.** From a position NE of Pointe d'Ampilahoa (13°12'S, 48°19'E) the track leads generally ENE, a distance of about 21 miles, to the vicinity of Port Saint-Louis (13°05'S, 48°50'E).

Topography

6.94

- 1 From the N point of Presqu'île d'Ambato (13°22'S, 48°29'E) to Antoha River (13°14'S, 48°49'E) the coast around Baie d'Ambaro is low, except for Mont Ambato (13°27'S, 48°34'E) (461 m in height) on the SW side of the bay.
- 2 Between Antoha River and Port Saint-Louis the coast is backed by a wide plain covered with vegetation through which flow numerous rivers fronted by alluvial banks; inland there are mountains.

Natural conditions

6.95

- 1 **Current.** See 6.8.
Tidal streams. See 6.14.
Flow. See 6.8.

Principal marks

6.96

- 1 **Landmarks:**
Maromokotro ((14°01'S, 48°58'E) (chart 3877).
Sommet Galoko (13°35'S, 48°44'E).
Mont Ambato (13°27'S, 48°34'E) (6.94).
- 2 **Major light:**
Rear leading light (13°05'5S, 48°50'7E) (6.105), at Port Saint-Louis.

Directions

(continued from 6.18)

Charts 706, 3876

From seaward

6.97

- 1 From a position NW of Le Grand Serpent (13°00'S, 48°16'E) the track leads generally ESE passing (with positions from Nosy Tsara Bajina (13°01'S, 48°33'E)):
 - SSW of Banc de Frères (6 miles NW), thence:
 - SSW of Les Quatre Frères (4 miles NW), a group of steep, rounded cone-shaped islets of varying heights, thence:
- 2 SSW of Nosy Tsara Bajina, an islet with reefs and shoals extending up to 8 cables from the shore. Thence the track continues ESE to the approach to Port Saint-Louis.

Charts 706, 3876

Coastal route

(continued from 6.75 or 6.87)

6.98

- 1 From a position about 8 miles NE of Pointe d'Ampilahao (13°12'S, 48°19'E) (6.87) the track leads ENE across the entrance to Baie d'Ambaro, passing SSE of Nosy Tsara Bajina (13°01'S, 48°33'E), to the vicinity of a buoy moored in the approach to Port Saint-Louis.

6.99

- 1 **Useful marks:**
 - Mont Lokobé (13°24'S, 48°20'E).
 - Pic Du Tanilatsaka (13°19'S, 48°14'E) (6.23).
 - Nosy Faly Light (13°19'S, 48°28'E) (6.87).
 - Mont Ankotaka (13°14'0S, 48°17'6E) (6.73).

(Directions for Port Saint-Louis are given at 6.105.
Directions for coastal route continue at 6.125)

Anchorage

Baie d'Ambaro

6.100

- 1 Baie d'Ambaro (13°20'S, 48°37'E) lies NE of Presqu'Île d'Ambato and forms most of the coastline from Nosy Faly to Port Saint-Louis. A number of rivers flow into the bay and its S part is shallow.
- 2 **Anchorage**, open to N and NW winds, may be obtained almost anywhere in the bay and off the coast N of the bay, dependent on draught, in various depths, sand or mud.

In its outer part, the bay contains several dangers which should be avoided, the principal of which are as follows (with positions from Nosy Faly Light (13°19'2S, 48°29'0E)):

 - 3 Roche Noir (5½ miles NE).
 - Roche Binao (7½ miles ENE).
 - An 8-3 m (27 ft) shoal (9¼ miles ENE).
 - Banc Kirota (11¾ miles ENE).
 - Banc des Etuis (10 miles E).

Other than these, the chart is the best guide.

Port Saint-Louis

Chart 3876 (see 1.22)

General information

6.101

- 1 **Position and function.** Port Saint-Louis (13°05'S, 48°50'E), situated within the mouth of Mahebo River, is a small port used almost entirely for the shipment of sugar.

Approach and entry. The port is approached from W on the alignment of leading lights and entered over a bar at the mouth of the river.

- 2 **Traffic.** In 2002, 6 vessels with a total dwt of 21 831 used the port.

Port Authority. Port Saint Louis Port Authority, BP84, Ambilobe, Madagascar.

Limiting conditions

6.102

- 1 **Controlling depth.** The bar dries 0.9 m (3 ft).
Maximum size of vessel handled. A vessel of 171 m in length and 20 475 dwt has used the anchorage. Small vessels up to 55 m in length and 400 dwt could enter at HW springs and berth at the quay.
- 2 **Sea conditions.** During the season of NW winds from November to April the anchorage off the port is affected by swell from N, which can be heavy.
Land breezes can cause a rough sea in the anchorage.

Arrival information

6.103

- 1 **Port operations.** Ocean-going vessels and large coasters anchor off the port. Cargoes are worked by lighter which can only cross the bar for about 2 hours either side of HW.
Pilots and tugs. A local pilot is available for passage to Port Saint-Louis.
Small tugs are available for towing lighters.

Harbour

6.104

- 1 **General layout.** The harbour consists of an open roadstead off the river mouth and a small quay with port facilities at Port Saint-Louis.

Directions

6.105

- 1 **Leading lights:**
 - Front light (white truncated triangle, red stripe, on metal framework tower, 11 m in height), exhibited from the N side of the entrance.
 - Rear light (similar structure, 16 m in height) (9 cables ESE of front light). Directional light.
- 2 From a position seaward, about 4 miles from the entrance, the alignment (110°) of these lights, in the intensified sector (108°-112°) of the rear light, leads ESE to the anchorage (6.106) and the river entrance across the bar. By day the light structures are difficult to identify but a sugar factory in the port is prominent to assist entry. Thence the river channel, reportedly marked by light-buoys, should be followed for about 1½ miles to the quay.

Berths

6.106

- 1 **Anchorage** for cargo ships is usually on the alignment of the leading lights, about 3 miles offshore, in depths of about 9 m (30 ft), good holding ground; the approach buoy is moored in a depth of 6 m (20 ft).
A wreck is reported to lie 4 miles W of the port.
- 2 **Alongside berth** at Port Saint-Louis: length 100 m, depth alongside 1 m; height above chart datum 4.8 m; metal pile construction.

Port services

6.107

- 1 **Repairs.** Minor. small slip for lighters.
Other facilities: Hospital; no facilities for reception of oily residues.
Supplies: Fresh provisions, except vegetables, in limited quantities; fresh water at the quay.

Small craft

Antoha River**6.108**

- 1 Boats can navigate Antoha River (entrance 13°16'S, 48°47'E) which is used locally by lighters.

Mahebo River**6.109**

- 1 Shallow-draught, flat-bottomed craft can ascend Mahebo River above Port Saint-Louis, with a local pilot.

PORT SAINT-LOUIS TO CAP D'AMBRE**GENERAL INFORMATION**

Chart 3876

Scope of section**6.110**

- 1 In this section are described the sea passages and routes between Port Saint-Louis (13°05'S, 48°50'E) and Cap d'Ambre (Tanjon'i Bobaomby) (11°57'S, 49°16'E), together with the anchorages adjacent to them. The description includes the offshore passage and various inshore routes adjacent to the coastline.
- 2 The section is arranged as follows:
Offshore passage (6.113).
Port Saint-Louis to Cap Saint Sébastien (6.120).
Cap Saint Sébastien to Nosy Lakandava (6.144).
Nosy Lakandava to Cap Voailava (6.159).
Cap Voailava to Cap d'Ambre (6.194).

Local weather**6.111**

- 1 **Local weather** between Cap Saint Sébastien (12°24'S, 48°45'E), and Cap Voailava (12°06'S, 49°05'E) (6.165) differs in two distinct zones N and S of Potopoto (12°21'S, 48°59'E), a hill (chart 1002). In the S zone, around Presqu'île d'Orontany (12°26'S, 48°48'E) (6.121) and Baie de Befotaka, E of Cap Saint Sébastien, the coast is sheltered from the South-east Trade Wind by Montagne d'Ambre (12°36'S, 49°09'E), the northern massif, and its numerous spurs. It is, however, affected by swell from SW, especially during January, February and March which makes landing difficult.

By contrast, in the N zone, there is very little shelter from the South-east Trade Wind, except close inshore, but islands and banks lying offshore protect this zone from ocean swell.

Caution**6.112**

- 1 Particular care is necessary when navigating over the coastal shelf between Cap Saint Sébastien and Cap Voailava. The inner reefs cannot be seen when covered and sounding gives no warning of small detached coral heads and pinnacles. The sea does not break over the reefs, nor even cause eddies, except near LW. In these circumstances no reliance can be placed upon a lookout from a high vantage point to give warning of dangers.

OFFSHORE PASSAGE**General information**

Charts 706, 3876, 1002

Route**6.113**

- 1 From a position NW of Le Grand Serpent (13°00'S, 48°17'E) the route leads generally NNE for about 50 miles to a position NW of Nosy Anambo (12°16'S, 48°39'E), thence a farther 44 miles ENE to a position N of Cap d'Ambre (11°57'S, 49°16'E) (6.118).

Offlying dangers**6.114**

- 1 The area through which the offshore route passes is incompletely surveyed, and a survey (1991) confirms that depths less than those charted do exist. NW of the offshore route lies an extensive area of banks with shallow patches and dangers, best seen on the chart, as listed below:
- 2 Banc du Castor (12°54'S, 47°40'E).
Banc du Voltigeur (12°46'S, 47°41'E).
Banc du Leven (12°30'S, 47°45'E).
Baron Cawdor (12°23'S, 47°37'E), depth 5.4 m reported in 1911 and the position of which doubtful.
Banc de la Cordelière (12°06'S, 47°50'E).

Principal marks**6.115**

- 1 **Landmarks:**
Nosy Lava (12°44'·7S, 48°40'·7E), summit.
Sommet d'Ambre (12°35'·6S, 49°09'·2E), (1478 m in height) the summit of the N massif, Montagne d'Ambre, which is a very good landfall mark.
Mont Ambohposa (12°27'·0S, 48°48'·9E) (505 m in height), a central peak on Presqu'île d'Orontany.
- 2 Nosy Anambo Lighthouse (white metal framework tower, red top, 29 m in height) (12°15'·4S, 48°38'·6E), exhibited from the E side of the islet.
Mont Andramaibo (12°12'·7S, 49°10'·1E).

Major light:

Cap d'Ambre Light (11°57'·3S, 49°17'·1E) (6.198).

Directions

(continued from 6.18)

Le Grand Serpent to Nosy Anambo**6.116**

- 1 From a position NW of Le Grand Serpent (13°00'S, 48°17'E) the track leads NNE, keeping in depths over 200 m (110 fm), and passing (with positions from Nosy Anambo Light (12°15'·4S, 48°38'·6E)):
- 2 WNW of Banc du Castor (37 miles SSW), thence:
WNW of Banc de la Dives (30 miles SSW), thence:
ESE of Intermediate Bank (22 miles SW), thence:
- 3 WNW of an 11 m (36 ft) shoal (12 miles SW), thence:
WNW of a 7.3 m (24 ft) shoal (9½ miles SW), thence:
WNW of a 10 m (33 ft) shoal (8 miles WSW), thence:
WNW of Cap Saint Sébastien (10 miles SSE), thence:
- 4 To a position about 10 miles NW of Nosy Anambo Light. An extended bank with a least charted depth of 11 m (36 ft) over it lies 3½ miles NW of the islet.

Nosy Anambo to Cap d'Ambre**6.117**

- 1 From a position about 10 miles NW of Nosy Anambo Light (12°15'·4S, 48°38'·6E) The track turns ENE, passing (with positions from Nosy Anambo Light):
NNW of a 12 m (39 ft) shoal (6 miles NNE), thence:

NNW of Nosy Faby (Nosy Fati) (Delight Sand) (9½ miles ENE), a rock on a sandy cay or flat, thence:

- 2 NNW of Nosy Fasy (15½ miles ENE), which is difficult to see except when the sea breaks over it, thence:

NNW of Nosy Vaha (21½ miles ENE) (6.164), thence:
 NNW of Nosy Hao (25½ miles ENE) a flat, rocky island partly covered with bushes, thence:

To a position NW of Cap Voailava (28 miles ENE).

6.118

- 1 The chart is sufficient guide for navigation from a position NW of Cap Voailava (12°06'S, 49°06'E), seaward of the coastal reef, to a position NW of Cap d'Ambre (Tanjon'i Bobaomby) (11°57'S, 49°16'E).

- 2 **Cap d'Ambre** consists of three low, rocky points, fringed by islets, of which Cap Ambohitramporia is the W point, North Island lies off the central point and Cap André is the E point. The positions of each can be seen on the chart.

The central point, which is the N extremity of the plain described at 6.195 can be seen from a considerable distance, although scarcely more prominent than the others.

Anchorage. See 6.200.

6.119

- 1 **Useful marks:**

Mont Ankaramisampana (12°13'S, 49°13'E) which dominates the land when seen from the N.

Mont Ambatoarara (5¼ miles NNW of Mont Ankaramisampana) (6.163).

- 2 Nosy Hao (12°07'S, 49°04'E) (6.117).

Mont Ambohitra Koholahy (12°05'S, 49°15'E), shows well from the SW, being the highest peak in that particular range.

(Directions for the coastal route, E of Cap d'Ambre are given in the reverse direction at 8.130)

PORT SAINT-LOUIS TO CAP SAINT SÉBASTIEN

General information

Chart 3876, 706, 1002

Routes

6.120

- 1 **Inner route.** From a position in the vicinity of Port Saint-Louis (13°05'S, 48°50'E) the inner coastal route leads about 19 miles N and 18 miles NNW, passing E of Nosy Mitsio (12°54'S, 48°36'E) and E of Nosy Lava (12°45'S, 48°41'E), to a position W of Nosy Mananoka (Mananono) (12°27'S, 48°40'E), 3 miles W of Cap Saint Sébastien.

- 2 **Outer route.** From a position in the approach to Port Saint-Louis, N of Pointe d'Ampilaho (13°12'S, 48°19'E), the outer coastal route leads about 42 miles NNE, passing W of Nosy Mitsio, to a position W of Nosy Mananoka as described above.

Topography

6.121

- 1 Between Port Saint-Louis and Pointe Andiako (12°46'S, 48°54'E), the mainland coastline is generally featureless, edged with mangroves and backed by a low coastal plain. Several rivers enter the sea, the mouths of which are partially obstructed by heavy mud deposits.
- 2 Nosy Mitsio (Îles Mitsio) which lie about 18 miles offshore, are volcanic in origin, with high basaltic columns. Nosy Mitsio (12°54'S, 48°36'E), the largest of the group, appears from a distance to be two islands as the N part is

joined to the remainder of the island by a low isthmus. This S part is well cultivated and, from it, a hilly promontory extends NW. The basaltic columns in the N part of the island are conspicuous.

- 3 S of Pointe Andiako there are few distinctive features along this coast, which consists of a low, dark sand beach and does not show well against a background of mountains. N of the point, the coast is indented by bays, fringed by reefs and backed by mountains, rising to peaks on Presqu'île d'Orontany, (12°26'S, 48°48'E) a large peninsula of which Cap Saint Sébastien (Pointe Mandoavoa) forms the NW part.

Offshore fishing

6.122

- 1 Local fishing canoes may be encountered at some distance off this area of coastline.

Natural conditions

6.123

- 1 **Current.** See 6.8.

Tidal stream observations were made off the E coast of Nosy Mitsio in January and February, when NW winds prevailed. It was found that, with a rising tide, the stream generally set between SW and SE, turning anti-clockwise, and attained a maximum rate of 1¼ kn about 3 hours before HW. At HW the stream set E and was very weak. During a falling tide the stream set between NE and W, turning anti-clockwise, and attained its maximum rate of 1¼ kn about 3 hours after HW.

- 2 Off Cap Saint Sébastien the streams are irregular and strong, usually setting SW on a rising tide and NE on a falling tide.

- 3 **Discoloration of the sea.** Off the entire coast, and towards Nosy Lava, 12½ miles W of Pointe Andiako, the water is generally muddy. Patches of spawn occasionally have the appearance of coral reefs and the water sometimes appears yellow over a depth of about 7 m. This yellow discoloration is sometimes seen in large patches, giving every appearance of dangerous shoals, while sounding shows no change in depth. It may be due either to spawn or to mud, stirred up from the bottom by tidal or other influences.

- 4 **Sea.** During a fresh breeze the sea off Cap Saint Sébastien becomes covered in foam, giving the appearance of breakers.

Fog often obscures the mountains inland.

Principal marks

6.124

- 1 **Landmarks:**

Sommet d'Ambre (12°36'S, 49°09'E) (6.115).

Mont Ambohiposa (12°27'0S, 48°48'9E) (6.115).

Major light:

Rear leading light (13°05'5S, 48°50'7E) (6.105), at Port Saint-Louis.

Directions

(continued from 6.99)

Inner coastal route

6.125

- 1 From a position on the approach leading line for Port Saint-Louis, 6 miles WNW of the rear leading light (13°05'5S, 48°50'7E), the track leads initially N, passing (with positions from Nosy Mangiho (12°58'5S, 48°45'3E)):
- 2 E of Nosy Tsara Bajina (12 miles WSW), thence:
 E of Nosy Tsitampevina (9 miles W), thence:
 W of Nosy Mangiho, which is flat, and:
- 3 E of Nosy Antaly (8¾ miles W), a massive truncated cone with some vegetation near its summit, thence:

E of Pointe Betamenaka, 74 m high, the SE point of Nosy Mitsio, thence:

E of Nosy Vazoana, 22 m high (8¾ miles NW), thence:

- 4 E of Pointe Ambohitriomby (11 miles NNW), the NE point of Nosy Mitsio. Rocher Bateau, 10 m high, lies 3 cables E, thence:

W of Pointe Andiako (15 miles NE), thence:

- 5 To a position W of Nosy ny Andriana (17 miles NNE), and about 2 miles E of Nosy Lava (14 miles NNW), the N island of Nosy Mitsio (6.121) which is barren and bordered by sheer cliffs, with an islet lying off the W side.

6.126

1 Useful marks:

Mont Ankarama, a conical hill, 206 m high, which is the highest point of Nosy Mitsio.

6.127

- 1 Thence the track continues NNW, passing (with positions from Nosy Lava):

WSW of Banc Ampamonty (10 miles NE) which dries but, in calm weather and when covered to a depth of about 1 m, gives no warning of danger even from a short distance, thence:

- 2 WSW of Nosy Bory (12 miles NE), thence:
WSW of Rocher Oravaka (12¼ miles NE), 15 m (48 ft) high, thence:

WSW of Nosy Faninana (Îlot Faninana) (14½ miles NNE), the outermost of three islets remarkable for sheer basaltic cliffs on their seaward sides, and N of which the coastal reef is strewn with rocks, thence:

- 3 WSW of Nosy Antoloho (Nosy Antolo) (15 miles NNE), thence:

WSW of Nosy Mandazona (16 miles NNE), thence:

To a position about 3 miles W of Nosy Mananoka (Mananono) (12°27'S, 48°40'E).

6.128

1 Useful marks:

Mont Ankarana (12°49'S, 48°37'E).

Îlot Tsiankazo (12°27'S, 48°44'E) which lies close S of Cap Saint Sébastien and serves to identify it.

Lesser peaks on Presqu'Île d'Orontany are described at 6.121 and 6.147, some of which may be useful marks.

(Directions for coastal route continue at 6.148 and for inshore route at 6.150)

Outer coastal route

(continued from 6.75 and 6.87)

6.129

- 1 From a position N of Pointe d'Ampilahoia (13°12'S, 48°19'E) the outer coastal route leads NNE passing (with positions from Pointe Mitaraka (12°53'S, 48°32'E)):

ESE of Le Grand Serpent (16½ miles SW), thence:

WNW of Récif Baleine (7½ miles SSW), thence:

- 2 WNW of Les Quatre Frères (6.97), a group of islets including Nosy Betalinjona (6¾ miles SSW), Nosy Betaniazo (5¾ miles SSW), Nosy Antsoha, (6 miles SSW) (5.183) and Nosy Behangovo (7 miles SSW). Thence:

WNW of Banc des Frères (6¾ miles SW), thence:

- 3 WNW of Récif de Marie (2¾ miles S), thence:

WNW of Pointe Mitaraka, thence:

ESE of Banc du Castor (7 miles WNW), which has not been carefully examined. Also, waters between W and ENE of this shoal have only been partially examined and caution is necessary, thence:

- 4 WNW of Nosy Ankarea (3¾ miles NE), which has the shape of a massive truncated pyramid and is the highest of Nosy Mitsio, thence:

WNW of Nosy Fisaka (5 miles NE) 34 m (112 ft) high, thence:

WNW of Banc d'Ankarea (5 miles N), a coral patch with a least depth of 12 m (39 ft) over it, thence:

- 5 ESE of Banc de la Dives (9 miles N), thence:

WNW of Nosy Lava (12 miles NE) (6.125), thence:

To a position about 3 miles W of Nosy Mananoka (12°27'S, 48°40'E).

Caution. The areas around Les Quatre Frères, Banc d'Ankarea and Banc de la Dives have not been surveyed in detail and less water than charted may be found in their vicinity.

6.130

1 Useful marks:

Mont Ankarama (12°49'S, 48°37'E) (6.126).

Îlot Tsiankazo (12°27'S, 48°44'E) which lies close S of Cap Saint Sébastien.

Directions for coastal route continue at 6.148 and for inshore route at 6.150)

Minor channels

Chart 3876 (see 1.22)

Passe du Nord

6.131

- 1 Local knowledge is required. Small vessels can use Passe du Nord, which lies off the NW side of Nosy Mitsio between Nosy Ankarea (12°50'S, 48°35'E) and Nosy Fisaka, 1 mile NE. The track through the channel leads NW-SE, passing:

A second channel, 3 cables wide, which lies between Nosy Fisaka and the coast of Nosy Mitsio.

Anchorage

Chart 3876 (see 1.22)

6.132

- 1 The E side of Nosy Mitsio affords shelter during NW winds but the wind often veers E at night, raising a troublesome sea.

Baie Alandrota, (12°55'·0S, 48°36'·5E) affords anchorage with shelter from N winds, in depths from 15 to 17 m, SW of Pointe Ampasimenakely, the NE entrance point to the bay.

6.133

- 1 **Baie d'Ampasimena** lies SW of Nosy Vazoana (12°53'·5S, 48°37'·7E) (6.125) and affords anchorage, in depths from 14 to 16 m, sheltered from N winds. Care should be taken to avoid Rocher Bevaoko, drying rocks, lying midway between Nosy Vazoana and Nosy Mitsio.

- 2 **Baie de Maribé** (12°53'·7S, 48°34'·7E), on the W side of Nosy Mitsio, affords good anchorage, sheltered from all but NW to NE winds. The bay is also easy to leave, should a cyclone threaten the area.

It is entered from NW, through Grand Passe, between Pointe Ampanomilay (12°52'·7S, 48°33'·4E), and Pointe Alankirimy, 2 miles E, 5 cables NNW of which lies Roche Prevoyante.

- 3 Anchorage can be obtained, almost anywhere in the bay in depths of 4·9 to 20 m, mud. A useful position, in a depth of 20 m, mud, lies at the intersection of Pointe Alankirimy bearing 040° and Mont Leja bearing 113°.

Pointe Andiako

6.134

- 1 **General information.** By day, vessels may anchor dependent on draught, anywhere off the coast between Port Saint-Louis and Pointe Andiako.

Anchorage may be obtained, with local knowledge, about 7 cables S of Pointe Andiako (12°46'S, 48°54'E) in depths of about 5 m on a bottom of sand, sandy mud or mud.

Baie Ankazomalemy

6.135

- 1 **General information.** Baie Ankazomalemy (12°41'S, 48°53'E) indents the coast between Pointe Andamoty, the SE entrance point, and a point 2¾ miles NW, off which lies Nosy Satza. The bay is relatively sheltered from the South-east Trade Wind which weakens after sunset.

The shores of the bay are backed by several villages.

Anchorage can be obtained in the middle of the entrance to the bay in a depth of about 8 m.

Baie Ampasindava

6.136

- 1 **General information.** Baie Ampasindava (12°38'S, 48°52'E) is a cove entered between Nosy Tsiringidringitra, an islet, 15 m in height, lying off the S entrance point, and Pointe Bekotoko, 1 mile NNE. At the head of the cove there is a sandy beach behind which stands the village of Ampasindava. In the NE corner of the cove there is a creek which dries as far as its entrance, the village of Bekotoko stands on the NW shore of the creek.
- 2 **Anchorage,** which is good but temporary, can be obtained in depths from 6 to 12 m. Nosy Tsiringidringitra, Pointe Bemoka, 4½ cables SE, and a reef connecting them on which there is a ridge of stones, afford sufficient shelter from SE winds. A drying reef lies 1¼ miles W of Nosy Tsiringidringitra.

Baie Ampamonty

6.137

- 1 **General information.** Baie Ampamonty (12°35'S, 48°51'E), is entered between Nosy Bory (12°36'3S, 48°50'4E) and Rocher Oravaka, 2 miles NNW and close S off the coast. The middle of its entrance is obstructed by Rochers Jiojio and the island of Nosy Antaly lies in the NW part of the bay.

- 2 **Directions.** From seaward, the bay may be entered N or S of Rochers Jiojio.

From a position about 6 cables S of Rocher Oravaka (12°34'6S, 48°49'4E) the track leads ENE and NE into the bay, passing (with positions from Rocher Oravaka):

NNW of Rocher Jiojio (1¼ miles SE), thence:

NNW of a 4 m (13 ft) shoal (2 miles E), thence:

- 3 To a position about 5 cables SE of Nosy Antaly (1¾ miles ENE).

Thence the track turns NE for about 1 mile on the alignment (021°) of a conical hill, 50 m high, situated at the head of the bay on a small projection (12°33'0S, 48°52'2E), with the conical wooded hill, 218 m (717 ft) high, 1¼ miles NNE.

- 4 Alternatively, from a position 1 mile NW of Nosy Bory the track leads 1½ miles E, passing N of Nosy Bory and S of Rochers Jiojio, to a position about 4 cables SE of the end of Rochers Jiojio, from whence the track leads NNE on the alignment described above, passing E of the 4 m shoal patch and E of Nosy Antaly.

- 5 **Anchorage** may be obtained at the entrance to the bay, in depths of 11 to 15 m, sheltered from SE winds.

Within the bay, anchorage for small vessels may be obtained, 5 cables NE of Nosy Bory in depths of 9 to 12 m. Smaller vessels can anchor E of Nosy Antaly, in depths of about 5.5 m, and farther inside if desired.

Antsahabé

6.138

- 1 **General information.** Antsahabé village (12°32'8S, 48°49'7E) stands on the shore of a bight in the coast N of Baie Ampamonty.

- 2 **Anchorage** can be obtained off the village in a depth of 7 m on the bearing 302° of the S extremity of Nosy Mandazona (12°28'S, 38°42'E) (chart 3876), in line with the middle of Nosy Mananoka, 2 miles WNW. It is, however, precarious with little shelter from the South-east Trade Wind.

Chart 1002

Baie Antsimaloto

6.139

- 1 **Caution.** Anchorage is not recommended in Baie Antsimaloto (12°29'S, 48°47'E).

Baie Andranoaomby

6.140

- 1 **General information.** Small vessels can obtain shelter in Baie Andranoaomby (12°28'S, 48°46'E), except with winds from between S and SW, but these rarely blow with any force except during the rainy season from November to April. In the dry season, a heavy swell caused by the South-east Trade Wind runs round the E entrance point and enters the bay but this is only an inconvenience and the anchorage is secure.

- 2 The bay can be approached from between S and W; it is entered between a reef which fringes the SE entrance point and the NW entrance point which is steep-to.

Directions. Approaching the entrance to the bay from S it is advisable to pass W of Nosy Antoloho, 1¼ miles SSW, as a bank with depths less than 9.1 m (30 ft) over it and a drying reef extend from the E side of the island.

- 3 Within the entrance, the W side of the bay should be preferred as the coastal reef is narrow here. On the E side it extends up to 1½ cables from the shore.

Useful marks:

Grand Pelé, 7 miles SE of Mont Ambohiposa, which is bare and flat. From it a range of somewhat lower hills, with conical wooded summits, extends NNE to the coast.

- 4 Le Diable (12°34'0S, 48°57'2E) (chart 3876) which is prominent.

Mont Ironono (12°24'S, 49°00'E) which is bare.

Mont Rôti, 5 miles E of Mont Ironono.

6.141

- 1 **Anchorage** can be obtained near the middle of the bay in depths from 9 to 10 m (30 to 33 ft), on the bearing 200° of the NW entrance point in line with the W side of Nosy Antoloho. A vessel drawing 5 m (16 ft) has anchored in the bay at night with the assistance of radar.

Coasters can anchor on the same marks in line, nearer the head of the bay in a depth of 5 m (16 ft), mud, off the village of Ambaro which stands in the NE corner.

Baie Rantabé

6.142

- 1 Depths increase rapidly offshore in Baie Rantabé (12°27'S, 48°44'E) which is open S and not convenient for anchorage; it is only used by local fishing boats.

Other names

Charts 1002, 3876

6.143

- 1 Antolohizana (12°30'0S, 48°47'5E).
Daphné, Roche (13°00'8S, 48°33'0E).
Toloho, Nosy (12°58'9S, 48°32'7E).

CAP SAINT SÉBASTIEN TO NOSY LAKANDAVA

General information

Chart 1002

Routes

6.144

- 1 From the vicinity of Nosy Mananoka (12°27'S, 48°40'E), a coastal route passes W of Andromache Islands, which surround Cap Saint Sébastien, thence leading E, across the approaches to Baie de Befotaka (6.156) to the vicinity of Nosy Lakandava (12°15'S, 48°58'E) (6.149) which lies in a chain of islands and reefs obstructing Baie Andranomaimbo (Andramahiba Bay).
- 2 An inshore route leads NE between the Andromache islands and thence E, across the approaches to Baie de Befotaka, to the vicinity of Pointe Baron (12°22'S, 48°58'E), the SW entrance point of Baie Andranomaimbo. From there the inshore route leads generally N, a distance of about 6½ miles, passing W of Grand Récif (Great Reef) to a position N of Nosy Lakandava (12°15'S, 48°58'E).

Topography

6.145

- 1 Presqu'île d'Orontany (6.121) extends NW from the mainland, with Andromache islands forming a chain of islands and reefs extending up to 5 miles seawards between Cap Saint Sébastien and Maruteza Point, the W and N-most tips of the rugged peninsula. The coast is fringed with rocks and reefs and backed by mountains.
- 2 On the E side of the peninsula, Baie de Befotaka lies between the peninsula and Pointe Baron, on the mainland, and is surrounded by a rugged coast. It is partly encumbered, in the approaches and within, by several shoals and reefs, some of which dry at LW.

Natural conditions

6.146

- 1 **Tidal streams** off Cap Saint Sébastien are irregular and strong, usually setting SW during a rising tide and NE during a falling tide.
Flow near Nosy Anambo (12°16'S, 48°39'E) sometimes attains a rate from 2 to 5 kn. See also 6.8.

Principal marks

6.147

- 1 **Landmarks:**
Nosy Anambo (12°16'S, 48°39'E) (6.149).
Mont Ambohiposa (12°27'S, 48°49'E) (6.115), on Presqu'île d'Orontany.
Mont Ambatobé, 2½ miles ESE of Mont Ambohiposa, remarkable for its dark colour and steep sides, standing among bare yellow hills.
- 2 Sommet d'Ambre (12°36'S, 49°09'E) (6.115).
Ankitikona (12°20'S, 49°06'E) (6.163).
Mont Andramaimbo (12°13'S, 49°11'E) (6.163).

Major light:

Nosy Anambo Light (white metal framework tower, red top, 29 m in height) (12°16'S, 48°39'E).

Directions for coastal route

(continued from 6.128 and 6.130)

6.148

- 1 From a position W of Nosy Mananoka (12°27'S, 48°40'E) the coastal route leads N initially, passing (with positions from Nosy Mananoka):
W of Nosy Mavony (2 miles WNW), thence:

- 2 W of Nosy Fisaka, an islet covered with guano, lying on the outer end of a bank that extends 2 miles NW from Nosy Mananoka over which there may be lesser depths than charted, thence:
E of an 11 m (36 ft) shoal (reported 1969) (8¾ miles WNW) (chart 3876), thence:
 - 3 E of a 7.3 m (24 ft) shoal (10 miles WNW), on the edge of the coastal shelf (see 6.116), thence:
W of Nosy Valia (Nosy Valiha) (3½ miles NNE), an island with hills reaching 130 m in height in the S part and surrounded on all but the SW side by a coral reef which extends up to 2½ cables seaward in places, thence:
 - 4 To a position NW of the outer end of a coral bank which extends 3 miles NW from Nosy Valia (12°23'S, 48°43'E).
- 6.149**
- 1 From a position NW of the coral bank the route then leads ENE, passing (with positions from Nosy Valia):
SSE of Nosy Anambo (8 miles NNW), an islet composed of sand and coral, covered by trees and bushes and with some guano on its NE point. A light is exhibited from the E end of the island (6.147). And:
 - 2 Clear of charted coral patches lying between the coral bank and Nosy Anambo, with a least depth of 11 m (36 ft) over them, thence:
SSE of a depth of 11 m (36 ft) (10 miles NNE), at the S end of an extensive flat on which lies Nosy Faby (6.117), thence:
 - 3 NNW of an extensive shoal (8 miles ENE), with a least depth of 7.3 m (24 ft) over it, thence:
NNW of an extensive shoal (10 miles ENE) with a least depth of 2.7 m (9 ft) over it.
 - 4 Thence (with positions from Nosy Lakandava (12°15'S, 48°58'E):
Clear of, depending on draught, a bank (4½ miles WSW), with a least depth of 11.9 m (39 ft) over it, thence:
Clear of a 7.6 m (25 ft) patch (2¾ miles WSW), and:
Clear of a shoal (2½ miles WNW), with a least depth of 7.3 m (24 ft) over it, thence:
NNW of rocks and shoals off the N end of Grand Récif (Great Reef) (1½ miles SSW), which lies at the S end of the inner chain, thence:
 - 6 To a position N of Nosy Lakandava (12°15'S, 48°58'E), which has steep cliffs on its W side.
(Directions continue for coastal route at 6.164)

Directions for inshore route

(continued from 6.128 and 6.130)

Cap Saint Sébastien to Pointe Baron

6.150

- 1 **Caution.** See 6.112. Vessels should keep in mid-channel between the dangers described below.
From a position S of Nosy Mananoka (12°27'S, 48°40'E) the inshore route leads NNE, passing (with positions from Nosy Mananoka):
SE of Nosy Mananoka, and:
WNW of Nosy Mandazona (2½ miles ESE), thence:
WNW of Roche Ambamonetsimani (2 miles E), which is rugged and cone-shaped, thence:
WNW of Nosy Tanga (2½ miles NE), thence:
WNW of a shoal with a least depth of 12.8 m (42 ft) over it (3½ miles NE).
- 3 To a position off the S end of Nosy Valia, (12°23'S, 48°43'E) (6.148).

6.151

- 1 **Leading marks.** From a position off the S end of Nosy Valia the alignment (246°) of Rochers Kalomisampa (12°25'S, 48°40'E) with Nosy Mavony, 1¼ miles WSW, astern, leads ENE between Nosy Valia and Presqu'île d'Orontany, passing (with positions from Marutéza Point (12°24'S, 48°46'E)):

- 2 SSE of Roche Yang-Tsé (2 miles WNW), coral, thence: Close SSE of a bank (1¼ miles WNW) with depths of 9.2 m (30 ft) or less over it, and:

NNW of a steep-to reef fringing Rochers Ambasavaka (7¼ cables NW), thence:

To a position N of the reef extending 5 cables N of Marutéza Point.

6.152

- 1 **Leading marks.** From a position N of Marutéza Point the alignment (084°) of Potopoto (12°21'S, 48°59'E), a bare, yellow hill, with Ankitikona (6½ miles E) (6.163), leads E passing (with positions from Pointe Baron (12°22'S, 48°58'E)):

S of an extensive shoal (7¼ miles WNW), with a least depth of 7.3 m (24 ft) over it, and:

- 2 N of a reef (5½ miles W), which dries 0.3 m (1 ft), thence:

N of a reef (3¼ miles W), which dries 0.6 m (2 ft), thence:

S of a shoal (2½ miles NW), with a least depth of 6.4 m (21 ft) over it, thence:

- 3 S of a shoal with a least depth of 11 m (36 ft) over it (1¼ miles NNW), thence:

To a position NW of Pointe Baron, a rounded, wooded bluff fringed with mangroves, the W side of which is steep.

(Directions for Baie Adranomaimbo are given at 6.175)

Pointe Baron to Nosy Lakandava**6.153**

- 1 From a position NW of Pointe Baron (12°22'S, 48°58'E), the track leads initially NW about 2½ miles and passing, (with positions from Pointe Baron):

NE of a reef (3¼ miles W), which dries 0.6 m (2 ft), thence:

SW of a shoal (2½ miles NW), with a least depth of 6.4 m (21 ft) over it, thence, heading NNE:

- 2 WNW of an area of reefs and shoals (3¼ miles NNW) with a least charted depth of 0.3 m (1 ft) over it, extending S from Grand Récif, thence:

WNW of Grand Récif (4¼ miles N), thence:

ESE of a 7.6 m (25 ft) patch (6 miles NNW), thence:

- 3 WNW of Nosy Lakandava (12°15'S, 48°58'E), thence:

To a position N of the island.

(Directions continue for coastal route at 6.164)

Anchorage and harbours

Chart 1002 (see 1.22)

Presqu'île d'Orontany and vicinity**6.154**

- 1 **Nosy Mavony.** Anchorage can be obtained off Nosy Mavony (12°26'S, 48°39'E) (6.148) in a depth of 28 m (15 fm), sand and coral, with the islet bearing 290° distant 2½ cables.

- 2 **Baie d'Andovo Honkou,** (12°26'S, 48°45'E) is useful as an anchorage for a vessel waiting for daylight before entering Baie Andranomaimbo (6.160). The best place is in the S part of the bay where the coastal reef narrows. Depths

decrease rapidly from 18.3 to 14.6 m (60 to 48 ft), about 1½ cables offshore, over a bottom of hard sand, good holding ground.

- 3 **Pointe Marutéza.** Anchorage, sheltered from the South-east Trade Wind as described at 6.111, has been obtained off Pointe Marutéza (12°24'S, 48°46'E) in depths of about 31 m (17 fm) with Mont Ambohiposa (4½ miles SE) (6.115) bearing 160° and Nosy Valia, 3 miles WNW, (6.148) bearing 265°.

Nosy Anambo**6.155**

- 1 **Anchorage** has been obtained in a depth of 11 m (36 ft), 5 cables S of Nosy Anambo Light (12°16'S, 48°39'E) (6.147).

See 6.146 for details of the rate of flow near Nosy Anambo.

Landing is only possible in fine weather as there is a swell here. Reefs extend 3½ cables N and E from the isle.

Baie de Befotaka**6.156**

- 1 **General information.** Baie de Befotaka indents the coast between the NE extremity of Presqu'île d'Orontany (12°25'S, 48°52'E) and Pointe Baron, 6½ miles ENE (6.152). The bay may be identified by the summits of Presqu'île d'Orontany (6.147) which dominate the W shore. Of these Mont Ambatobé stands among bare yellow hills. The huts of a number of villages around the bay also assist identification. Of these, Ironono, 1¼ miles SSE of Pointe Baron, can be identified by some white cliffs, close S, which show distinctively against reddish soil in the background, while Befotaka, 7 miles S of Pointe Baron, is also easily seen. A prominent waterfall is visible from NW in a large, dark ravine, 2 or 3 miles SE of Befotaka.

6.157

- 1 **Directions.** When approaching the bay, care must be taken to avoid the charted shoals and reefs which front it (see 6.152).

Approaching from the W, when clear of the dangers off Pointe Marutéza (12°24'S, 48°46'E), the alignment (093°) of Mont Ironono (12°24'S, 49°00'E) (6.140) with Mont Rôti, 5 miles E (6.140), leads S of the dangers mentioned above.

- 2 Within the bay a number of charted dangers must be avoided, in particular (with positions from Pointe Baron):

A rock (3 miles SW) with a depth of 1.2 m (4 ft) (charted as a dangerous rock).

A reef (3¾ miles S), awash at LW.

Nosy Mahonotsa (4 miles S) (38 m in height), stands on an isolated reef which extends 1¼ miles SW and is awash. There is no passage E of these reefs.

- 3 Récif Andriva Rangotro (5¾ miles SW).

A rock, awash (5½ miles SSW).

6.158

- 1 **Anchorage** can be obtained in the bay on good holding ground of mud and sand in depths from 9 to 22 m (30 ft to 12 fm).

Landing is difficult in the bay. A landing place at the mouth of a stream S of Ironono village (12°23'7S, 48°58'5E) (6.156), is accessible only at HW.

- 2 **Small craft** can anchor in the S part of Baie d'Ironono, opposite the white cliffs mentioned at 6.156, care being taken to avoid reefs which fringe the shores and are not visible at HW. The remainder of the bay is open to swell and is unsafe during strong W winds.

NOSY LAKANDAVA TO CAP VOAILAVA

General information

Chart 1002 (see 1.22)

Routes

6.159

- 1 From Nosy Lakandava (12°15'S, 48°58'E), the coastal route continues N, about 8 miles, passing W of the inner chain of islands and reefs, thence across the edge of the coastal shelf described at 6.2, to a position NW of Nosy Vaha (12°08'S, 48°59'E) (6.164). From thence the route passes NE, a farther 6 miles, to a position NW of Cap Voailava (12°06'S, 49°06'E).

Topography

6.160

- 1 The chain of islets, reefs and shoals between Pointe Baron (12°22'S, 48°58'E), and Cap Voailava (12°06'S, 49°06'E), encumber the approaches to a succession of bays and coves which, together, form Baie Andranomaimbo (Andramahiba Bay) (12°12'S, 49°02'E) and which is backed by the Massif de l'Ambongoabo (6.187).

Depths

6.161

- 1 **Coastal shelf.** The outer and inner chains of islands and dangers join off Cap Voailava. The dangers in the S part of the inner chain nearly all lie in relatively deep water while those farther N, between Nosy Hara (12°15'S, 49°01'E) and Nosy Hao, 7 miles NNE, lie on a shallow bank.
 - 2 The reefs are composed of coral and, while the more extensive ones uncover at LW, appearing yellowish in colour, there are small detached coral heads and pinnacles seaward of the inner chain that do not dry.
- The outer chain, lying between Cap Voailava and Nosy Anambo, 28 miles WSW, is formed of single islets, each standing on a reef and surrounded by a shallow sandbank, with relatively deep water between.

Natural conditions

6.162

- 1 **Current.** See 6.8.
- Tidal streams** in the neighbourhood of the chain of islets and dangers near the N edge of the coastal shelf, from Nosy Anambo to Cap Voailava, are irregular and sometimes very strong. they generally set SW on a rising tide and NE on a falling tide.
- 2 **Colour of the sea** over the reefs on the N edge of the coastal shelf is green, contrasting strongly with the dark blue of deep water in the vicinity.

Principal marks

6.163

- 1 **Landmarks:**
 - Sommet d'Ambre (12°36'S, 49°09'E) (chart 3876) (6.115).
 - Ankitikona (12°20'S, 49°06'E) a prominent, densely wooded peak.
 - 2 Mont Andramaimbo (12°13'S, 49°11'E) which is conical and prominent, with a disused flagstaff on its summit, rising from a level ridge. From W it can be seen at a great distance.
- Mont Ambatoarara, 4¾ miles N of Mont Andramaimbo. A prominent hill with a rounded summit, partially covered with trees, the base of which forms a peninsula off the coast.

Directions

Nosy Lakandava to Nosy Vaha

(continued from 6.149 and 6.153)

6.164

- 1 **Leading marks.** From a position N of Nosy Lakandava, the alignment (185° astern) of the W side of the island with Le Diable (12°34'S, 48°56'E) (6.140) (chart 3876), leads across the approaches to Baie Andranomaimbo, passing (with positions from Nosy Lakandava (12°15'S, 48°58'E)):
 - 2 E of a coral shoal (2¾ miles NW) with a least charted depth of 7.3 m (24 ft) over it, thence:
 - 3 W of Nosy Antanalovo (2 miles NE), thence:
 - 3 W of a drying reef (4 miles NNE), which rises from a sandy bottom and shows plainly when covered, around Nosy Foty, a flat, brush-covered islet fringed by a sandy beach, prominent in sunlight, thence:
 - 4 E of Nosy Fasy (6¾ miles NW) (6.117), and:
 - 4 W of Nosy Vaha (7¼ miles NNE), which is flat and bare and surrounded by a drying reef, thence:
- To a position N of Nosy Vaha, beyond the edge of the coastal shelf.

Caution. Passage N, within 2½ miles W of Nosy Vaha, passes over a shoal extending W from Nosy Vaha, with a least charted depth of 7.3 m (24 ft). Vessels inhibited by draught should use the following:

- 5 **Leading marks.** the alignment (167°) of the W side of Nosy Lakandava with Potopoto (12°21'S, 48°59'E) (6.152), astern, leads NNW in deeper water, passing ¾ miles W of Nosy Vaha. Thence, leading ENE:
- To a position N of Nosy Vaha.

Nosy Vaha to Cap Voailava

6.165

- 1 From a position N of Nosy Vaha (12°08'S, 48°59'E) the route leads generally NE, passing (with positions from Nosy Vaha):
 - NW of a bank with depths less than 1.8 m (6 ft) over it which extends 3 miles NE from the reef surrounding Nosy Vaha, thence:
 - 2 NW of Passe de la Rance (3½ miles NE), the narrow passage between the above bank and the reef surrounding Nosy Hao (6.117), The tidal streams described at 6.162 cause eddies in the pass. Thence:
 - 3 NW of a similar bank (4 miles NE) extending NW from the N extremity of the drying reef on which Nosy Hao stands, thence:
 - 3 To a position NW of Cap Voailava (Cap Vohilava) (12°06'S, 49°06'E), which is low-lying and composed of yellow sand, keeping well clear of a drying reef bordering the coast, in the vicinity of the cape or point, on which lies Nosy Pahanji, 7 cables NNW of the cape.
- (Directions for Cap d'Ambre continue at 6.199)

Offshore passes

Chart 1002

Description

6.166

- 1 Along the N edge of the coastal shelf (6.2), from about the latitude of Cap Saint Sébastien (12°26'S, 48°44'E) to Cap Voailava, there is a chain of islets and dangers between which there are several wide passes giving access from N to the mainland coast and the approaches to Baie Andranomaimbo (6.172).

Principal mark

6.167

- 1 **Landmark:**
 - Sommet d'Ambre (12°36'S, 49°09'E) (6.115).

Passes**6.168**

- 1 The chart is sufficient guide for navigation of the passes between Nosy Anambo (12°16'S, 48°39'E), Nosy Faby (Delight Sand, 9½ miles ENE, Nosy Fasy (Magnet Sand), 15 miles ENE, and Nosy Vaha, 21½ miles ENE. Care must be taken to avoid a shallow flat which extends 5 cables N from Nosy Fasy.

See 6.147 and 6.149 for a description of Nosy Anambo and light, and 6.146 for the flow in this vicinity.

Anchorage**Nosy Anambo****6.169**

- 1 See 6.155 for details.

Nosy Hara**6.170**

- 1 Nosy Hara (12°15'S, 49°01'E), the largest of the islands, is composed of basaltic rock the cliffs of which, except in the S extremity, are steep and inaccessible. At the N end there is an isolated rock, 106 m high, connected to the island by a sandy isthmus.
- 2 There is good anchorage in a depth of 20 m (11 fm) in the shelter of the W coast of Nosy Hara, on the bearings 188° of Le Lion, 1½ miles SSW, and 250° of Nosy Belomotro, 1½ miles W of the S end of Nosy Hara, in line with Nosy Lakandava, 1 mile WSW of Nosy Belomotro.

Nosy Foty**6.171**

- 1 Good anchorage can be found in the vicinity of Nosy Foty (12°11'5S, 48°59'2E) (6.164), in depths from 9 to 18 m (30 to 59 ft), sand and coral. The anchorage is contained within lines joining Nosy Hara (12°15'S, 49°01'E), Nosy Fasy, 8 miles WNW (6.117), and Nosy Vaha, 5¾ miles NNW of Nosy Hara (6.170). In depths of more than 20 m (11 fm) the bottom is sand and mud or only mud.
- 2 When using the W part of this anchorage care must be taken to avoid a deep gully which extends about 4½ miles, generally SE, from Nosy Fasy. Here the holding ground is poor, the tidal streams sometimes very strong and the sea rough during the South-east Trade Wind.

Baie Andranomaimbo**General information****6.172**

- 1 **Caution.** There are passes which lead generally NE from the vicinity of Pointe Baron and E from the vicinity of Nosy Lakandava. There are also passes in the S part of the inner chain of islands and reefs, into the Baie Andranomaimbo, S of Nosy Hara, 2½ miles E of Nosy Lakandava.

Passe du Capricorne (12°13'S, 49°02'E), affords a route for small vessels through the middle part of the inner chain of islands and reefs.

- 2 Passe de Nosy Hao (12°07'S, 49°05'E), at the N end of the inner chain, can be used by small vessels but only at LW as the reefs on both sides of the narrow, tortuous channel are difficult to discern at other times.

There are no good marks for Passe de Nosy Hao and local knowledge is essential.

6.173

- 1 **Route.** From a position NW of Pointe Baron (12°22'S, 48°58'E), an inshore coastal route leads NE about 15 miles, passing S and E of a chain of reefs and islets (6.160), to an area of deeper water within Baie Andranomaimbo.

- 2 **Topography.** The shores of Baie Andranomaimbo (William Pitt Bay; Andramahiba Bay), are indented by a number of smaller bays and coves, many of which are bordered by mangroves. The bay is backed by the Massif de l'Ambongoabo, a range of thickly wooded hills intersected by streams, on a narrow isthmus which separates the bay from Diego Suarez Bay, on the E coast.

- 3 **Depths.** The bay itself is virtually enclosed by the chain of reefs and islets (6.160), and, within the bay, passage is further hampered by innumerable coral reefs, shoals and shallows, although deep water is found between these dangers. Since this area has not been examined recently (last French survey 1911) less water than charted may be found. For anchorages within the bay, see 6.179 to 6.192.

- 4 **Local knowledge** is advisable, essential in some cases, as the passes are narrow and the limits of the reefs are difficult to see, in addition to the lack of recent survey information.

Tidal streams**6.174**

- 1 In Baie Andranomaimbo the streams set SW during a rising tide and NE during a falling tide; both are strong. The tidal streams are strong in Passe de Nosy Hao, causing eddies.

Directions**6.175**

- 1 **Leading marks.** From a position NW of Pointe Baron (12° 22'S, 48° 58'E) (6.152) the bearing 027° of Nosy Mely, 5¾ miles NNE (6.178), just open W of Nosy Hara (7¾ miles NNE of Pointe Baron), leads NNE into Baie Andranomaimbo, passing (with positions from Pointe Baron):

WNW of the coastal bank and reefs NE of Pointe Baron, and:

- 2 SE of a shoal (1¾ miles N) with a least charted depth of 5.5 m (18 ft), thence:

To a position SE of the S end of Great Reef (3½ miles N), and:

NW of a reef (3½ miles NNE) which dries to 1.2 m (4 ft).

6.176

- 1 **Leading marks.** From this position, SE of Great Reef, the alignment (048°) of Nosy Famaho (12°14'S, 49°04'E) (6.177) with Mont Ambohitro Koholahi (12°05'S, 49°15'E) (6.178) leads NE through the SW part of Baie Andranomaimbo, passing (with positions from Pointe Baron):

- 2 NW of an above-water rock (5 miles NE) 0.3 m (1 ft) high, and:

Close SE of a 7.6 m (25 ft) shoal (5¼ miles NNE), thence:

SE of Le Lion (6¼ miles NNE), a rock, 14 m high, surrounded by a shallow shoal.

- 3 **Leading marks.** Passing clear of Le Lion, the alignment (078°) of Pointe Mangoaka (12° 16'S, 49° 06'E) (6.184), with Les Mamelles, 5 miles ENE (6.188), leads into the main part of Baie Andranomaimbo, passing S of the S reef of Nosy Hara Reefs, ¾ miles W of Pointe Mangoaka.

6.177

- 1 **Leading marks.** Having cleared the reef the alignment (045°) of Les Cristaux (12° 11'S, 49° 08'E), a group of numerous above-water rocks, with Mont Ambohitra Koholahi, 9¼ miles NE, (6.178), leads NE across the main part of Baie Andranomaimbo, passing (with positions from Les Cristaux):

- 2 SE of the E reef of Nosy Hara Reefs (6½ miles SW), thence:

Close SE of a dangerous wreck (5½ miles SW), thence:

NW of a depth of 8.2 m (27 ft) (5¼ miles SW) at the outer end of a spit extending from Pointe Mangoaka, thence:

NW of a 5 m (16½ ft) coral patch (4¾ miles SSW), thence:

SE of Nosy Famaho (4¾ miles SW), a basaltic islet covered with bushes and fringed by a coral reef which shows plainly, thence:

NW of an 8.5 m (28 ft) shoal (3 miles SSW), and:

SE of a 6.7 m (22 ft) shoal (8 cables NW of the previous shoal), thence:

NW of Entrance Shoal (Banc de l'Entrée) (2½ miles SSW).

Once clear of Entrance Shoal, the route leads N across Baie Andranomaimbo, passing:

E of a 7.6 m (25 ft) shoal (1¼ miles WNW of Entrance Shoal), thence:

To a position S of Récif de la Fosse (12° 10'S, 49° 06'E), and W of Les Cristaux (12° 11'S, 49° 08'E).

6.178

Useful marks:

Mont Ambohitra Koholahi (12° 05'S, 49° 15'E) which shows well from SW but which is not, however, visible from WNW, being shut in by Mont Ambinantsandra (6.198).

Nosy Mely (Nosy Meli) (12° 17'S, 49° 00'E), close SW of which there is a pointed rock, 20 m high. Nosy Anjombavola (8½ cables N of Nosy Mely), which is very rugged.

Nosy Hara (12° 15'S, 49° 01'E) (6.170)

Anchorage

6.179

Entrance. With local knowledge, anchorage can be obtained for coasters on the S side of the entrance to Baie Andranomaimbo off the mouth of Mahamindro River, close SW of Potopoto (12°21'S, 48°59'E) (6.152) on a bottom of sand and mud. The river is full during the rainy season from November to April but almost dries at other times.

See 6.111 regarding shelter from the South-east Trade Wind.

6.180

Bay. Within the chain of islands and dangers (6.159) which extends across the S part of the entrance there is ample room for anchoring, according to draught. The N part of the bay is not, however, recommended as the depths are irregular, nor is the anchorage practicable in Passe de Nosy Hao (12°07'S, 49°05'E). See also 6.174 regarding the tidal streams which are, at times, very strong, and 6.111 regarding the South-east Trade Wind which raises a rough sea.

Baie d'Ampasimena

6.181

Anchorage for coasters can be found, with local knowledge, between reefs which fringe both shores of Baie d'Ampasimena (12°19'S, 49°01'E), a shallow cove. The cove offers useful shelter, especially from NE squalls which occur about November and April at the change of seasons.

Landing can be effected close to Djimanguira, a village at the head of the bay.

Manankarana Bay

6.182

Small craft. The coastal reef and bank fill Manankarana Bay (12°18'S, 49°03'E), a shallow cove bordered by mangroves, but it can be entered by small craft at HW and

the large stream which discharges into the head of the bay is navigable by boat for about 2 miles.

Baie d'Ambararata

6.183

General information. Baie d'Ambararata (12°18'S, 49°05'E) affords anchorage for small vessels; offshore squalls are sometimes very strong but the bottom everywhere is mud, good holding ground.

The greater part of the bay is shallow, its head bordered by mangroves among which numerous streams discharge alluvium either side of Le Chien, a pointed headland at the N foot of Ankitikona (6.163). Ambararata River flows into the E side of the head of the bay between steep banks of red clay.

The bay is approached through Baie Andranomaimbo, between a drying reef, on which there are several above-water rocks, which extends from the SW entrance point (12°17'S, 49°04'E), and a reef which fringes Pointe Mangoaka, 2¾ miles NE, which is the NE entrance point.

Caution. Approaching the bay from N, care should be taken to avoid a 4.9 m (16 ft) shoal, about 1 mile NW of Pointe Mangoaka.

6.184

Useful marks:

Pointe Mangoaka (12° 16'S, 49° 06'E), the N extremity of a wooded hill, forming a peninsula.

Flagstaff at the village of Ambararata, 3 miles S of Pointe Mangoaka.

Ankitikona, 4½ miles S of Pointe Mangoaka (6.163).

6.185

Anchorage, suitable for a coaster, can be obtained in the SW part of the bay in a depth of 5 m (17 ft), on the bearings:

028° of Les Cristaux, 5 miles NNE of Pointe Mangoaka, just open NW of that point, and:

325° of the middle of the reef extending ENE from the W entrance point of the bay, in line with the large rock at the NE point of Nosy Hara, 4½ miles NNW (6.170).

6.186

Small craft. Boats can enter Ambararata River at HW over a bar in the entrance; within the bar are depths from 3 to 4 m (10 to 13 ft).

Baie de Courrier

6.187

General information. Baie du Courrier (Courrier Bay) (12°14'S, 49°09'E) is the principal anchorage between Pointe Baron (12°22'S, 48°58'E) and Cap Voailava (12°06'S, 49°06'E). Heavy squalls with strong winds blowing offshore are sometimes experienced during the South-east Trade Wind but otherwise the bay affords excellent shelter as described in 6.111.

The bay is backed on the E side by the Massif de l'Ambongoabo, a range of thickly wooded hills which extend from Les Mamelles (12°14'S, 49°11'E) (6.188), to La Selle, 3 miles SSW. These are interspersed by streams which flow into the bay through a border of mangroves.

The approach is through Baie Andranomaimbo, from W or NW, and an entry is made between a spit which extends NNW from Pointe Basse (12°15'S, 49°08'E), the SW entrance point, and shoals off the NE entrance point, 3 miles NE.

6.188

Useful marks:

Les Mamelles (12°14'S, 49°11'E), two bare rounded hills, both 246 m high.

Mont Nu (12°16'S, 49°11'E) (351 m height), which stands in the middle of a range on the E side of Baie du Courrier and is the highest and most distinctive peak.

- 2 Îlot du Courrier (12°14'1S, 49°09'3E) (7.9 m in height) on the E side of the bay.

A prominent island, 70 m (230 ft) high, (12°16'5S, 49°08'5E), on dry mudflats at the head of the bay.

6.189

- 1 **Anchorage.** Vessels can anchor in the bay in depths from 9 to 13 m (30 to 43 ft) but care must be taken to choose good holding ground of mud, or sand and mud. A recommended berth is N of the bank which extends NW from Îlot du Courrier.

- 2 The most sheltered berth is in depths from 7 to 8 m (23 to 26 ft), mud, 5 cables NNE of the E extremity of Îlot du Courrier with Les Mamelles bearing 125°.

Shallow-draught vessels can avoid the squalls mentioned at 6.187 by anchoring close off the SE shore of the bay.

Amponkarana Bay

6.190

- 1 **General information.** Amponkarana Bay indents the NE corner of Baie Andranomaimbo between a wooded point (12°10'S, 49°11'E) and a peninsula from which rises Mont Ambatoarara, 1¼ miles NW (6.163). Anchorage can be obtained in the bay although it is affected by heavy swell during the South-east Trade Wind.

- 2 The shores of the bay are bordered everywhere by mangroves.

Approach. The bay can be approached from the SW or W, but a more direct route can be found for a shallow-draught vessel by means of the chart. The bay is entered between dangers extending from the S entrance point and others in the middle of the bay which divide it into two parts.

- 3 **Local knowledge** is essential for approach by any route to Amponkarana Bay.

Antsantsa Bay and Miroana Bay

6.191

- 1 **General information.** Antsantsa Bay indents the N part of Baie Andranomaimbo, NW of the peninsula which rises to Mont Ambatoarara (12°08'S, 49°10'E) (6.163) with Miroana Bay forming the SE part of Antsantsa Bay. Numerous dangers with a least depth of 2.7 m (9 ft) over them, and the islet of Nosy Mpay, 2½ miles W of Mont Ambatoarara, lie in the approaches to Antsantsa Bay and in the bay itself, their positions being best seen on the chart.

- 2 **Local knowledge** is essential.

6.192

- 1 **Anchorage** for coasters can be obtained N of Mont Ambatoarara in depths from 9 to 11 m (30 to 36 ft), good holding ground.

Landing may be effected on a sandy beach at the SE side of the inner part of Miroana Bay.

Other names

6.193

- 1 Ambatomarangitsi, Nosy (12°15'5S, 48°58'7E).
Andantsara, Nosy (12°15'9S, 48°58'4E).
Antanalova, Nosy (12°14'0S, 48°59'5E).
Double, Récif (12°12'7S, 49°02'3E).
Est, Récif (12°08'5S, 49°05'5E).
Long, Récif (12°13'S, 49°03'E).
Mahinavatoubé, Mont (12°28'5S, 48°52'2E).
Milieu, Récif du (12°10'0S, 49°03'5E).

Nord, Passe (12°09'S, 49°04'E).

Passes, Récif des (12°09'3S, 49°04'0E).

Petite Passe, Bancs de la (12°14'S, 49°03'E)

CAP VOAILAVA TO CAP D'AMBRE

General information

Chart 1002

Route

6.194

- 1 From a position NW of Cap Voailava (12°06'S, 49°06'E) a coastal route leads NE in deep water for about 13 miles, across the approaches to three large inlets all of which afford anchorage, to a position NW of Cap d'Ambre (Cape Amber) (11°57'S, 49°16'E)(6.118).

Topography

6.195

- 1 The main land-mass is volcanic in origin with irregular hills reaching 150 to 275 m in height which are generally covered with grass. During the dry season, however, they have the colour and appearance of sand dunes. Between the hills the valleys are generally marshy and covered with green grass.

- 2 Farther N, a large, moderately high, regular plain lies between the hills and the coast, terminating at Cap d'Ambre (6.118). This has a brown parched appearance, particularly at the end of the dry season. From W, however, the land W and SW of the cape presents a broken, irregular outline, with numerous grass-covered hills and slopes.

The coastland is formed of coral.

Depths

6.196

- 1 The coastal shelf (6.2) is reduced to 1½ miles off Cap Voailava and is occupied by the coastal reef seaward of that point. Farther NE, the shelf edge lies close to the coast, giving depths in excess of 110 m (60 fm) less than 5 cables off the entrances to Baie Ampanasina (12°00'5S, 49°11'9E) (6.207) and Baie Lotsoina (11°59'5S, 49°12'8E) (6.210).

- 2 Three miles SW of Cap d'Ambre the edge reappears, moving away from the coast, NNE, and forming a shelf which extends 4 miles N of the cape before turning SSE and following the E coastline at a distance of about 1½ miles.

The coastal shelf off Cap d'Ambre (6.118) has a gentle slope with depths between 18 and 40 m (10 to 22 fm) over it but the coast is steep-to in this area and there are no dangers beyond 5 cables from the shore.

Natural conditions

6.197

- 1 **Current.** It has been found that, either just before LW or during a N wind, the N-going current (6.8) may be reversed temporarily.

The W-going South Equatorial Current (1.166) rounds Cap d'Ambre strongly and has been known to attain a rate of 8 kn, especially a few cables offshore.

- 2 **Heavy overfalls** can develop off Cap d'Ambre where the N-going and W-going currents meet.

Tidal stream observations made a little W of Cap d'Ambre over a period of six days in March showed that the stream generally set NE except for an hour at LW when it set S with no slack water. The NE-going stream attained a maximum rate of 2½ kn 1 hour after HW. The rate of the S-going stream was about half that of the NE-going stream.

- 3 **Local weather.** there is generally a cool SE wind blowing.

Principal marks**6.198****1 Landmarks:**

Mont Andramaimbo 12°13'S, 49°11'E) (6.163).

Mont Ambinantsandra (12°04'S, 49°13'E) stands among, but is higher than, the hills described at 6.195 and is covered with forest darker than the land surrounding it.

2 Major light:

Cap d'Ambre (Tanjon'i Bobaomby) Light (white eight-sided tower, black top, 36 m in height) (11°57'S, 49°17'E), exhibited from Cap André (6.118), the E point of Cap d'Ambre.

Directions

(continued from 6.165)

6.199

- 1 The chart is sufficient guide for navigation from a position NW of Cap Voailava (12°06'S, 49°06'E), seaward of the coastal reef, to a position NW of Cap d'Ambre (11°57'S, 49°16'E) (6.118).

Anchorage and harbours**Baie d'Ambavanibé****6.200**

- 1 **General information.** Baie d'Ambavanibé, 5½ miles NE of Cap Voailava, is an extensive inlet which affords anchorage for coasters but is not entirely secure during the South-east Trade Wind season.

Wooded hills surround the inlet and assist to identify it. Mont Ambinantsandra (6.198) is typical of these hills, its rounded outline dominating others around it.

- 2 The inlet is approached from the WNW while a difficult channel affords entry through the coastal reef between Pointe Vedette (12°03'S, 48°10'E) and Pointe Andranovondrony 1¼ miles NE, which form the entrance points.

The shores of the inlet are inhabited and small boats may be encountered here fishing for turtle. The waters swarm with large shark.

6.201

- 1 **Depths.** There are depths from 26 to 50 m (14 to 27 fm) in the entrance channel which is about 1½ cables wide between steep-to reefs. There are lesser depths in the anchorage.

Local knowledge is recommended. Navigation of the channel requires care, on account of the tidal streams. Without local knowledge it is advisable to mark the dangers along the track described below, before entry.

6.202

- 1 **Natural conditions.** The tidal streams attain rates from 2 to 3 kn at springs.

Breakers form across the entrance when strong SE squalls, associated with the South-east Trade Wind, blow against the tidal stream. These prevent the edges of the coastal reef at the entrance being seen. At half tide, however, they are easily seen.

- 2 **Caution.** Reefs which fringe the shores of the inlet, and dry in places, are difficult to distinguish when covered or when the light is unfavourable. The best time to attempt the entrance channel is in the early morning when winds are usually light and the reefs can be seen. If practicable it should be entered before the sun rises over the hills on the E

side of the inlet as, later, it is more difficult to discern the reefs on this side.

6.203**1 Principal marks:**

Mont Ambinantsandra (12°04'S, 49°13'E) (6.198).

Le Ballon (12°05'S, 10°13'E), 47 m (152 ft) high, a cone-shaped hill on the E shore of Baie d'Ambavanibé.

L'Ablette, 1¼ miles SE of Le Ballon.

Tirailleuse (12°06'S, 49°13'E), 111 m (364 ft) high, on a peninsula at the head of the bay.

6.204

- 1 **Directions.** The bearing 112° of Mont Ambinantsandra (12°04'S, 49°13'E) (6.198) leads towards the entrance of Baie d'Ambavanibé. See view B on chart 1002.

- 2 The alignment (128°) of Le Ballon, 1 mile SSW of Mont Ambinantsandra, with L'Ablette, 1¼ miles SE of Le Ballon, leads into the entrance channel. Vessels should be kept a little NE of this alignment, passing not less than 6 cables off Rocher Sentinelle (Sentinel Rock), so as to avoid the coastal reef on the SW side of the entrance; the rock lies on the reef off Pointe Vedette. When the rock bears about 230° and is just open NW of Pointe Vedette the track leads more to the S to avoid the coastal reef on the NE side of the entrance.

6.205

- 1 When Rocher Arguille (Needle Rock), 6¾ cables E of Pointe Vedette (6.200), bears about 262° and is open N of that point, the track leads E avoiding a projection of the coastal reef on the SE side of the channel, 1.1 miles E of Pointe Vedette. The sharp turn required may be difficult to execute with the wind from SE.

- 2 When NE of the reef the track leads SE in mid-channel until Mont Ambinantsandra bears 090°. Thence the bearing 147° of Tirailleuse (12°06'S, 49°13'E), 111 m (364 ft) high, leads to the anchorage, passing:

Close NE of the outer end of the coastal reef on the W side of the inlet, 1¼ miles ESE of Pointe Vedette, thence:

- 3 Very close SW of a 1.8 m (6 ft) shoal, 1.1 miles NNW of Sommet Tirailleuse.

6.206

- 1 **Anchorage** during the South-east Trade Wind is in a depth of about 15 m (49 ft), mud, NE of Tirailleuse. This is the best place but strong squalls blow down from the hills, raising a choppy sea and causing vessels to drag their anchors.

Baie Ampanasina**6.207**

- 1 **General information.** Baie Ampanasina, 8¼ miles NE of Cap Voailava, closely resembles Baie Lotsoina (6.210), affording anchorage for coasters.

- 2 The inlet is approached from NW and a nearly straight channel, about ½ cable wide with a least charted depth of 12.8 m (42 ft), affords entry through the coastal reef which is steep-to on both sides. There are lesser depths in the anchorage.

Tidal stream is similar to that described in 6.211.

6.208

- 1 **Directions.** the bearing 141° of Mont Ambohitra Koholahy (12°05'S, 49°15'E) (6.119) leads towards the entrance which is difficult to recognise.

Care is necessary when entering the channel, on account of the tidal stream.

It is advisable, before entering, to mark the projections of the reefs which fringe the shores of the inlet.

6.209

- 1 **Anchorage** can be obtained in the E part of the inlet, in depths from 7 to 9 m (23 to 30 ft).

Baie Lotsoina**6.210**

- 1 **General information.** Baie Lotsoina, 4½ miles WSW of Cap d'Ambre, is a landlocked inlet which affords anchorage for coasters and is useful for a vessel awaiting a favourable opportunity to round Cap d'Ambre.

The shores of the inlet are formed of coral and rise vertically to flat surfaces from 3 to 4.5 m high, thickly covered with bushes. In the background there are wooded hills.

- 2 The inlet is approached from the NW and is entered by a nearly straight channel through the coastal reef.

The waters of the inlet swarm with large shark.

6.211

- 1 **Depths.** There is a least depth of 10.1 m (33 ft) at the entrance to the fairway of the channel where it has a least width of about ½ cable.

In the channel leading to anchorage there is a least charted depth of 6.4 m (21 ft).

- 2 **Natural conditions.** During a rising tide the tidal stream sets strongly WSW across the entrance; within the entrance it follows the channel.

With winds blowing off the land, violent squalls sweep the anchorages in the inlet.

- 3 The best time to enter is early in the afternoon when the reefs can most easily be seen, the reefs on both sides of the fairway being visible from a high point of vantage.

If possible, the edge of the reef off Pointe Mpaninabo, the SW entrance point, should be marked before entry.

- 4 Departure should be planned for the early morning, before the breeze increases. As the light is bad at this time, however, opportunity should be taken to mark both sides of the navigable channel.

6.212

- 1 **Directions.** The bearing 136° of Mont Ambohibiri (12°05'S, 49°18'E) (8.128) leads towards the entrance which is not easy to identify from a distance.

The track into the inlet leads SE, passing NE of a projection of the coastal reef with a depth of 3 m (10 ft) over it which extends 1 cable NNE from Pointe Mpaninabo. Care is necessary on account of the tidal stream.

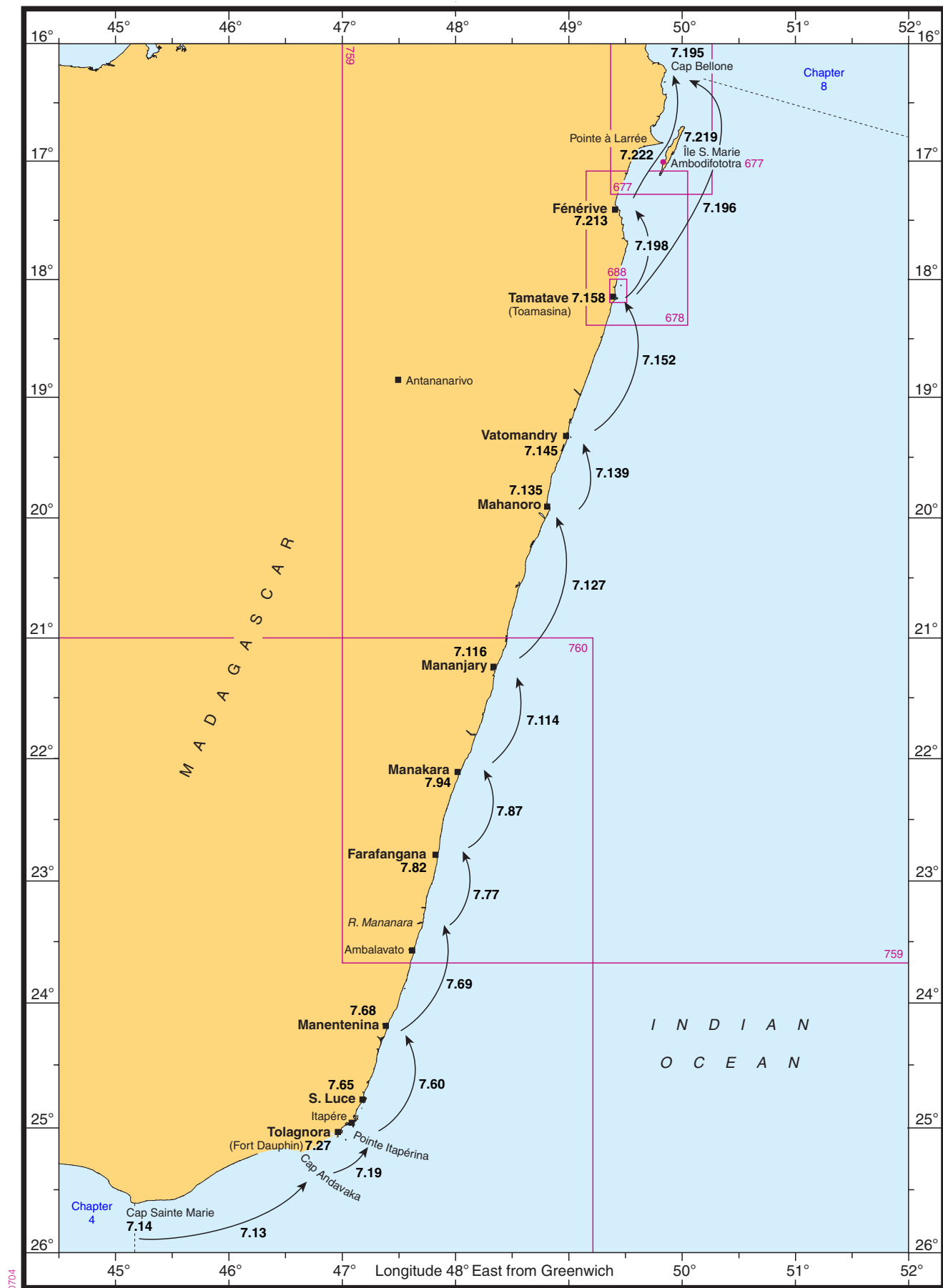
6.213

- 1 **Anchorage** can be obtained off the entrance to Baie Lotsoina in depths from 20 to 22 m (11 to 12 fm), soft mud, within 4 cables of the entrance points. Beyond this the edge of the coastal shelf (6.196) drops away beyond 110 m (60 fm). Also the proximity of the coastal reef makes it necessary to be ready to weigh if the wind blows onshore.

- 2 Within the inlet there is good anchorage in a depth of 14 m (46 ft), mud, good holding ground, on the bearing 220° of a bush-covered islet, 1¼ miles SE of Pointe Mpaninabo. Anchorage can also be obtained in a basin NW of the islet.



Chapter 7 - South and east coasts of Madagascar - Cap Sainte Marie to Baie d'Antongil



CHAPTER 7

SOUTH AND EAST COASTS OF MADAGASCAR — CAP SAINTE MARIE
TO BAIE D'ANTONGIL

GENERAL INFORMATION

Charts 760, 759

Scope of the chapter**7.1**

- 1 This chapter covers the coastal and offshore waters of Madagascar between Cap Sainte Marie (25°35'S, 45°09'E) and Cap Bellone (16°13'S, 49°52'E), on the SW side of the entrance to Baie d'Antongil, a distance of about 680 miles. It contains a description of the routes and sea passages along the coast and the ports, harbours and anchorages associated with them, the principal ports being Tolagnora (Fort-Dauphin) (25°02'S, 47°00'E) (7.27) and Tamatave (Toamasina) (18°09'S, 49°25'E) (7.158).

- 2 The chapter is divided into the following sections:

Cap Sainte Marie to Pointe Itapérina (7.10).

Pointe Itapérina to Tamatave (7.56).

Tamatave to Cap Bellone (7.191).

Depths**7.2**

- 1 A coastal shelf fronts the entire coast between Banc de l'Etoile (25°50'S, 45°00'E), S of Cap Sainte Marie, and Cap Bellone, having numerous dangers with depths of 11 m (36 ft) or less over them. Beyond the edge of the shelf the soundings drop away very rapidly to depths in excess of 1 000 m (547 fm). Off Cap Sainte Marie, the shelf extends seawards up to 42 miles where Banc Tabinta (26°16'S, 45°20'E), on the edge of the shelf, has a least depth of 16 m (52 ft) over it. Following the coastline E, the shelf gradually narrows until, between Sainte Luce (24°46'S, 47°12'E) (7.65) and Tamatave (18°09'S, 49°25'E) (7.158), the edge varies between 10 and 20 miles from the coast. With much of its length remaining only partially surveyed, uncharted dangers may well exist.
- 2 North of Tamatave, the coastal shelf widens until, off the entrance to Baie d'Antongil, it extends up to 30 miles off the coast with numerous islands, banks, reefs and shoals upon it.

Positions**7.3**

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions obtained from charts in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation, and are advised to use alternative methods of position determination, especially when closing the shore or navigating near dangers. See notes on charts.

Navigational information**7.4**

- 1 Because of insufficient information it is not possible to ensure that Admiralty Charts covering the waters of Madagascar are up to date for new dangers or changes to navigational aids. Mariners are advised to exercise particular caution when navigating in these waters. See also 1.7 for information on navigational marks.

- 2 **Caution.** Survey of the banks and offshore areas on this coast are old and sometimes incomplete. Depths may be less than charted and uncharted dangers may exist.

Buoyage is generally unreliable and lights are frequently reported to be extinguished. See 1.23 and 1.25 and *Admiralty List of Lights Volume D* for details.

Fishing**7.5**

- 1 Fishing with traps, handlines, gillnets, longlines and purse seine nets, and by trolling and trawling, is carried out off the coast. See 1.10 for further information.

Weather**7.6**

- 1 **Winds.** The entire area described in this chapter is subject, for most of the year, to the influence of the South-east Trade Wind (1.198), which divides into two branches off the E coast, one branch blowing generally N and the other S.
 - 2 During the cooler winter months from June to August, and generally during September, this division occurs in the zone between Vatomandry (19°19'·6S, 48°59'·0E) and Tamatave, where winds are variable between NE and E. South of this zone, between Tolagnora and Mananjary (21°14'·3S, 48°20'·8E), winds are generally NE, becoming more constant and cooler towards the S end of the island where local winds predominate. At the N end of the coast, from the vicinity of Île Sainte-Marie (16°55'S, 49°53'E), the wind blows from SE, increasing in strength to the N.
 - 3 In October, NE winds always blow between Fort Dauphin and Mananjary; from Île Sainte-Marie to the N the SE winds back to ESE.
 - 4 In November, when the warm weather of summer is well established, NE winds are experienced as far N as Tamatave, thence they are variable between NNE and ESE. The weather associated with ESE winds is relatively cool and clear and, although humid, there is rarely any heavy rain. By contrast, during winds from a N quarter, the weather is hot and not only humid but stormy with heavy downpours of rain.
 - 5 From December to about February N and NE winds predominate between Vatomandry and Tamatave. During March, when the weather is similar to that in October, the oppressively hot winds from a N quarter gradually weaken and there is a progressive return to the cooler conditions associated with winds from a SE direction. In the vicinity of Tolagnora, NE winds predominate while, near Vatomandry, winds are generally between E and ESE, becoming SE at the N end of the coast.
 - 5 In April, S of an intermediate zone between Mananjary and Vatomandry, winds blow from NE while, N of this zone, they blow from SE.
- By May, the South-east Trade Wind predominates along the whole coast and is fully established by June; the strength of the wind increases to a maximum in August.

- 6 **Cyclones** are experienced in the waters described in this chapter from October to April, particularly between Mananjary and Cap Bellone. See 1.209 for further details.

Flow

7.7

- 1 **Current.** The variability in rate and direction of the South Equatorial Current (1.166) is particularly noticeable when affected by winds associated with cyclones.

Tidal streams. See 1.171.

Regulations

7.8

- 1 See 1.40 to 1.42 for regulations concerning pollution of the sea, prohibited fishing areas and health requirement on entry.

Rescue

7.9

- 1 A reporting system is established to assist SAR operations. For details see 1.54 and *Admiralty List of Signals Volume 1(1)*.

CAP SAINTE MARIE TO POINTE ITAPÉRINA

GENERAL INFORMATION

Chart 760

Scope of the section

7.10

- 1 In this section are described the coastal waters between Cap Sainte Marie (25°35'S, 45°09'E) (7.14) and Pointe Itapérina (25°00'S, 47°06'E) (7.23), a distance of about 118 miles. Also included is the small port of Tolagnora (Fort-Dauphin) (25°02'S, 47°00'E) (7.27), and various anchorages along the coast.
- 2 The section is arranged as follows:
Cap Sainte Marie to Cap Andavaka (7.13).
Cap Andavaka to Pointe Itapérina (7.19).
Tolagnora and approaches (7.27).

Current

7.11

- 1 See 1.167 for a general description of the current S of Madagascar; with winds between S and W the generally W-going current sets E.

Caution

7.12

- 1 The coast between Cap Sainte Marie and Cap Antsirabé (25°02'S, 47°00'E) should not be approached within 5 miles owing to dangers reported between these capes. See 7.4.

CAP SAINTE MARIE TO CAP ANDAVAKA

General information

Chart 760

Route

7.13

- 1 From a position off Cap Sainte Marie (25°35'S, 45°09'E) the route leads generally ENE to a position SSE of Cap Andavaka (25°12'S, 46°38'E), a distance of about 85 miles.

Topography

7.14

- 1 Cap Sainte Marie is a rocky promontory rising vertically from the sea in cliffs from which some blackish rocks extend 1 mile S, terminating in an isolated pointed rock, only visible from the E. From Cape Sainte Marie to Cap Andavaka the entire coast is regular and of only moderate elevation, affording no shelter.
- 2 Faux Cap, 19 miles E of Cap Sainte Marie, is formed by a group of rocks, dominated by several white dunes and enhanced by a coastal reef which extends 1 mile seaward at this point.

- 3 Between Faux Cap and the mouth of Manambovo River, 14 miles NE, the coast is wooded and of uniform appearance. Thence, to Cap Andavaka, it is generally featureless, the only features being some large white sandhills. A wooded plain, which becomes less thickly wooded to the E, backs the coast from Manambovo River. Farther inland, elevations increase to the E, the terrain becoming mountainous in the vicinity of Cap Andavaka.

Current

7.15

- 1 Currents off the coast are variable. In the vicinity of Cap Sainte Marie a current setting onshore at rates up to 1 kn has been experienced.

Principal marks

7.16

- 1 **Landmarks:**
Vohisandria (25°10'S, 46°39'E), an isolated mountain surmounted by three knolls of differing height.
Trafonomby (24°33'S, 46°44'E), the summit of which is prominent.
- 2 **Major light:**
Cap Sainte Marie (Tanjona Vohimena) Light (square masonry tower, white corners, 18 m in height) (25°35'S, 45°09'E).

Directions

7.17

- 1 From a position about 6 miles S of Cap Sainte Marie (25°35'S, 45°09'E) (7.14), the track leads generally ENE, passing (with positions from Cap Sainte Marie):
NNW of Banc Tabinta (26°16'S, 45°20'E) (7.2), with a least depth of 16.5 m (54 ft) (charted as 52 ft) (reported 1952), 41 miles SE of Cap Sainte Marie, and:
2 NNW of a 15.8 m (52 ft) shoal, 3 miles farther SSE on the same bank (position approximate), thence:
SSE of a 3.7 m (12 ft) shoal (16½ miles E), thence:
SSE of Faux Cap (19 miles E) (7.14), thence:
3 SSE of Manambovo River entrance (32 miles ENE), identified by a wide depression, with gentle slopes, in the coast, thence:
SSE of Mandrare River entrance (75 miles ENE), of similar appearance to above but more wooded, thence:
4 To a position SSE of Cap Andavaka, a promontory which, from a distance E, has the appearance of an island and clear of a shoal with a depth of 9.2 m (30 ft) over it (reported 1977) (25°33'S, 46°56'E), apparently beyond the edge of the coastal shelf.

7.18

Useful mark:

Pic Saint Louis (25°00'·4S, 46°57'·9E), a peak on the high land, W of Baie de Fort-Dauphin.

(Directions continue at 7.23. Directions for passage W of Cap Saint Marie are given at 4.14)

CAP ANDAVAKA TO POINTE ITAPÉRINA

General information

Chart 760

Route

7.19

From a position SSE of Cap Andavaka (25°12'S, 46°38'E) the route leads generally ENE to a position SSE of Pointe Itapérina (25°00'S, 47°06'E), a distance of about 28 miles.

Topography

7.20

From Cap Andavaka (25°12'S, 46°38'E) to Cap Antsirabé (25°02'S, 47°00'E) the coast is rocky and broken while, inland, there are high mountains with slopes broken by deep ravines.

A factory (white with black tower) stands near the coast in approximate position 25°07'·3S, 46°48'·1E.

Natural conditions

7.21

Current. Off Baie de Fort-Dauphin there is usually a SSW-going current with a rate of 2 to 3 kn, but currents setting E or NE have also been experienced and are said to occur with winds between W and S.

Transparency of the sea near the coast between Cap Andavaka and Cap Antsirabé is such that, under ordinary conditions, the bottom is clearly visible in depths of about 12 m (40 ft).

Principal marks

7.22

Landmarks:

Vohisandria (25°10'S, 46°39'E) (7.16).

Trafonomby (24°33'S, 46°44'E) (7.16).

Major light:

Evatra Light (white tower, 10 m in height) (24°58'·9S, 47°05'·7E), exhibited from Pointe Itapérina, close S of Sommet Evatra Sud (7.48).

Directions

(continued from 7.18)

7.23

From a position SSE of Cap Andavaka (25°12'S, 46°38'E) the track leads generally ENE, passing (with positions from Cap Andavaka):

SSE of a rocky islet (4½ miles ENE), situated close off the coast to which it is connected by a bank, awash, thence:

Clear of a shoal with a depth of 9·2 m (30 ft) over it (26 miles SE) (7.17), thence:

SSE of the entrance to Baie des Galions (6¾ miles ENE) (7.26), thence:

SSE of Pointe Ambero (11 miles ENE), thence:

SSE of Cap Ranavalona (19 miles ENE), a wooded bluff, 84 m high, thence:

To a position about 12 miles SSE of Pointe Itapérina, which may be identified by several small reddish peaks and Sommet Evatra.

7.24

Useful marks:

Pic Saint Louis (25°00'·4S, 46°57'·9E) (7.18).

Tolagnora Rear Leading Light (25°01'·5S, 46°59'·4E) (7.49).

Flacourt Light (25°01'·5S, 47°00'·0E) (7.47).

(Directions for coastal route continue at 7.64.

Directions for Tolagnora are given at 7.48)

Anchorage

Chart 760 (see 1.22)

Crique d'Andrahomana

7.25

General information. Crique d'Andrahomana (25°11'·5S, 46°39'·5E), a cove in the coast at the base of the headland forming Cap Andavaka, affords anchorage for coasters but can only be entered in fine weather and local knowledge is required.

The shores of the cove are fringed with rocks, mostly awash and steep-to, while at its head there is a sandy beach.

Directions. The cove should be approached from E, keeping close to the coast which is fringed with rocks, mostly awash.

The entrance to the cove is difficult to identify and, to enter, vessels should keep in mid-channel as both entrance points are foul.

Anchorage. Within the cove speed must be reduced in time to anchor in depths from 5 to 9 m (10 to 30 ft) and then swing the stern to the inner part of the cove, securing with hawsers to the shore.

Baie des Galions

7.26

General information. Baie des Galions (25°09'S, 46°45'E) affords anchorage for small vessels but local knowledge is required. Although affected by swell and surf in bad weather the bay is sheltered during winds between SE and SW and is useful as a refuge for vessels forced to leave the anchorage off Tolagnora.

Directions. The bay should be approached from SE, passing NE of a 12 m (39 ft) shoal which lies 7 cables S of the W entrance point of the bay.

The track through the entrance leads NNW, passing:

1½ cables WSW of the E entrance point to avoid rocks lying off it, and:

ENE of a rocky 6·1 m (20 ft) shoal situated in the middle of the entrance which is 6 cables wide. The W side of the entrance is foul.

Anchorage can be obtained midway between the rocky entrance points of a cove on the E side of the bay in depths from 7 to 9 m (23 to 30 ft). A vessel 65 m in length drawing 4·9 m has anchored off the cove in depths of 9 m (30 ft) with the N entrance point bearing 022° distant 1¾ cables. These anchorages are recommended during E winds.

Anchorage can also be obtained in the middle of the bay, in depths from 11 to 12 m (36 to 39 ft) on the bearing of 270° of Rocher Galion, a black rock resembling a ship's hull which lies close off the W shore of the bay.

The bottom of the bay is mud interspersed with patches of rock and care is necessary to avoid fouling the anchor.

TOLAGNORA (FORT-DAUPHIN) AND APPROACHES

General information

Chart 760 (see 1.22)

Position

7.27

- 1 Tolagnora (Fort-Dauphin) (25°02'S, 47°00'E), stands on Pointe Libanona, a peninsula at the SW end of Baie de Fort-Dauphin, which is entered between Cap Antsirabé (25°02'·5S, 46°59'·8E) and Pointe Itaperina, 6 miles NE.

Function

7.28

- 1 Tolagnora is a minor commercial port off which vessels anchor, discharging into lighters. It is a port of entry and the seat of administration for the district. Cargoes handled include rice, maize and sisal.

Topography

7.29

- 1 The shores of Baie de Fort-Dauphin are low. Just within the coastline there is a chain of lagoons and interconnecting waterways, fed by local rivers, behind which the terrain rises rapidly to mountains inland.
The W shore of the bay is fringed by a sandy beach, fronted by rocks.
- 2 A prominent television mast (not charted), marked by red obstruction lights, stands on the peninsula, 1½ cables SW of Flacourt Light (25° 01'·5S, 47° 00'·0E) (7.47).

Approach and entry

7.30

- 1 Tolagnora is approached from NE, through the bay, and entered on the alignment of leading lights.

Traffic

7.31

- 1 In 2003, 4 vessels with a total dwt of 7037 used the port.

Port Authority

7.32

- 1 Tolagnora Port Authority, BP 262, Tolagnora, Madagascar

Limiting conditions

Depths

7.33

- 1 Approach: 15·8 m (52 ft).
Anchorage: 12 m (39 ft).

Mean tide levels

7.34

- 1 At Tolagnora the mean spring range is about 0·2 m; mean neap range is nil. For further information see *Admiralty Tide Tables Volume 3*.

Water density

7.35

- 1 The density of the water in the anchorage is 1·025g/m³.

Maximum size of vessel handled

7.36

- 1 A vessel of 21 514 dwt drawing 12 m has used the anchorage.

Local weather and sea state

7.37

- 1 The South-east Trade Wind, which usually blows from NE, is felt most frequently from July to October and generally in the afternoon, when it is strong enough to restrict lighterage in the anchorage to mornings only. Strong squalls associated with these winds can make the anchorage unsafe. The harbour is also affected by swell from ENE which is often heavy and can disrupt lighterage.

Arrival information

Port operations

7.38

- 1 Vessels work cargo by lighter in the anchorage; oil products are discharged by submarine pipeline.

ETA

7.39

- 1 ETA should be reported in advance to the Port Authority.

Outer anchorages

7.40

- 1 **Anse Dauphine.** The main anchorage area lies 3 cables N of the harbour and is indicated by the intersection of the entrance leading lights (7.49) bearing 239½° and the following lights in line, bearing 155°:
Front light (white square tower, red lantern, 12 m in height) (25°01'·5S, 47°00'·0E), exhibited from the N point of the peninsula.
- 2 Rear. Flacourt Light (7.47) (40 m SSE of front light).
Caution. An important wreck now lies 1 cable NNE of this position and it is no longer permitted for vessels to anchor here. The wreck should also be regarded as a danger to navigation to any vessel entering the anchorage by night.
- 3 With strong winds between N and E this anchorage is affected by swell and provides little shelter. In SE winds rolling may be experienced but this does not affect boat traffic. Vessels may anchor closer inshore but not SE of the entry leading line, as a further dangerous wreck lies 1¾ cables SSW of the indicated anchoring position.
- 4 **Anse Itapère.** During NE and E winds good shelter may be obtained in Anse Itapère (24°58'·8S, 47°05'·0E), as follows:
In depths of 22 to 24 m (12 to 13 fm), fine sand, 1 mile W of Evatra Light (24°58'·9S, 47°05'·7E) (7.22).
In depths from 17 to 18 m (56 to 59 ft), sand, 5½ cables W of Evatra light.
In strong NE breezes, a heavy SE swell sets into the bay.

Pilots

7.41

- 1 Pilots are not available.

Tugs

7.42

- 1 Tugs are available for towing lighters.

Regulations

7.43

- 1 On entry, Pratique should be requested from the Health Department.

Harbour

General layout

7.44

- 1 The port consists of an open roadstead in Anse Dauphine and a small harbour, protected by an angled mole, fronting the N part of the town.

Storm signals**7.45**

- 1 Signals indicating the locality threatened by a cyclone are displayed from the signal station see 1.48 for details.

Natural conditions**7.46**

- 1 **Tidal streams** are weak, setting W during a rising tide and E during a falling tide.
Current, as described at 7.21, is felt within the harbour.
Tides, see 1.174.

Principal marks**7.47**

- 1 **Landmarks:**
Calvary (large white cross on a masonry pedestal) (25°01'4S, 46°59'3E).
Flacourt Lighthouse (white six-sided tower, red lantern, 12 m in height) (25°01'5S, 47°00'0E).
- 2 **Major lights:**
Evatra Light (24°58'9S, 47°05'7E) (7.22).
Flacourt Light (see above).
- 3 **Fort-Dauphin Front Leading Light** (white stepped beacon, black stripe and lantern, 10 m in height) (25°01'5S, 46°59'5E).
Fort-Dauphin Rear Leading Light (white beacon, black stripe and lantern, 8 m in height) (25°01'6S, 46°59'4E).

Directions for entering harbour**Approach****7.48**

- 1 From a position to seaward, about 3 miles ESE of Pointe Itaperina (25°00'S, 47°06'E), the track into Baie de Fort-Dauphin leads W for 7 miles on the line of bearing (270°) of Pic Saint Louis (25°00'4S, 46°57'9E), passing S of Roche Itaperina, about 4 cables S of Pointe Itaperina, to a position on the entrance leading line about 1¾ miles NE of Flacourt Light (25°01'5S, 47°00'0E).
- 2 **Clearing bearing.** By night, Flacourt Light bearing more than 260°, clears S of Roche Itaperina.
Useful marks:
Sommet Evatra Sud (24°58'8S, 47°05'8E).
Sommet Evatra Milieu, 5 cables N of above.
Mont Evatra, 4 cables N of Sommet Evatra Milieu.

Entry**7.49**

- 1 **Fort Dauphin Leading Lights:**
Front light (25°01'5S, 46°59'5E) (7.47),
Rear light (260 m WSW of front light) (7.47).
- 2 From a position on this leading line, about 1¾ miles NE of the front light, the alignment (237½°) in the intensified

sector (237½°-242½°) of these lights leads to the anchorage area, passing (with positions from the front light):

Close NW of a shoal (1 mile NE) with a least depth of 8.2 m (27 ft) over it, thence:

SE of foul ground (5 cables NE), thence:

- 3 To a position 2¾ cables NNW of Flacourt Light at the intersection of the leading lights.

Useful marks:

Stranded wreck, 5¾ cables NW of Flacourt Light.

A light (black and white column, 3 m in height) (25°01'6S, 46°59'8E) exhibited on the molehead.

Berths**Anchorage****7.50**

- 1 **Anse Dauphine.** There are a number of berths available in the anchorage area, depending on draught and cargo to be worked.
- 2 **Caution.** A submarine oil pipeline (not charted) (see 1.36) is laid across Anse Dauphin for a distance of 4 cables N from the centre of the harbour mole, 2 cables WSW of Flacourt Light. Tankers discharge ashore from its seaward end.

Alongside berths**7.51**

- 1 The small harbour basin is used for lighters, barges and small craft. Berths are available on both sides of the outer part of the mole. The maximum acceptable draught is 2.5 m at HW.

Small craft**Anse Itapère****7.52**

- 1 **Landing** is possible on a beach in Anse Itapère; the entrance to the cove is much narrowed by reefs.

Port services**Other facilities****7.53**

- 1 Hospital in the town.

Supplies**7.54**

- 1 Fresh water in emergency only in drums; fresh provisions; diesel oil in drums.

Communications**7.55**

- 1 Airport, 12 km distant, with internal domestic flights.

POINTE ITAPÉRINA TO TAMATAVE APPROACHES**GENERAL INFORMATION**

Charts 760, 759 (see 1.22)

Scope of section**7.56**

- 1 In this section are described the waters and routes of the E coast of Madagascar between Pointe Itapérina (25°00'S, 47°06'E) and the approaches to the port of Tamatave (Toamasina) (18°09'S, 49°25'E) (7.158), the principal

harbour on this stretch of coast. It includes a description of Tamatave, together with other minor harbours and anchorages along the coast.

- 2 The section is arranged as follows:

Pointe Itapérina to Manampanihy River (7.60).

Manampanihy River to Mananara River (7.69).

Mananara River to Farafangana (7.77).

Farafangana to Manakara (7.87).

Manakara to Mananjary (7.110).

Mananjary to Mahanoro (7.127).
 Mahanoro to Vatomandry (7.139).
 Vatomandry to Tamatave approaches (7.148).

Topography

7.57

- 1 This section of the E coast is generally featureless, being, for the main part, low and wooded against a background of the mountainous interior. This rises from the coastal plain in successive ranges of hills or massifs, the first about 5 miles from the coast, to a high interior plateau, the edge of which is formed of cliffs about 150 m high. About 30 miles farther into the interior there is a succession of dominant mountain summits which, from a distance seaward, present varied and notable outlines. The predominant peak is Ambatovaky Avaratra (16°47'S, 49°08'E) which is visible for the rest of this chapter. In the S part, numerous rivers which originate in these mountains enter the sea on this coast and numerous waterfalls mark the E slope of the island. In some cases their estuaries can be identified and are mentioned in the text.
- 2 Farther N, the rivers feed a chain of lagoons and interconnecting waterways which form the Canal des Pangalanes, a commercial waterway between Farafangana, on the Manampatra River (22°50'S, 47°50'E) and the port of Tamatave, 290 miles NNE. The waterway follows the coast, lying between a barrier of sand dunes, averaging 3 miles wide, which fronts the coast, and the higher land of the interior. Between Tamatave (18°09'S, 49°25'E) and Ambila-Lemaitso, 44 miles SSW, the railway line to Antananarivo lies on this barrier.

Natural conditions

7.58

- 1 **Weather.** From April to October a strong South-east Trade Wind blows almost unceasingly, causing a heavy swell which makes landing on the S part of the coast possible in exceptional circumstances only.
- 2 When a cyclone forms N of an area in which the Trade Wind is blowing strongly the swell associated with the cyclone can be felt at a considerable distance and may even make the ports and harbours unusable.
 In summer, heavy rain (7.6) obscures the land during squalls, making it difficult to identify landmarks.
- 3 **Currents** are generally very variable in strength and direction along the coast between Pointe Itapérina and Mahanoro (19°54'S, 48°49'E).

In coastal waters from Mahanoro to Tamatave, S to SW currents with rates of about 1½ kn predominate.

In offshore waters between Pointe Itapérina and Tamatave, S to SW currents of 2 to 3 kn predominate for much of the year. See also note on chart.

- 4 **Transparency and colour of the sea.** The transparency of the sea is such that, in ordinary conditions off the coast between Pointe Itapérina and Tamatave, the bottom is clearly visible in depths as great as 10 to 12 m. Below-water dangers can generally be seen at a distance from a high vantage point by the colour of the water.

Caution

7.59

- 1 A landfall on the E coast of Madagascar should be made with the sun astern. Owing to the unreliability of navigational lights an approach at night, without reliable radar, is not recommended. See 1.23.
 When making a landfall between Pointe Itapérina and Tamatave it is advisable to keep N of the point of

destination in view of the likely effect of the S branch of the Southern Equatorial Current. See 1.167.

- 2 Approaching the coast, it is essential to keep a constant good lookout from a high vantage point for below-water dangers.

POINTE ITAPÉRINA TO MANAMPANIHY RIVER

General information

Chart 760

Route

7.60

- 1 Between Pointe Itapérina (25°00'S, 47°06'E) and the entrance to Manampanihy River, 45 miles NNE, the coastal route passes seaward of dangers bordering the coast and clear of a number of detached dangers lying up to 17 miles offshore.

Topography

7.61

- 1 Between Pointe Itapérina and Sainte Luce (24°46'S, 47°12'E) the coastal plain is low-lying with occasional small hillocks. Numerous lagoons and waterways fed by small rivers lie immediately behind the coastline. Inland, about 6 miles from the coast, the land rises to a line of mountains running NNE.
- 2 From Sainte Luce to Manampanihy River the coast is at first wooded and low-lying, backed by a ridge of hills running SW. Farther N it becomes dry and barren behind low cliffs.

Magnetic anomaly

7.62

- 1 Local magnetic anomaly has been reported (1938) E and N of Pointe Itapérina, up to 20 miles offshore.

Principal marks

7.63

- 1 **Landmarks:**
 Varabé (24°48'S, 47°04'E) (650 m (2132 ft) high), which is prominent.
 Trafonomby (24°33'S, 46°44'E) (7.16).
Major light:
 Evatra Light (24°58'·9S, 47°05'·7E) (7.22).

Directions

(continued from 7.24)

7.64

- 1 From a position SE of Pointe Itapérina (25°00'S, 47°06'E) the track leads generally NNE, passing (with positions from Pointe Itapérina):
 ESE of a dangerous rock (existence doubtful) (9 cables NE), thence:
 ESE of Sainte Luce (14 miles NNE), and a chain of islets and shoals (7.65) which extends 1½ miles N, thence:
 ESE of a dangerous wreck (30 miles NNE) (position doubtful), and:
 Clear of a rock with a depth of less than 1·8 m (6 ft) over it (charted as a dangerous rock) (reported 1935), 3½ miles E of the dangerous wreck, above, thence:
 Clear of an 18·9 m (60 ft) patch (37 miles NE) (reported 1973). Another patch of 21·9 m (12 fm), the position of which is approximate, lies 3 miles NE. Thence:

To a position about 15 miles ESE of the entrance to Manampanihy River (45 miles NNE), which is inaccessible, being obstructed by breakers.

4 **Useful mark:**

Mont Sakarivo (24°12'S, 47°12'E) (7.73).
(Directions continue at 7.72)

Anchorage and landing places

Chart 760 (see 1.22)

Rade de Sainte Luce

7.65

- 1 **General information.** Rade de Sainte Luce (24°46'S, 47°12'E) affords anchorage with moderate shelter for coasters off Sainte Luce, a town on the shore near the S end of the bay. The anchorage lies between the coast and a chain of islets and shoals lying parallel with it. The islets are low, flat, rocky and scarcely distinguishable from the coast, the sea often washing completely over them and breaking on the shoals.

- 2 On the S side of the bay there are two small, arid hills which appear as an island when seen from the N.

It is open to NE winds but, though sometimes strong, they do not raise a heavy sea. SE winds, in contrast, cause a choppy sea despite the shelter afforded by the islets.

7.66

- 1 **Directions.** Local knowledge is required. The roads should be approached with utmost caution, owing to the existence of dangers, the exact positions of which are unknown.

- 2 From seaward, approach should be made on the line of bearing (270°) of an uncharted hill, 200 m high, which appears above trees at the mouth of Manery River, 3¼ miles N of Sainte Luce, passing (with positions from Îlot Souillac (24°45'5S, 47°12'6E)):

N of Garland Rock, (7 cables NE), the position of which is doubtful, thence:

- 3 To a position about 1 mile N of Îlot Souillac, the largest islet at the N end of the chain.

Thence, the track leads SSW, passing (with positions from Îlot Souillac):

WNW of a 4-6 m (15 ft) shoal (¾ cables NNE), thence:

- 4 ESE of a 4-6 m (15 ft) shoal (¾ cables NW), thence: WNW of Îlot Souillac and ESE of a rocky shoal, 2½ cables W, with a depth of 4-6 m (15 ft) over it, thence:

- 5 To a position about 3 cables WNW of Îlot de Chartres, 4¼ cables N of Îlot aux Babet and 8 cables N of Îlot aux Chèvres, noting a dangerous rock 3 cables W of Îlot de Chartres.

7.67

- 1 **Anchorage** can be obtained in the position described above, 3 cables WNW of Îlot de Chartres, in a depth of about 6 m (20 ft), good holding ground.

Landing can be effected at a small jetty in a cove close S of Sainte Luce but there are many dangers in the approach.

Manampanihy River

7.68

- 1 **Landing** can be effected, in good weather conditions, within some rocks in a cove on the S side of the entrance to Manampanihy River, near the village of Manantenina (24°17'S, 47°19'E).

MANAMPANIHY RIVER TO MANANARA RIVER

General information

Chart 760

Route

7.69

- 1 From a position ESE of the entrance of Manampanihy River (24°17'S, 47°21'E), the route leads generally NNE for about 60 miles to a position off the entrance to Mananara River (23°21'S, 47°42'E).

Topography

7.70

- 1 Between the mouths of the Manampanihy River and Isandra River, 15 miles NNE, the coast is lightly wooded and bordered by low, isolated hills in places. Inland there are mountains (7.73) which gradually recede from the coast, N of Isandra River.

- 2 Between Isandra River and Manambondro River, 16 miles farther NNE, the coast becomes more thickly wooded and bordered by small hills but, moving N, the vegetation becomes more sparse again until, passing the Masianaka River (23°36'S, 47°37'E), the coast is practically barren to the Mananara River.

Principal marks

7.71

- 1 **Landmarks:**

Papanga (23°50'S, 46°58'E) summit, having an elevation of 1801 m (5905 ft).

Sommet Salohy (23°29'S, 47°12'E) (1165 m (3822 ft) high), makes a good landmark in fine weather. La Dent (1007 m (3303 ft) high) lies 8 miles S.

Directions

(continued from 7.64)

7.72

- 1 From a position ESE of the entrance to Manampanihy River (24°17'S, 47°21'E) the track leads NNE, passing (with positions from Fenoambany village (23°49'S, 47°33'E)):

ESE of a 44 m (24 fm) bank (reported 1943) (23 miles S), which has not been examined, thence:

- 2 ESE of Roches Brisantes, a group of rocks and breakers (21 to 18 miles SSW), thence:

ESE of the entrance to Isandra River (15 miles SSW) which may be identified by a bank that partly dries and some rocky heads lying 1 mile E and NE, thence:

- 3 ESE of the entrance to Manambondro River (7.74) within which, on the S side, lies the village of Fenoambany, thence:

ESE of the entrance to Masianaka River (13 miles NNE) which is surrounded by a rocky reef, marked by breakers and dangerous, thence:

- 4 To a position ESE of the entrance to Mananara River (29 miles NNE) (7.76). This may lie farther S than charted but can be identified by breakers visible from some distance seaward, and by the village of Benanorema, consisting of two distinct groups of houses, situated on the N side of the entrance. Two isolated buildings, clearly visible, stand slightly N of a sand spit at the entrance.

7.73

- 1 **Useful marks:**

Sakarivo summit (24°12'S, 47°12'E) (890 m (2920 ft) high), and Mont Torotoro, close by, both equally steep. The base of these mountains appear to join, forming a V, which opens as the vessel proceeds N.

Identification of these peaks may be facilitated by Mont Fenoarivo, 3 miles NW of Mont Sakarivo and 690 m high, which is remarkable with a summit shaped like a hump.

(Directions continue at 7.79)

Anchorage and landing place

Manambondro River

7.74

- 1 **Anchorage.** The line of bearing (255°) of a saddle-shaped mountain (uncharted) in the interior WSW of the mouth of Manambondro River (23°48'S, 47°35'E) leads to anchorage in a depth of 33 m (18 fm), abreast a beach of white sand covered with creepers, near the landing place.

- 2 **Landing place.** Close N of Fenoambany village (23°49'S, 47°33'E) where some rocks form a small cove.

Masianaka River

7.75

- 1 **Anchorage** can be obtained 2 miles S of the entrance of Masianaka River (23°36'S, 47°37'E) (7.72) and 2½ miles offshore.

Mananara River

7.76

- 1 **Anchorage** can be obtained 7 cables off the mouth of Mananara River (23°21'S, 47°42'E) in Mouillage de Vangaindrano, in a depth of 15 m (52 ft). Small vessels can anchor closer inshore in a depth of 10 m (33 ft).

- 2 **Boats** can enter Mananara River in fine weather, over a bar.

Communications. Vangaindrano village, which gives its name to the anchorage, is situated 5 miles upriver. There is an airfield 3 km from the village.

MANANARA RIVER TO FARAFANGANA

General information

Charts 759, 760 (see 1.22)

Route

7.77

- 1 From a position about 10 miles ESE of the entrance to Mananara River (23°21'S, 47°42'E) the route leads NNE for about 33 miles to Farafangana (22°49'S, 47°50'E).

Topography

7.78

- 1 The land backing this stretch of coast is distinctly different in appearance N and S of Mananivo River (23°14'S, 47°44'E). To the S there are few trees and the country is more flat than that to the N, between Mananivo River and Farafangana, which is well wooded.

Directions

(continued from 7.73)

7.79

- 1 From a position about 10 miles ESE of the entrance to Mananara River the track leads NNE, passing (with positions from Carbonnier Light (22°49'6S, 47°49'6E)):

ESE of the mouth of Mananivo River (7.81) (24 miles S), which is encumbered by rocks and shoals. A beacon (white square with black disc in the middle) marks the river mouth. Thence:

- 2 ESE of Karimbela (18 miles SSW), thence:

ESE of Manambotra (5½ miles S), thence:

To a position about 12 miles ESE of Farafangana.

7.80

Useful marks:

Antananabo (23°02'S, 47°32'E), a table-topped hillock.

Sommet Mahabo (22°50'2S, 47°48'0E) (7.84).

Carbonnier Light (22°49'6S, 47°49'6E) (7.85).

(Directions for coastal route continue at 7.90.

Directions for Farafangana anchorage are given at 7.85)

Anchorage and landing place

Mananivo River

7.81

- 1 **Anchorage** can be obtained in a depth of 33 m (18 fm), sand, 3 miles off the mouth of Mananivo River (23°14'S, 47°44'E) with the S side of Antananabo (7.80) bearing 313°.

Farafangana

7.82

- 1 **General information.** Farafangana (22°49'S, 47°50'E), a small town and former commercial port, stands between Manambato River and Manampatra River, on the estuary formed by their common mouth.

The town is surrounded by clumps of trees which are visible from a distance. Buildings in the town are clearly visible.

7.83

- 1 **Natural conditions:**

Magnetic anomaly. Local deflection of the magnetic compass is experienced in the vicinity of Farafangana.

Current off the estuary usually sets SSW at a rate from 1 to 2¾ kn.

- 2 **Discoloration** of the sea by the outflow of the two rivers occurs during heavy rains, reaching 4 to 5 miles offshore, sometimes farther seaward.

7.84

- 1 **Landmarks:**

Sommet Mahabo (22°50'2S, 47°48'0E), a bare, easily identified hillock.

Abattoir (22°49'4S, 47°49'9E), a large, isolated red building with grey roof.

7.85

- 1 **Directions.** Leading beacons:

Front beacon (white, triangular, with black stripe) (22°48'4S, 47°49'3E). Obscured when bearing more than 325°.

Mayeux Beacon (white, triangular, with black stripe) (3¾ cables W of front mark).

From seaward the alignment (281°) of these beacons leads W to the anchorage.

- 2 **Leading marks:**

Front mark (white eight-sided tower, black band) (22°49'4S, 47°49'9E) which stands near the coast beside a prominent abattoir (7.84).

Rear. Carbonnier Light (white eight-sided tower, black band, 16 m in height) (3¾ cables SW of front mark), situated in the village of Ambaniou.

- 3 From seaward the alignment (230°) of these marks or, by night, the line of bearing (230°) of Carbonnier Light leads to the anchorage.

On approach, if the leading lines cannot be identified and the position is uncertain, vessels should anchor when depths decrease to 25.6 m (14 fm). A line of reefs front the coast about 1 mile NE of the estuary.

- 4 **Useful marks:**

Stranded wreck (22°49'1S, 47°50'2E).

Steeple (tower) (22°49'0S, 47°49'3E).

7.86

- 1 **Anchorage** is in a depth of 15 m (49 ft), about $2\frac{3}{4}$ cables from the reefs mentioned above, at the intersection of the approach leading lines. The anchorage 6 cables WNW is no longer recommended.

The holding ground in the anchorage is only moderate and the current (7.83) generally holds a vessel across heavy SE swell. At night, if the wind threatens to increase, it is prudent to proceed to sea until daylight.

- 2 **Landing place** is on the N side of the town, in Manampatra River which is entered over a shallow bar at the mouth of the estuary. The bar changes frequently and the sea breaks heavily over it, making passage impracticable in bad weather.

Services: Hospital in the town; airfield close N.

FARAFANGANA TO MANAKARA**General information**

Charts 759, 760 (see 1.22)

Route**7.87**

- 1 From a position ESE of Farafangana (22°49'S, 47°50'E) the route leads about 42 miles NNE to a position ESE of Manakara.

Topography**7.88**

- 1 The coast between Farafangana and Manakara is low and wooded with no distinctive features. Close behind the coastline is the continuation of the Canal des Pangalanes (7.57). Inland, in exceptionally good visibility, the mountains of the interior can be seen.
- 2 About 10 miles N of Farafangana a regular tableland, formed by a wooded plateau, is a good guide to the locality of Farafangana when approaching from N.

Principal marks**7.89**

- 1 **Landmark:**
Pic Boby (22°12'S, 46°53'E), a mountain, clearly visible.
- 2 **Major lights:**
Emokala Light (white eight-sided tower, black top, 29 m in height) (22°07'S, 48°01'E).
Mankara No 3 Rear Leading Light (22°07'·9S, 48°00'·9E) (7.103).

Directions

(continued from 7.80)

7.90

- 1 From a position about 12 miles ESE of Farafangana (22°49'S, 47°50'E) the track leads NNE, passing (with positions from Emokala Light (22°07'S, 48°01'E)):
ESE of a barrier reef (34 miles SSW to 25 miles SSW) which lies 5 cables offshore, thence:
- 2 ESE of the mouth of Matitanana River (20 miles SSW) which forms a large estuary completely obstructed by breakers extending about 5 cables offshore. There are several hummocks N of the river mouth and a large isolated hill stands on a plain to the W. The village of Andranamby is also visible. Thence:
- 3 ESE of Mangatsifotra (12 miles SSW), thence:
ESE of Iantsary (6 miles SSW), thence:
To a position SSE of the estuary of Manakara River.

7.91**Useful marks:**

- 1 Carbonnier Light (22°50'S, 47°50'E) (7.85).
Residency (La Résidence) Light (22°09'S, 48°01'E) (7.101).
(Directions for coastal route continue at 7.114)
(Directions for Manakara anchorages are given at 7.101)

Anchorage and landing place**Nosikely****7.92**

- 1 **Anchorage** can be obtained in a depth of about 15 m (49 ft) E of Nosikely village (22°41'S, 47°51'E), which stands on a grey hill, and N of a large black rock.
Landing can be effected here when bad weather prevents landing at Farafangana.

Andranamby**7.93**

- 1 The village of Andranamby (22°32'S, 47°53'E) lies on the coast, 17 miles N of Farafangana. Local knowledge is essential.
Anchorage may be obtained off the village in a passage, used by small vessels, entered near the N end of the barrier reef (7.90) S of the village.
Several other openings in the reef are available only to local boats.

Manakara**General information****7.94**

- 1 **Position.** Manakara (22°08'·5S, 48°01'·2E) consists of Manakara-Sud and Manakara-Nord, occupying both sides of the mouth of Manakara River and linked by a bridge about 7 cables within the river entrance.
Function. It is a sub-district of Naval administration, being a small commercial port off which vessels anchor to load and discharge.
- 2 **Topography.** The land is mainly low-lying and Manakara can best be identified by the clumps of Casuarina trees around the estuary and the light-tower at Emokala (7.89). Very little of Manakara-Nord can be seen from seaward, other than a few buildings and, in particular, a railway station.

7.95

- 1 **Approach and entry.** The main anchorages (7.106) are approached direct from sea on the alignments of leading marks.
Traffic. This is nearly all coastal. In 2002, 1 vessel of dwt 4763 used the port.

Limiting conditions**7.96**

- 1 **Depths:** The least charted depths in the approaches to the anchorages are as follows:
SW outer from SE — 14 m (46 ft).
SW outer from ENE — 11·9 m (39 ft).
NE outer — 11·9 m (39 ft).
- 2 Inner, E of Rocher Noir — 4·9 m (16 ft).
Approach to anchorage off Manakara-Nord — 5·2 m (17 ft).
Mean tide levels. At Manakara the mean spring range is about 0·3 m; mean neap range about 0·1 m. For further information see *Admiralty Tide Tables Volume 3*.

Arrival information**7.97**

- 1 **Port operations.** All cargoes, including oil products, are worked by lighters in the anchorages.

ETA. ETA should be reported in advance to the Port Authority.

- 2 **Pilots** are not available.

Tugs are available for towing lighters.

Local knowledge is required for the innermost anchorage off Manakara-Nord.

Harbour**7.98**

- 1 **General layout.** The port consists of:
An open roadstead in which the main anchor berths lie seaward of several chains of rocks, reefs and shoals fronting the coast to a distance of 8 cables for about 2½ miles NNE from Manakara-Sud.
- 2 Inner anchorages for coasters between the coast and offshore reefs.
Berths for harbour craft and shore facilities, including those for discharge of oil products, at Manakara Sud and Manakara Nord.

7.99

- 1 **Storm signals** indicating the locality threatened by a cyclone are displayed from the signal station, see 1.48.

7.100

- 1 **Natural conditions.** Local deflection of the magnetic compass is experienced when approaching the anchorages.
Current off Manakara River sets SSW at rates from 1 to 2¾ kn.
- 2 **Swell** described at 7.58 affects the anchorages, making lighterage very difficult, and is also felt in the river mouth although this is protected by a dyke (7.105). With heavy swell the channel is quickly blocked and has to be cleared by dredging.

Directions**7.101**

- 1 **South-western outer anchorage.** Leading beacons:
Front, No 2 Beacon (white triangle surmounted by black diagonal cross, mounted on concrete pillar) (22°07'·7S, 48°01'·5E), near the coast.
Rear, No 1 Beacon (white triangle surmounted by black diagonal cross, painted on red roof of a large building), 4 cables NW of front beacon.
- 2 From SE, the alignment (312°) of these beacons leads to the SW anchorage (7.106) passing close SW of a shoal with a least depth of 8·5 m (28 ft) over it (22°08'·6S, 48°02'·6E).
From ENE, the line of bearing 246° and, by night, in the white sector (237°-247°) of Residency (La Résidence) Light (white eight-sided tower, black top, 11 m in height) (22°09'·0S, 48°01'·3E) leads WSW to the anchorage, passing NW of the shoal described above.

7.102

- 1 **North-eastern outer anchorage.** Leading lights:
Front light (black and white beacon, 12 m in height) (22°07'·4S, 48°01'·6E), near the coast.
Emokala Light (white eight-sided tower, black top, 29 m in height) (5¾ cables NW of front light), at the S end of Emokala village.
- 2 From SE, the alignment (315°) of these lights leads to the NE anchorage (7.106), passing:

SW of a 10·1 m (33 ft) shoal (22°08'·5S, 48°03'·1E) (existence doubtful), the outermost of numerous charted dangers fronting Manakara, thence:

NE of the 8·5 m (28 ft) shoal described at 7.101.

7.103

- 1 **Leading lights:**

Front, No 4 Light (white tower, black top, 6 m in height) (22°08'·0S, 48°01'·4E), on the coast.

Rear, No 3 Light (major light) (white tower, black top, 13 m in height), 820 m WNW of the front light.
This is a direction light.

- 2 From ESE, the alignment (285½°) of these lights leads to the NE anchorage, passing NNE of the 10·1 m (33 ft) shoal (existence doubtful) mentioned at 7.102.

7.104

- 1 **Inner anchorage.** From seaward, the line of bearing 267° of Emokala Light (7.89) leads W through a passage at the N end of Récif du Large, the outermost reef described at 7.98.
Within Récif du Large the line of bearing 212° of Rocher Pyramide (22°08'·4S, 48°01'·6E), lying on a ledge of rocks, leads SSW towards the inner anchorage (7.107), passing:
- 2 ESE of numerous dangers fringing the coast NNE from Manakara, the positions of which can best be seen on the plan, and:
WNW of Récif Intermédiaire, 8 cables NNE of Roche Pyramide, which lies within and parallel to Récif du Large.

- 3 It is essential not to deviate from the leading bearings but steering is made difficult by wind, swell and current.

7.105

- 1 **Anchorage off Manakara-Nord.** The alignment of the leading lights described at 7.103 leads through the passage used by lighters at the S end of Récif du Large and SSW of Récif Intermédiaire towards anchorage off Manakara-Nord, passing NNE of:
- 2 Rocher Plat (22°08'·4S, 48°01'·9E), a black flat rock, not easily identified when the sea breaks over it, which lies on an extension SSW of Récif Intermédiaire.
Rocks awash, lying close N of Rocher Noir, 3 cables WNW of Rocher Plat. Rocher Noir marks the termination of a ledge of rocks on which is a dyke protecting the entrance to Manakara River.
- 3 When clear of the rocks the alignment (241°) of leading lights leads to the anchorage:
Front (white column, 4 m in height) (22°08'·2S, 48°01'·4E).
Rear (white column, 6 m in height) (45 m WSW of front light).
The lights are exhibited when required.

Anchorage**7.106**

- 1 **South-western outer anchorage.** Vessels can anchor in a depth of 15 m (49 ft) at the intersection of the approach leading line and leading bearing (7.101).
- 2 **North-eastern outer anchorage.** Anchorage can also be obtained in a depth of 16 m (52 ft) at the intersection of the approach leading lines (7.102).
Vessels may anchor as convenient between these two berths. The holding ground is good.

7.107

- 1 **Inner anchorage** is in a depth of about 9 m (30 ft) 1½ cables E of Rocher Noir (7.105). This anchorage is seldom used.

Manakara-Nord. Coasters can anchor in depths from 3 to 4 m (10 to 13 ft) on the approach leading line described at 7.105.

Berth 7.108

- 1 A quay fronting the custom house on the NW side of Manakara River, 2½ cables within the entrance.

Port services 7.109

- 1 **Supplies.** Fresh provisions may be available.
- Communications.** Railway to Fianarantsoa; airport at Emokala with connections to Antananarivo; coast radio station at Manakara-Sud.

MANAKARA TO MANANJARY

General information

Charts 759, 760

Route 7.110

- 1 From a position ESE of Manakara (22°08'5S, 48°01'2E) the route leads NNE for about 58 miles, to a position ESE of Mananjary (21°14'3S, 48°20'8E).

Topography 7.111

- 1 The coast between Manakara and the mouth of Faraony River, 23 miles NNE, is covered with vegetation and from there to Namorona River, 9 miles farther NNE, it is barren and low-lying. From Namorona River to Mananjary the coast consists of a sandy beach bordered by brushwood and scattered small clumps of trees.

Current 7.112

- 1 See 7.59. About 6 miles E of Mananjary a S-going current with a rate of 1½ kn has been experienced, but a strong set in the opposite direction has been encountered in the approach to anchorage off the town.

Principal marks 7.113

- 1 **Landmarks:**
Pic Boby (22°12'S, 46°53'E) (7.89).
Vatovavy (21° 24'S, 47° 57'E), higher than neighbouring summits and a distinctive darker colour.

Major light:

Emokala Light (22°07'S, 48°01'E) (7.89).

Directions (continued from 7.91)

7.114

- 1 From a position about 12 miles SSE of Manakara (22°08'5S, 48°01'2E) the coastal track leads NNE, passing (with positions from Manakara):
ESE of the mouth of Mananana River (7 miles NNE) which can be identified by a clump of Casuarina trees, thence:
- 2 ESE of Rocher Ambatovorona (13 miles NNE), thence:
ESE of the mouth of Faraony River (23 miles NNE), barred by a long line of reefs over which the sea breaks heavily, thence:
ESE of the mouth of Namorona River (32 miles NNE) where there are some village huts, thence:

- 3 ESE of a stranded wreck (39 miles NNE) on the coast, thence:
To a position about 12 miles ESE of Mananjary.
(*Directions for coastal route continue at 7.131.*)
Directions for Mananjary anchorage are given at 7.122)

Anchorage

Faraony River 7.115

- 1 Outside the reef fronting the mouth of Faraony River (21°48'S, 48°10'E) (7.114) there is anchorage on a bottom of sand and coral.
The river can be entered by boat through channels in the reef but local knowledge is essential.

Mananjary

Charts 759, 760, see (1.22)

General information 7.116

- 1 **Position.** Mananjary (21°14'3S, 48°20'8E) is situated on the N side at the mouth of Mananjary River, at its junction with the Canal des Pangalanes (7.57), the commercial waterway running parallel to the coast.
Function. It is a sub-district of Naval administration, being a small commercial port off which vessels anchor to load and discharge.
- 2 **Topography.** The town is fronted by a white sandy beach, visible from a distance of several miles, while some distinct clumps of Casuarina (Filao) trees also serve to identify the locality. The N-most clump surrounds a hospital (7.121), 2 miles N of the river mouth. The land surrounding the town is low-lying with a series of interconnected lagoons which form part of the intercoastal canal.

7.117

- 1 **Approach and entry.** Anchorage off the port is approached direct from sea on the alignment of leading lights.
Traffic is nearly all coastal. In 1997 the port was used by two vessels totalling 3 656 dwt.
Port Authority. Mananjary Port Authority, Societe d'Exploitation, Port Toamasina, Toamasina.

Arrival information 7.118

- 1 **Port operations.** All cargoes, including oil products, are worked by lighter in the anchorage.
Pilots. There are no pilots available.
Tugs. Launches are available for towing lighters.

Harbour 7.119

- 1 **General layout.** The port consists of an open roadstead containing the anchorage area, E and NE of Récif Mananjary, which fronts the town about 3 cables offshore.
There is a small quay in the SW part of the town for harbour craft and lighters which is reached through a very narrow, shallow and tortuous channel at the mouth of the river.
- 7.120**
- 1 **Natural conditions.** Strong currents are experienced in the tortuous entrance channel at the mouth of the river.
In the rainy season (1.218) the channel is frequently blocked and the port is flooded.
- 2 Swell (7.58) always affects the anchorage, making lighterage difficult. Vessels roll, especially during SE winds and, although this is not so bad with NE winds, communication with the shore is more difficult.

7.121**Landmarks:**

Residency (21°14'4S, 48°20'8E).

Water tower (white tower, 26 m in height) (21°13'1S, 48°20'7E).

Hospital (green and pink), 6 cables ENE of the water tower.

Major light:

Mananjary Entrance Rear Leading Light (21°13'9S, 48°20'2E) (7.122).

Directions**7.122****Entrance Leading Lights:**

Front light (white vertical rectangle, 6 m in height) (21°13'9S, 48°20'9E), on the coast, partially obscured.

Rear light (major light) (white topmark on white pyramid, 13 m in height), (6½ cables W of front light). Direction light, partially obscured.

- 2 From seaward, the alignment (269°) of these lights, close N of Mananjary, leads W to the anchorage, passing close S of an obstruction 9 cables E of the front light.

7.123**Cross Leading Lights:**

Front light (black and white beacon, 10 m in height) (21°13'0S, 48°21'2E).

Rear light (similar structure, 12 m in height) (400 m NW of front light). Direction lights.

- 2 From SSE, the alignment (331°) of these lights leads NW into the anchorage, passing WSW of the obstruction mentioned at 7.122.

Anchorage**7.124**

- 1 **Anchorage** can be obtained in a depth of 14 m (46 ft), sand, in a position at the intersection of the leading lines described above.

7.125

- 1 **Berths.** A quay, close W of the Residency, is 180 m in length with a depth of 1 m alongside for use by harbour boats and lighters.

Port services**7.126**

- 1 **Facilities:** hospital.

Supplies: fresh provisions may be available.

Communications: Mananjary Airfield, internal flights to Antananarivo International airport.

MANANJARY TO MAHANORO**General information**

Chart 759 (see 1.22).

Route**7.127**

- 1 From a position ESE of Mananjary (21°14'3S, 48°20'8W) the route leads NNE for about 84 miles to a position ESE of Mahanoro (19°54'3S, 48°48'9E), through waters in which there are no known dangers.

Topography**7.128**

- 1 Between Mananjary and the village of Mahela, 25 miles NNE, the coast is bordered by shrubs and brushwood, above which small trees rise here and there. The land within, although not low, presents no notable features. Along this

stretch, for 3 to 4 miles N of the mouth of Mananjary River, there is a dense line of Casuarina trees, contrasting with the vegetation S of the river.

- 2 From about 35 miles NNE of Mananjary, trees gradually replace bushes. Thence, to the mouth of Mangoro River, 6 miles SSW of Mahanoro, the coast is low and bordered by trees except in the vicinity of gaps formed by the main estuary of Sakeleona River (7.134), 41 miles SSW of Mahanoro, and the outflow from the Canal des Pangalanes (7.57).

- 3 Farther inland there is a range of slightly wooded hills, increasing in elevation to Sommet Marovanana. This, the S-most hill of any prominence, is of only moderate height and has a summit which is inclined to the S.

The river mouths are not easily seen but can usually be identified on a radar display.

Natural conditions**7.129**

- 1 **Current.** Currents are generally very variable in strength and direction, S of Mahanoro (19°54'3S, 48°48'9E). Offshore, S to SW currents of 2 to 3 kn predominate for much of the year.

- 2 **Sea discoloration.** Off the mouth of Mangoro River muddy water sometimes extends a long distance offshore, presenting so strong a contrast to the normal colour of the sea as to give the impression of shoal water in depths which are actually very great.

Principal marks**7.130****Landmarks:**

Sommet Marovanana (20°35'S, 48°16'E) (523 m high) (uncharted) which has a prominent summit, inclined to the S.

Vohitrakoholahy (19°53'S, 47°55'E), a prominent, sharp, isolated peak at an elevation of 1737 m (5700 ft).

- 2 Mahanoro Light (white metal tower, 14 m in height) (19°54'S, 48°49'E), standing on the NE point of the peninsula at Mahanoro.

Major light:

Mahanoro Light - exhibited from the light-tower above.

Directions

(continued from 7.114)

7.131

- 1 From a position about 12 miles E of Mananjary (21°14'S, 48°28'E), the track leads NNE, passing (with positions from Mananjary):

Clear of Gabrielle Shoal (12 miles NE) (position doubtful), reported (1894) by the schooner *Gabrielle* to consist of sand and coral but not found in 1896, thence:

- 2 ESE of a break in the coast (17 miles NNE) marking the estuary of the Sakara River and an outlet from Lac Rangazavaka (both uncharted), thence:

ESE of Mahela (25 miles NNE) (7.133), thence:

- 3 ESE of Nosy Varika (40 miles NNE), situated on the S side of a gap in the coast, with Ambasy Sakaleona on the N side, where a delta is formed at the mouth of Sakaleona River by some streams that flow from lagoons into the river a little inland, thence:

ESE of a break in the coastline marking the combined estuaries of Masora, Sahantsio and other rivers (61 miles NNE), thence:

- 4 ESE of the Mangoro River (78 miles NNE) which is obstructed by rocks and breakers, thence:
To a position about 10 miles E of Mahanoro.

7.132**1 Useful marks:**

Sommet Vatovavy (21°24'S, 47°57'E) (7.113).
Ampahanivorona (19°38'S, 48°41'E) (7.142).
(Directions for coastal route continue at 7.143.
Directions for Mahanoro are given at 7.136)

Anchorage and landing places**Mahela****7.133**

- 1 **Description.** Mahela (20°49'S, 48°29'E), a small village, lies on the N side of the mouth of River Fanantara, 15 miles SSW of Nosy Varika. It can be identified by a line of Casuarina trees and a prominent house, situated on the N shore of the estuary at its juncture with the Canal (7.57).

Directions. Local knowledge is required. Vessels should approach from N in depths of about 15 m (49 ft) to a position E of the village at the river mouth.

- 2 **Anchorage** is best obtained in depths of 22 to 24 m (12 to 13 fm), sand and coral, with the prominent house (7.131) bearing between 270° and 281°. Outside these bearings the bottom is foul. A good length of cable should be used.

Caution. The anchorage is untenable during South-east Trade Winds.

Sakaleona River**7.134**

- 1 **Anchorage** can be obtained off Sakaleona River entrance (20°33'S, 48°34'E) in a depth of 31 m (17 fm), fine red sand, with Sommet Marovanana (7.130) bearing 263°.

Depths decrease gradually and evenly inshore until, 2 cables outside the bar of the river, the depth is about 10 m (33 ft). In depths of less than 20 m (11 fm) the bottom is coral.

Communication with the shore is usually difficult.

Mahanoro**7.135**

- 1 **General information.** Mahanoro village (19°54'3S, 48°48'9E) stands on both sides of the mouth of a river, the E side of which is formed by a wooded peninsula which appears from a distance as an island, and from the NE point of which Mahanoro Light (7.130) is exhibited.

- 2 A chain of reefs, about 1½ miles off the coast, extend 2½ miles NE from the peninsula. The swell breaks over them continually in places, even in fine weather, but it is not often seen to break more than 2 miles offshore.

A narrow channel lies between the reefs and a bank which fronts the shore. The river enters the sea, NW of the peninsula, through a broad expanse of shallow lagoon over a bar and sandbanks which are liable to shift.

- 3 **Storm signals** indicating the locality threatened by a cyclone are displayed from a signal station in Mahanoro, see 1.48.

Local magnetic anomaly. Local deflection of the magnetic compass may be experienced in shallow water off Mahanoro.

7.136

- 1 **Directions.** Approach to the anchorages off Mahanoro is difficult due to the lack of marks as the charted beacons no longer exist. Local knowledge is required.

Leading marks:

Front. House (red roof) (19°54'2S, 48°48'8E).

- 2 Rear. Selle de Betsizaraina (19°57'S, 48°30'E), an uncharted mountain at an elevation of 610 m (2001 ft) with a summit slightly hollowed to a saddle in the centre. From S, it shows a dark outline against a background of distant mountains. From N, its profile appears against the sky behind the hills of a second ridge.

- 3 From sea, the alignment (267°) of these marks leads to the outer anchorage area, E of the reefs.

Approach at night should only be made if a vessel's position is known and with the aid of a reliable radar. Anchorage within the reefs should not be approached except in daylight and it is not advisable to attempt to leave at night.

- 4 **Inner anchorages.** From NNE the line of bearing (201°) of Mahanoro Residency building (19°54'2S, 48°49'0E), leads SSW within the reefs to the inner anchorage area. No attempt should be made to approach these anchorages from S.

7.137**1 Useful marks:**

Stranded wreck (19°52'2S, 48°48'9E).
Stranded wreck (19°52'9S, 48°48'8E).

7.138

- 1 **Anchorage** may be obtained as follows (with positions from Mahanoro Light (19°54'S, 48°49'E)):

Outer anchorage (1 mile E) in depths of about 18 m (59 ft), sand and mud.

Inner anchorages (7½ cables N and 1 mile NNE) in depths of 5.5 m (18 ft) and 7 m (23 ft) respectively.

- 2 During the South-east Trade Wind, and particularly during June and July, a strong swell is experienced in the anchorages making communication with the shore impossible, sometimes for several days at a time.

Berths. There is a small wooden pier close within the river entrance, W of the Residency. Local boats should be used as the bar can only be crossed by ships' boats in very fine weather.

MAHANORO TO VATOMANDRY**General information**

Chart 759

Route**7.139**

- 1 From a position ESE of Mahanoro (19°54'S, 48°49'E) the route leads NNE for about 36 miles to a position E of Vatomandry (19°20'S, 48°59'E).

Topography**7.140**

- 1 Between Mahanoro and Vatomandry the coast is low, bordered by trees and broken by the mouths of several rivers. A short distance inland some hills, on a second ridge, are distinctive.

Natural conditions**7.141**

- 1 **Magnetic anomaly.** Local deflection of the magnetic compass may be experienced in shallow water in the vicinity of Vatomandry.

Current. In coastal waters between Mahanoro and Tamatave, S to SW currents with rates of about 1½ kn predominates while, in the approaches to Vatomandry and the anchorage, a current sets in the same direction at a rate of about 2 kn.

- 2 **Local weather.** See 7.58. Cyclones are often experienced at Vatomandry.
Clarity of the sea. see 7.58.

Principal marks

7.142

- 1 **Landmarks:**
 Vohitrakoholahy (19°53'S, 47°55'E) (7.130).
 Ampahanivorona (19°38'S, 48°41'E), the summit of which is conical and dark in colour.
 Miarinarivo (19°15'S, 48°47'E) (7.151).

Directions

(continued from 7.132)

Chart 759 (see 1.22)

7.143

- 1 From a position about 11 miles ESE of Mahanoro (19°54'S, 48°49'E), the track leads NNE, passing (with positions from Mahanoro):
 ESE of a 7.9 m (26 ft) shoal (7 miles NNE), thence:
 ESE of Banc du Vaudreuil (25 miles NNE), the position of which is approximate, on which there is a rock awash, thence:
 2 ESE of a dangerous rock (35½ miles NNE). A 7 m (23 ft) shoal patch, the position of which is doubtful, lies 2 miles SW. Thence:
 To a position about 12 miles E of Vatomandry.

7.144

- 1 **Useful mark:**
 Mahanoro Light (19°54'S, 48°49'E) (7.130).
(Directions for coastal route continue at 7.152.)
Directions for Vatomandry anchorage are given at 7.146)

Anchorage

Vatomandry

7.145

- 1 **General information.** Vatomandry (19°19'6S, 48°59'0E), a village of red-roofed houses, stands at the outlet from a lagoon in the estuary of Marolo River and was formerly a small commercial port. The outlet from the lagoon has now silted up and the port is closed to shipping but anchorage can be obtained off the village.

7.146

- 1 **Directions.** Leading marks:
 Front. Vatomandry Beacon (white, octagonal, masonry) (19°19'3S, 48°59'1E) situated on the coast. A good mark.
 Rear. Flagstaff (19°19'4S, 48°58'8E) at Vatomandry Residency (red roof).
 2 From seaward, the alignment (265½°) of these marks leads W to the anchorage, passing (with positions from Vatomandry Beacon):
 S of a shoal with a least depth of 8.8 m (29 ft) over it, (2 miles ENE) thence:
 3 N of the NW Rocher du Large (1¼ miles ESE), one of two low, above-water rocks lying each end of an extensive coral shoal over which the sea breaks, thence:
 S of Banc Nord (about 1¼ miles ENE), thence:
 4 To a position NE of Rochers Noirs (5½ cables ENE), a group of rocks of which the N-most is 10 m high and conical.

7.147

- 1 **Anchorage** can be obtained in depths from 15 to 16 m (49 to 52 ft) on the approach leading line, about 4 cables NE of Rochers Noirs (7.146).
 The holding ground is good, sand and mud, but there are scattered patches of coral elsewhere in the roadstead. There is always a heavy swell and vessels held broadside on by the current roll heavily, especially during E winds.
 2 **Landing place.** On the beach, on the seaward side of the sandbar forming the lagoon, for boats. Communication with the shore is sometimes interrupted during periods of heavy swell.

VATOMANDRY TO TAMATAVE APPROACHES

General information

Charts 678, 759

Route

7.148

- 1 From a position E of Vatomandry (19°20'S, 48°59'E) the route leads NNE for about 76 miles to a position NE of Tamatave (Toamasina) (18°09'S, 49°25'E).

Topography

7.149

- 1 This part of the coast is low and wooded, backed by a plain on which there is an occasional hill.
 At the large village of Ambila-Lemaitso (18°50'S, 49°09'E) the railway from Antananarivo to Tamatave reaches the coast and then follows the course of the Canal des Pangalanes (7.57), passing through the smaller villages of Ampanotomaizina (18°42'S, 49°13'E) and Tampina (18°31'S, 49°17'E). Ambila-Lemaitso is well-lit and, at night, can be seen from a considerable distance offshore. The other villages are not easily seen but the roofs of the railway stations are visible.
 2 Several rivers enter the sea between Andevoranto village (18°58'S, 49°06'E) and Tamatave. the entrance to Ivondro River, 6 miles S of Tamatave, is encumbered by sandbanks.

Natural conditions

7.150

- 1 **Local magnetic anomaly.** Local deflection of the magnetic compass is reported to occur in the approach to Tamatave. See caution on chart.
Current. In coastal waters from Vatomandry to Tamatave S to SW currents with rates of about 1½ kn predominate. In offshore waters this current reaches rates from 2 to 3 kn for much of the year.
 2 In the approaches to the port of Tamatave the currents are very uncertain. During SE winds the current may not set N, but with winds between N and NE, which are comparatively rare, a fairly strong S-going current will generally be found. Near the coast and in the channel leading to Tamatave the currents are much affected by the wind and usually set in the same direction as the wind. However, in Passe de Sud (7.161) a current is reported to set frequently ESE at a rate from 1½ to 2 kn.
 3 From October to December, it often happens that the current continues to set S, even when a S wind has been blowing for some time. Again, from March to September, the current sometimes sets strongly N even when winds from a S quarter, which predominate during this period, are not blowing. It is also possible to experience a S set when a S wind is blowing.
 4 The maximum rate of the currents, whether N or S-going, can be expected to be about 1½ kn.

Tidal streams. These are generally not significant, although the S-going stream has been observed to attain a rate of 1¼ kn and the N-going stream a slightly lesser rate. The streams are stronger to the S than they are to the N of Tamatave.

5 **Sea clarity and colour.** See 7.58.

Local weather. See 7.58.

Principal marks

7.151

1 Landmarks:

Vohitrakohalahy (19°53'S, 47°55'E) (7.130).

Miarinarivo (19°15'S, 48°47'E), the most characteristic of several saddle-shaped summits on a ridge WNW of Vatomandry. From N they appear as a tableland. Water tower (yellow light) at Tamatave (18°09'6S, 49°25'6E).

Water tanks, 1½ cables NNE of water tower.

2 Building, 5¼ cables WNW of water tower, visible from a great distance.

Silo, (red light) 2½ cables N of water tower.

Major lights:

Pointe Tanio Light (white tower, black base and cupola, 18 m in height) (18°08'3S, 49°25'1E).

Île aux Prunes Light (18°02'8S, 49°27'6E) (7.179).

Directions

(continued from 7.144)

7.152

1 From a position about 12 miles E of Vatomandry the track leads NNE, passing (with positions from Rocher Noir (19°13'S, 49°02'E)):

ESE of Rocher Noir, a black islet situated close off the entrance to a channel which connects with one of the lagoons in Canal des Pangalanes (7.57), thence:

2 ESE of an area of breakers (8 miles NE) which were reported in 1912, thence:

ESE of Andevoranto (16 miles NNE) (7.155), a village on the N bank at the mouth of Rianila River. The spray from breakers off the river entrance is visible well to seaward, thence:

ESE of Andevoranto Bank (26 miles NNE), thence:

3 ESE of Tourmaline Bank (37 miles NNE), over which the sea breaks in heavy weather, thence:

ESE of Nosy Dombala (52 miles NNE) an extensive coral reef on which the sea breaks. Nosy Fonga, another coral reef, lies close SSW. Passage between these reefs should never be attempted.

Chart 678

7.153

1 The track continues NNE, passing (with positions from Pointe Hastie (18°10'S, 49°26'E)):

ESE of Banc Malagasy (13½ miles S), thence:

ESE of Nosy Faho (8¼ miles S), a small islet surrounded by extensive coral reefs and shoal water. A stranded derelict vessel, the position of which is approximate, lies 1 mile W. Thence:

2 ESE of a dangerous wreck (9¼ miles SSE) the position of which is approximate, thence:

ESE of Pointe Hastie, thence:

ESE of Le Grand Récif (1¼ miles NE), thence:

ESE of Le Petit Récif (3½ miles NNE), thence:

3 To a position NE of Tamatave, on the entrance leading line in the vicinity of the pilot boarding area.

Charts 759, 678, 688

7.154

1 Useful marks:

Railway station at Ambila-Lemaitso (well-lit) (18°50'S, 49°09'E) visible a considerable distance offshore. Flare (Manangareza oil refinery) (18°10'3S, 49°23'3E). Storage tanks (illuminated), 6 cables NE, are prominent from S.

2 Radio mast (red lights) (18°08'0S, 49°24'6E).

Îles aux Prunes (Nosy Alaïana) (18°03'0S, 49°27'6E) (7.179).

(Directions for coastal route continue at 7.196.

Directions for Tamatave are given at 7.180)

Anchorage

Chart 759

Andevoranto

7.155

1 Anchorage can be obtained, on a bottom of sand, off Andevoranto (18°58'S, 49°06'E) (7.152).

Nosy Dombala

7.156

1 Anchorage, with good shelter during storms from SE, can be obtained W of Nosy Dombala (18°26'S, 49°23'E) (7.152) in a depth of 18 m (59 ft), sand, good holding ground.

Other names

Chart 688

7.157

1 Ivondro, Baie d' (18°10'S, 49°25'E).

Récif du Sud (18°10'5S, 49°25'0E).

TAMATAVE AND APPROACHES

General information

Chart 688

Position

7.158

1 Tamatave (now called Toamasina) (18°09'S, 49°25'E) is situated about 180 miles from the N end of the E coast of Madagascar, at the head of a small bay.

Function

7.159

1 Tamatave is the principal port of Madagascar, serving Antananarivo, the country's capital city, about 120 miles WSW in the central part of the island, with which it is connected by railway. The harbour is equipped for handling various cargoes including bulk grain, chrome ore, containers petroleum products, general cargo and passenger traffic. It is also a port of entry and the provincial capital, having a population of 127 441 in 1993.

Topography

7.160

1 The land around Tamatave is difficult to identify, being low and consisting of small hillocks. High ground, farther inland, may be seen in clear weather from a considerable distance.

Approaching the harbour, a group of cranes on the mole (7.177) is easily seen.

Approach and entry

7.161

1 The main approach for larger and deep-draught vessels is from E, on the alignment of leading lights (7.180), which

leads through Grande Passe de l'Est, a channel between the reefs about 4 miles NNE of the town. The harbour is entered between Pointe Tanio (18°08'3S, 49°25'2E) and Pointe Hastie, 1½ miles SSE, through a marked channel at the S end of Passe du Nord.

- 2 Approach may also be made from N through Passe du Nord, passing W of Île aux Prunes (18°03'0S, 49°25'6E).

Passe du Sud, close E of the harbour between Récif de la Pointe, which fringes Pointe Hastie, and Le Grande Récif, 1¼ miles NNE of Pointe Hastie, is dangerous and closed to shipping. The channel between Le Grande Récif, close NNE of the harbour breakwater, and Le Petit Récif, farther NNE, should not be used as there are no leading marks and the currents are uncertain.

Traffic

7.162

- 1 In 2003, 320 vessels with a total dwt of 4 826 419 used the port.

Port Authority

7.163

- 1 Port Autonome de Toamasina, BP 492, Soc. d'Exploitation du Port, Toamasina, Madagascar.

Limiting conditions

Depth

7.164

- 1 The least charted depth in the entrance channel is 16.5 m (54 ft).

Deepest and longest berth

7.165

- 1 W side of Môle C (7.186).

Tidal levels

7.166

- 1 At Tamatave the mean spring range is 0.6 m; the mean neap range is 0.2 m. For further information see *Admiralty Tide Tables Volume 3*.

Abnormal water levels

7.167

- 1 During earlier cyclones the normal water level has increased by 0.5 m.

Density

7.168

- 1 Density in the harbour is 1.025 g/cm³.

Maximum size of vessel handled

7.169

- 1 Inner anchorage (7.184): length 200 m.
Stern-to-berth tankers: length 230 m, draught 12.2 m.
Alongside berths: length 180 m, draught 10.1 m.

Arrival information

Port operations

7.170

- 1 Cargo operations may be interrupted during periods of strong winds.

Port radio

7.171

- 1 There is a port radio station at Tamatave but it has been reported that communication with the port may be

difficult. It would appear that it is customary for a local official to board on arrival if communication is not established.

Notice of ETA

7.172

- 1 A vessel's ETA should be sent 4 hours in advance to the ship's agent who informs the Port Authority. For further details see *Admiralty List of Radio Signals Volume 6(3)*.

Outer anchorages

7.173

- 1 In the outer roads there are three anchorage areas indicated on the chart, as follows (with positions from Pointe Tanio (18°08'3S, 49°25'2E)):

Northern anchorage (2¼ miles NNE). For use by large vessels; in depths of about 27 m (15 fm) sand and mud, good holding ground in moderate weather.

- 2 Waiting anchorage (7 cables N). Vessels awaiting berths and vessels working dangerous cargo; in depths of about 15 m (49 ft), sand and mud, good holding ground. This berth offers some shelter during a cyclone.

Quarantine anchorage (6 cables NE). In depths of about 18 m (59 ft).

Pilots

7.174

- 1 Pilotage is compulsory and is available when required. Requests for pilots should be sent to the Port Authority 12 hours in advance.

For tankers in excess of 30,000 dwt the pilot boards 1¾ miles E of the entrance to Grande Passe de l'Est, on the approach leading line, as indicated on the chart. For all other vessels boarding takes place inside the reefs, about 2 miles NNE of Pointe Tanio.

Tugs

7.175

- 1 Tugs are available and compulsory for vessels greater than 3000 m³ by volume.

Quarantine

7.176

- 1 A Pratique message should be sent to the vessel's agent who will inform the Port Health Officer. Vessels are boarded in the vicinity of the quarantine anchorage. The appropriate International Code signal should be displayed.

Harbour

General layout

7.177

- 1 The harbour is formed by the shore of the bay fronting the town on the W side and, on the E side, by a broad mole extending about 1 mile NNE from Pointe Hastie (18°09'8S, 49°25'6E), which encloses the SE part of the harbour.

The main berthing areas and cargo handling facilities lie on the W side of the broad mole which also has two short moles extending N from its SW part. All berths are accessed directly off the harbour entrance channel.

- 2 South of the Môles there are two basins forming a lighterage harbour in which there is a small slip.

There are four numbered anchor berths in the inner roadstead close NW of the main mole.

Port development. An extension to the breakwater was under construction in 1988.

Storm signals**7.178**

- 1 Signals indicating the locality threatened by a cyclone and international storm signals are shown at the signal station, see 1.48.

Principal marks**7.179**

- 1 **Landmarks:** (positions from the water tower (yellow light) (18°09'·6S, 49°25'·6E)):
Water tanks (1½ cables NNE).
Tower (1¾ cables NW).
Mosque minaret (4¼ cables WNW).
2 Building (5¼ cables WNW).
Silo (red light) (2½ cables N).
Bridge (1 mile NW).
Radio mast (red lights) (1¾ miles NNW).
School (1¾ miles NNW).
3 Île aux Prunes (Nosy Alaïana) (18°03'·0S, 49°27'·6E) which has sheer coasts and is low and level but is remarkable for the regular green foliage of trees, up to 27 m high, covering it. They stand out strongly against the land and can be distinguished from a considerable distance, particularly in the NE approach to Tamatave.
4 Île aux Prunes Lighthouse (white tower, black top, 60 m in height) (18°02'·9S, 49°27'·6E), standing at the N end of the islet.

Major lights:

- Île aux Prunes Light — as above.
Pointe Tanio Light (18°08'·3S, 49°25'·1E) (7.151)

Directions for harbour**Grande Passe de l'Est****7.180**

- 1 **Caution.** Approach to Tamatave may be affected by uncertain currents (7.150) and strong N or S sets may be experienced at any time. In general, if practicable, landfall should be made in early morning in the vicinity of Île aux Prunes.
2 **Leading lights:**
Front light (white triangle on pyramidal tower, 14 m in height) (18°05'·7S, 49°24'·1E), exhibited near the coast.
Rear light (white pyramidal structure, black stripe, 16 m in height), 5 cables W of front light. Direction light.
3 From the pilot boarding position for tankers over 30 000 dwt (18°06'S, 49°29'E) (7.174) the alignment (277°) of these lights leads W through Grande Passe de l'Est into Passe du Nord, passing (with positions from the front light):
N of Le Petit Récif (7.153), (3 miles ESE), thence:
S of a shoal (2½ miles E), with a least depth of 11 m (36 ft) over it, thence:
4 To a position 2 miles E of the front light.
Alternatively, at night, the white sector (211°-217°) of Pointe Tanio Light (18°08'·3S, 49°25'·1E) (7.154) leads obliquely through the passage, passing ESE of the above shoal.
7.181
1 **Useful marks:**
Vohitravoha (17°58'S, 49°20'E) (7.202).
Fausses Mamelles (17°49'S, 49°07'E) (7.202).

Mamelles de Nattes, 1¼ miles W of Fausses Mamelles. (7.202).

(Directions for inshore coastal route are given at 7.203)

Entrance channel**7.182**

- 1 From a position at the W end of Grande Passe de l'Est, 2 miles E of the front leading light described above, the line of bearing 190° of a light (grey lantern on white building) (18°09'·4S, 49°25'·5E), exhibited from the Port Office and, by night in the white sector (184°-193°) of this light, leads S to the harbour, passing (with positions from Point Tanio Light (18°08'·3S, 49°25'·2E)):
2 W of Le Petit Récif (2¼ miles NE), thence:
E of a 16.5 m (54 ft) shoal (about 1½ miles NNE), thence:
E of a light-buoy (starboard hand) (4½ miles NE), marking the NE limit of the shoal area off Pointe Tanio, and:
3 W of Le Grand Récif (7 cables ENE). A stranded wreck lies on its W side. Thence:
E of Pointe Tanio Light, thence:
To the anchorages or berths as required.
4 Vessels bound for the outer anchorages should proceed direct as required from the W end of Le Grand Passe de l'Est.

7.183**Useful marks:**

- Beacon (white masonry), 7½ cables S of Pointe Tanio, close to the coast.
Leading lights (red lanterns, 19 m in height) (18°09'·5S, 49°25'·4E) exhibited from the Port Office. Their alignment (163°) assists in berthing.

Berths**Anchorages****7.184**

- 1 **Inner anchorage.** Between Pointe Tanio and the port the normally sheltered area offers four numbered berths in depths from 13 to 21 m (43 ft to 11½ fm) as shown on the chart.
Berth No 1 cannot be used when a vessel is secured in the tanker berth, off the head of Mole B, the central mole.
2 Coasters can anchor in a depth of 7 m (23 ft) E of a swimming pool on the beach (18°09'·1S, 49°25'·0E).
7.185
1 **Tanker berth.** Tankers berth with two anchors down on hard mud, good holding ground, and the stern secured to the head of Môle B and a buoy. Cargoes are discharged through submarine pipelines (see 1.36), the ends of which are hoisted on board with ship's gear and the assistance of local divers. The maximum size of vessels is 240 m LOA and draught 12.0 m.

Alongside berths**7.186**

- 1 There is a total of about 1020 m of berthing space available on the three moles with depths of 5.8 to 10.5 m alongside. The longest berth is on the W side of the largest, Mole C, 525 m in length with a maximum depth of 10.5 m. It is mainly used for containers and has Ro-Ro facilities. Passenger vessels are also berthed there. There are dolphins and mooring buoys situated off some berths, as indicated on the chart.
2 Berths for small craft are available in the lighterage basins at the SSE end of the harbour, the entrance to which is marked by a light (white column, black top, 4 m in height).

Caution. At times heavy surges may suddenly be experienced on the berths, without warning.

Port services

Repairs

7.187

- 1 Minor only. A slip for vessels of about 200 tonnes in the lighterage harbour. Divers available.

Other facilities

7.188

- 1 Hospitals in town; Deratting and issue of Deratting and

Deratting Exemption Certificates; no facility for the reception of oily residues.

Supplies

7.189

- 1 Fresh water of questionable quality at berths or by lighter; provisions, available in quantity if ordered in advance; marine diesel, by pipeline on the berth, or in drums.

Communications

7.190

- 1 Airport, 4 km N, with daily internal flights to Antananarivo and other destinations; railway to Antananarivo and Antsirabé with a branch-line to Lake Alaotra.

TAMATAVE TO CAP BELLONE

GENERAL INFORMATION

Scope of the section

7.191

- 1 This section describes the coastal waters between Tamatave (18°09'S, 49°25'E) and Cap Bellone 16°13'S, 49°52'E), about 120 miles NNE. It includes description of the inshore and coastal routes, the Île Sainte Marie (17°00'S, 49°51'E), together with a number of anchorages and minor harbours along the coast. It is arranged as follows:
- 2 Coastal passage (7.192).
Tamatave to Fénérive (7.198).
Fénérive to Cap Bellone (7.217).

COASTAL PASSAGE

General information

Charts 759, 678, 677

Route

7.192

- 1 From a position NE of Tamatave (18°09'S, 49°25'E), the coastal route leads NNE for about 117 miles to a position E of Cap Bellone (16°13'S, 49°52'E).

Topography

7.193

- 1 The coastline is generally low and broken in places by rivers, with few notable features and backed by mountains farther inland. Île Sainte-Marie (17°00'S, 49°51'E), a narrow island, about 27 miles long and thickly wooded, lies about 4 miles off the coast.

Currents

7.194

- 1 On this section of coast the current sets predominantly NW throughout the year with the greatest strength a few miles offshore. See 7.150 and notes on Chart 759.

Principal marks

7.195

- 1 **Landmarks:**
Antanamazala (17°49'S, 49°11'E) summit.
Ambatovaky Avaratra (16°47'S, 49°08'E) summit.
Cap Bellone (16°13'S, 49°52'E), a high, rounded rocky massif, visible from a distance of about 40 miles in clear weather.

Major lights:

- Île aux Prunes Light (18°02'8S, 49°27'6E) (7.179).
Pointe Albrand Light (16°44'2S, 49°59'7E) (7.221), exhibited 2¼ miles SSW of the point.
Cap Masoala Light (15°59'1S, 50°13'1E) (8.49).

Directions

(continued from 7.154)

7.196

- 1 From a position NE of Tamatave the track leads NNE, passing (with positions from Île aux Nattes (17°06'S, 49°48'E)):
ESE of Banc des Six Metres (61½ miles SSW), thence:
ESE of Île aux Prunes (60 miles SSW), thence:
ESE of Récif du Nord (58½ miles SSW), thence:
2 ESE of Marie Eugénie Bank (51 miles SSW), thence:
ESE of Capricorn Bank (26 miles SSW), thence:
ESE of Laperouse Banks (19 miles SSW), thence:
ESE of Blevec Shoal (6 miles SSE), thence:
ESE of Pointe Blevec, the S point of Île aux Nattes, from which a light (7.222) is exhibited.

7.197

- 1 The track continues NNE, passing:
ESE of Saphir Bank (10 miles E), thence:
ESE of Diamond Bank (13 miles NE), thence:
ESE of Ruby Bank (15 miles NE), thence:
ESE of Alidade Bank (20½ miles NE), thence:
2 ESE of Pointe Albrand (26½ miles NNE). A light (7.221) is exhibited 2¼ miles SSW of the point.
Thence:
ESE of Cap Lohatrozana (40 miles N), thence:
3 To a position E of Cap Bellone (53 miles N) (7.195), the W entrance point of Baie d'Antongil.
(Directions for coastal passage continue at 8.17)

TAMATAVE TO FÉNÉRIVE

General information

Charts 678, 759

Route

7.198

- 1 From a position close NNE of Tamatave (18°09'S, 49°25'E) the route leads about 25 miles NNE and about 18 miles NNW to Fénérive (17°23'S, 49°25'E) passing initially WNW of a line of reefs and banks which lie parallel to the coast about 4 miles offshore.

Topography

7.199

- 1 North of Tamatave the coast is low scrubland with white, sandy beaches, becoming thickly wooded and rising in

elevation to Fausses Mamelles, 19 miles N (7.202), situated 2 miles inland.

The coast in the vicinity of Foulpointe may be identified by some white sandhills, their summits covered with trees.

- 2 Between Foulpointe and Pointe Takoandro, 3 miles SE of Fénérive, the coast is irregular, consisting of four pronounced bays separated by points, each fringed with rocks. The land behind the coast is a succession of hillocks covered with trees, with no distinguishing features except in the vicinity of Mahambo, 6½ miles SSE of Fénérive, where a reddish staining is visible on the hills behind. In the background high wooded mountains advance NE towards the coast.

Local knowledge

7.200

- 1 **Local knowledge** is required. Although the inner passage is in relatively deep water it is recommended that this route is used only by smaller vessels engaged in the coastal trade. Due to the close proximity of the coast and the lack of good navigational marks this passage is only practicable in good weather with clear visibility.

Natural conditions

7.201

- 1 **Currents.** See 7.150 and note on Chart 759. In the vicinity of Foulpointe the current usually sets N or NE, but a S or SW-going current also occurs, especially in summer.
Tidal streams. See 7.150.
Local weather. See 7.58.

Principal marks

7.202

- 1 **Landmarks:**
Île aux Prunes (Nosy Alanana) (18°03'·0S, 49°27'·6E) (7.179).
Île aux Prunes Lighthouse (18°02'·8S, 49°27'·6E) (7.179).
Vohitravoha (17°58'S, 49°20'E) round and wooded.
Mamelles de Nattes (17°49'·0S, 49°25'·5E) two prominent rounded hills.
- 2 Fausses Mamelles (17°49'S, 49° 27'E) two identical hills, similar to, but lower than Mamelles de Nattes, for which they might be mistaken in hazy weather.

Major lights:

Île aux Prunes Light (18°02'·8S, 49°27'·6E) (7.179).
Pointe Tanio Light (18°08'·3S, 49°25'·1E) (7.151)

Directions for inshore passage

Chart 678

Tamatave to Foulpointe

7.203

- 1 From a position about 2½ miles NNE of Pointe Tanio Light (18°08'·3S, 49°25'·2E), at the junction of Grande Passe de l'Est and Passe du Nord, the inshore coastal track leads NNE, keeping about 2 miles offshore. In addition, by night, the white sector (192°-201°) of Pointe Tanio Light, astern, leads through the N part of Passe du Nord. The track passes (with positions from Pointe Tanio Light):
- 2 WNW of Banc des Six Metres (4 miles NNE), thence:
WNW of Île aux Prunes (6 miles NNE), thence:
ESE of Anosibe (16 miles N), thence:
WNW of Ifontsy Bank (17 miles NNE), thence:
WNW of Antetezana Bank (21½ miles NNE).

7.204

- 1 The track continues, passing (with positions from Foulpointe (17°41'S, 49°31'E)):
WNW of Banc du Sud (3 miles E), and:

ESE of Grand Récif (1 mile E) an extensive coastal reef, thence:

WNW of Banc du Large (4½ miles NE), thence:

ESE of Bancs du Foulpointe (4 miles NNE), thence:

To a position NE of Foulpointe.

7.205

Useful marks:

Le Manguier Boule (17°56'S, 49°25'E), a round mango tree which was a good landmark, but present existence not confirmed.

Roof (conspicuous) (17°53'S, 49°28'E) in Anosibe village.

Fort Hova (ruins) (17°40'·7S, 49°30'·4E).

Foulpointe to Fénérive

7.206

- 1 From a position NE of Foulpointe the inshore track leads generally NNW to Fénérive, passing (with positions from Pointe Takoandro (17°24'·7S, 49°27'·1E)):
WSW of Capricorn Bank (10 miles SE), thence:
WSW of Mohambo Bank (5½ miles SE), thence:
WSW of Little Bank (5¾ miles E), thence:
ENE of Pointe Takoandro, on which stands a beacon (white pyramid), thence:
- 2 ENE of Lakaria Light (white tower, 11 m in height) (1½ miles NNW), exhibited from a hillock close to the coast, thence:
- 3 ENE of Nosy Ilansambo (2 miles NNW), an islet covered with trees including a palm tree which is conspicuous, thence:
To a position NE of Fénérive.
(Directions for inshore passage NE continue at 7.222.
Directions for Fénérive anchorage are given at 7.214)

Anchorage and landing places

Chart 688

Île aux Prunes

7.207

- 1 **Landing place.** In fine weather, landing can be effected at a concrete jetty on Île aux Prunes (18°03'·0S, 49°27'·7E), reached through a small passage formed by a break in the reef on the NW side of the islet.

Chart 678

Ifontsy River

7.208

- 1 **Anchorage** can be obtained off the mouth of Ifontsy River (17°52'S, 49°28'E), in depths of 24 to 29 m (13 to 16 fm), or as convenient up to 3 miles N of the river mouth.

Charts 678 (see 1.22)

Foulpointe

7.209

- 1 **General information.** Foulpointe (17°40'·6S, 49°30'·8E) is a large village, marked by a clump of trees, standing on low ground and almost surrounded by lagoons swarming with crocodiles.
Anchorage, which is safe during the South-east Trade Wind season (7.58), can be obtained off the village.
- 2 **Current** in the vicinity of Foulpointe usually sets N or NE, but a S or SW-going current also occurs, especially in summer.

7.210

- 1 **Directions.** Grand Récif (7.203) should not be approached in the afternoon as it is impossible to make out its limits when in the sun.

The line of bearing, about 270°, of an uncharted remarkable pointed summit a little N of Foulpointe, in the background, leads towards Foulpointe, passing close S of the S bank of Bancs de Foulpointe and 1 mile N of Grand Récif.

- 2 When clear of Grand Récif, the alignment (180°) of a low, barely visible sandy point (17°40'·4S, 49°31'·3E), at the W limit of Grand Récif, with a clump of trees at the S end of the same reef, leads to the anchorage.

7.211

- 1 **Anchorage** may be obtained in a depth of 13 m (43 ft), sand, good holding ground, at the intersection of the anchorage approach leading line and the N extremity of Grand Récif bearing 090°. The berth is sheltered by Grand Récif although open to N and NE.

Vessels of lesser draught may anchor in a depth of 9 to 10 m (30 to 33 ft), sand, about 2½ cables S of the above anchorage.

- 2 **Landing** is possible by boat on the S side of the point, E of Foulpointe and is approached from N through a narrow boat channel between the point and Grand Récif.

Supplies of fresh provisions are available in limited quantities.

Mahambo

7.212

- 1 **Anchorage** can be obtained in a depth of 9 m (30 ft) N of Mahambo village (17°29'S, 49°28'E) and W of a steep-to rocky bank which extends NE from the point NE of the village. This is the best anchorage but is practicable only for coasters and local knowledge is required. Larger vessels must anchor farther offshore where they are exposed to the swell.

- 2 **Useful mark:**

La Bitte, a conspicuous rock, so called from its resemblance to the bitts on a ship. It lies on a reef extending from the rocky point on the SE side of the mouth of Tsiritra River, 5½ cables WNW of Mahambo.

Fénérive

7.213

- 1 **General information.** Fénérive (17°23'S, 49°25'E), a small town with a population of about 6 500, stands close W of Pointe du Nouvel Hôpital (17°22'·7S, 49°25'·2E).

Temporary anchorage can be obtained off the town, if required. In winter, the roadstead is exposed and dangerous.

Local magnetic anomaly. Local deflection of the magnetic compass is reported to occur in the vicinity of Fénérive.

- 2 **Landmarks:**

Residency (17°23'·4S, 49°25'·5E), a prominent building with a flagstaff immediately N. An uncharted prominent grey water tower stands close by.

Vohimasina (17°23'·6S, 49°24'·1E), an old fort and a disused light-tower standing on an isolated, barren flat-topped hill, elevation 49 m.

7.214

- 1 **Directions.** From a position NE of Fénérive the alignment (224°) of the following leading marks leads to the roads:

Front mark (white tower, former light) (17°22'·8S, 49°25'·0E).

Rear mark (white tower, former light) (10¾ cables SW of front mark), on Vohimasina (7.213).

Care must be taken not to get SE of the leading line due to the proximity of the shoals.

7.215

- 1 **Anchorage** for deeper draught vessels can be obtained in depths of 10 to 11 m (33 to 36 ft) at the intersection of the approach leading line with the bearing 190° of Lakaria Light (17°23'·7S, 49°25'·8E), in line with the E side of Nosy Ilansambo, 6 cables N.

- 2 Coasters can anchor in a depth of 7 m (23 ft) at the intersection of:

The approach leading line with the bearing 164° of Lakaria Light. There is a shoal with a least depth of 4 m (13 ft) within ½ cable of the approach to this berth and a 4·9 m (16 ft) shoal within ½ cable of the berth itself.

- 3 The bearings 181° of Lakaria Light and 271° of Pointe du Nouvel Hôpital. In the approach, the bearing 177° of the palm tree on Nosy Ilansambo (7.206) in line with Lakaria Light passes E of a shoal with a depth of 2·7 m (9 ft) over it, 1 mile N of Lakaria Light. This berth is better protected from swell and wind by Nosy Ilansambo.

- 4 A berth used locally is in a depth of 8 m (26 ft) with Lakaria Light bearing 183° distant 9½ cables.

7.216

- 1 **Landing places:**

Near a ruined pier on the coast S of Nosy Ilansambo. On a beach close W of Pointe du Nouvel Hôpital.

There are often rollers on this beach but it is possible to land closer to the town.

FÉNÉRIVE TO CAP BELLONE

General information

Charts 677, 678, 759

Route

7.217

- 1 From a position NE of Fénérive (17°23'S, 49°25'E) the inshore route leads 38 miles NE and about 39 miles NNE to Cap Bellone (16°13'S, 49°52'E). The route passes through Canal de Sainte-Marie (16°51'S, 49°52'E), the passage between Île Sainte-Marie and the mainland.

Topography

7.218

- 1 The mainland coast is low and sparsely wooded between Fénérive and the mouth of Maningory River, 11 miles NNE. This is one of the longest and deepest rivers on the E side of Madagascar but it is not navigable due to a bar at the mouth.

- 2 Between the mouths of the Maningory River and Marimbona River, 19 miles farther NNE, the coast continues low and is fringed with a reef. Thence, a farther 5¼ miles NNE, to the Soamianina River, it consists of a white sandy beach.

- 3 E of Soamianina River, Pointe à Larrée projects from the mainland coast towards Île Sainte-Marie, forming the narrowest part of Canal de Sainte-Marie. On the N side of the headland lies Fandrazana River (16°45'S, 49°44'E) and Baie de Tintingue (7.227).

- 4 Between Baie de Tintingue on the mainland, opposite Pointe Albrand, and Cap Lohatrozana, 17 miles NNE, the coast is high and backed, at a distance of about 10 to 15 miles, by a series of massifs which gradually approach the coast and terminate at Cap Bellone (7.195).

7.219

- 1 **Île Sainte-Marie** is slightly undulating, moderately high and thickly wooded. At its narrowest part, in the vicinity of Ambodifototra (Port Sainte-Marie) (17°00'S, 49°51'E), it is

low and marshy. There are no rivers, only streams, the beds of which follow some of the valleys of the island. At the entrance to others there are fresh water or salt water marshes, the latter being covered by spring tides. The island lies close to the mainland coast, forming the Canal de Sainte-Marie between it and the mainland.

Natural conditions

7.220

- 1 **Local magnetic anomaly.** Local deflection of the magnetic compass is reported to occur in the vicinity of Île Sainte-Marie.

Current. See note on chart. In Canal de Sainte-Marie the currents generally are variable and of moderate strength, but off Pointe à Larrée, in the narrows of the channel, they are very strong. As a rule they follow the direction of the wind, so that N sets predominate.

- 2 **Tidal stream** off Pointe Antsirakariaka (16°44'S, 49°58'E), near the N end of the W coast of Île Sainte-Marie, sets S during a falling tide and N during a rising tide, attaining a rate of about 1kn.

Principal marks

7.221

- 1 **Landmarks:**

Ambatovaky Avaratra (16°47'S, 49°08'E) (7.57).
Pointe Albrand (Lohantanjona Antsirakakambana)
Lighthouse (white metal tower, black cupola, 16 m in height) (16°44'2S, 49°59'7E).
Cap Bellone (16°13'S, 49°52'E) (7.195).

Major light:

Pointe Albrand Light — as above.

Directions for coastal route

(continued from 7.206)

Fénérive to Canal de Sainte-Marie

7.222

- 1 From a position NE of Fénérive the track leads NE, passing (with positions from Île aux Nattes Light (17°06'9S, 49°48'5E)):

SE of Banc Tampo (21 miles SW), thence:
SE of Banc d'Antakobola (20¼ miles SW), thence:
Clear of Fry Shoal (13½ miles WSW), thence:

- 2 NW of Île aux Nattes, from which Île aux Nattes Light (white tower, black lantern, 7 m in height) is exhibited near its S end. A stranded wreck lies on the S end of a reef extending S from Pointe Blevec (Lohatanjona Vohibato), the S point of the island. A narrow, shallow channel for boats lies between the island and Île Sainte Marie. Thence:

- 3 SW of Marimbona River entrance (17½ miles NW), thence:

NW of Rocher des Baleiniers (6¼ miles N) (Chart 677, plan), a high black rock, thence:

NW of Pointe des Sorciers (7¾ miles NNE), from which a light (white eight-sided tower, 6 m in height) is exhibited, thence:

- 4 NW of Pointe Tafondro (15 miles NNE), thence:

To a position about 2¼ miles E of Pointe à Larrée (16°50'3S, 49°50'2E), a long, low sandy, partly wooded, headland, fringed with rocks, in the central part of Canal de Sainte Marie.

7.223

- 1 **Useful mark:**

Lakaria Light (17°23'7S, 49°25'8E) (7.206).

Canal de Sainte-Marie to Cap Bellone

7.224

- 1 From a point E of Pointe à Larrée (16°50'3S, 49°50'2E), the track leads about 39 miles NNE, passing (with positions from Cap Lahatrozana (16°26'S, 49°52'E)):

WNW of Pointe Ambalaombe (23 miles SSE), thence:

WNW of Pointe Antsirakariaka (9½ miles NE), a low salient, tree-covered point which can be identified by its white sandy beach. Pointe Albrand Light lies 1¼ miles E. Thence:

- 2 WNW of Pointe Albrand (16°42'1, 50°00'6E) which is backed by forest, thence:

ESE of Cap Lahatrozana, which is surrounded by extensive reefs, thence:

- 3 ESE of Nosy Atafa (6¼ miles N), the largest of three islets lying on an extensive reef. It appears as two islets at a distance greater than 3 miles. The smaller part is wedge-shaped and its darker vegetation contrasts with the lighter vegetation of the coast. Thence:

- 4 To a position E of Cap Bellone (16°13'S, 49°52'E).

(Directions for Baie d'Antongil continue at 8.17.

Directions for coastal passage continue at 8.49)

Anchorage and minor harbours

Canal de Sainte-Marie

7.225

- 1 **Anchorage**, which may be considered fairly secure, can be obtained in any part of Canal Sainte-Marie where the depths are suitable. The holding ground is good N of Pointe à Larrée (16°50'S, 49°50'E), but S of that point the bottom is sandy and loose. In this part the best anchorage is on the E side of the channel where the reefs fringing Île Sainte-Marie are steep-to and may be approached closely whereas, on the W side, there is almost always a heavy sea.
- 2 Anchorage may also be obtained SSE of the entrance to Baie de Tintingue, in the bight NW of Pointe à Larrée, in depths as appropriate and sheltered from SE winds.

Soanierana-Ivongo

7.226

- 1 Soanierana-Ivongo (16°55'S, 49°35'E) is a small village at the mouth of Marimbona River. It may be identified by a white chapel in its S part, and a prominent tree farther S.

Anchorage may be obtained in a depth of about 10 m (33 ft), sand, E of the village with a large ruined jetty at the village bearing W.

Chart 677 (see 1.22)

Baie de Tintingue

7.227

- 1 **General information.** Baie de Tintingue (16°43'S, 49°45'E) indents the coast between the mouth of Fandarazana River (16°45'S, 49°44'E) and Pointe Mahela, 2½ miles NNE. It is heavily encumbered by extensive reefs and shoal areas but provides anchorage for small vessels in its NE part, sheltered from all winds.

- 2 The bay is entered on the alignment of leading beacons through Passe du Golo and thence a narrow and tortuous channel marked by numbered buoys (lateral), with a least charted depth of 4.9 m (16 ft), leads through the bay to the anchorage.

Passe Royale and Passe du Sud, S of the main entrance, should not be used.

7.228

- 1 **Least charted depth** in the channel is 4.9 m (16 ft) in its narrowest part, W of No 7 buoy, 5 cables SW of Pointe Mahela, where it is about 1 cable wide. There are depths of 7.6 m (25 ft) close W of the buoy.

- 2 **Current**, usually setting ESE, has been reported in the entrance to the bay.

Landmarks:

House (gable) (16°42'S, 49°43'E), which is conspicuous.

7.229

- 1 **Directions.** Local knowledge is required. Entry should not be attempted until the leading marks have been identified.

Leading beacons:

Front beacon (white) (16°42'9S, 49°43'3E), standing on the shore at the S end of Sahabevava.

Rear beacon (white) (410 m WNW of front).

- 2 From a position to seaward the alignment (279¼°) of these beacons leads through Passe du Golo, passing (with positions from Pointe Mahela (16°42'2S, 49°44'7E)):

NNE of a buoy (port hand) (9¼ cables S) at the entrance to the buoyed channel, thence:

- 3 SSW of a buoy (starboard hand) (8½ cables SSW) marking the S limit of Récif Mahela. A stranded wreck lies close NE and another buoy lies about 1 cable SW.

- 4 Thence the track turns NW for 3½ cables with Nosy Vorona (about 1 mile W), on which there is a white patch, ahead, bearing 315° and passing between the channel buoys before turning NNE for 1¼ miles to the anchorage, following the buoyed channel. Care should be exercised when passing through the narrowest part of the channel, about ½ cable wide, 5 cables SSW of Pointe Mahela which is high, cliffy and wooded.

- 5 **Anchorage.** Anchorage may be obtained in a depth of 5.5 m (18 ft), 5½ cables NNE of Pointe Mahela and also in a depth of 7 m (23 ft), mud, 2 cables SSW of the other anchorage.

Chart 677

West coast of Île Sainte-Marie**7.230**

- 1 **Lokintsy.** There is an anchorage off the village of Lokintsy (16°53'S, 49°53'E), in a depth of 27 m (15 fm) with Pointe Tafondro bearing 230° distant 4½ cables, about 1 cable from the 10 m (33 ft) depth contour.

Anchorage can also be obtained nearer the village with three white school buildings bearing 180°.

- 2 Approaching these anchorages from W, a wide berth should be given to Pointe Tafondro, to avoid the reef extending N from the point.

Landing is difficult on account of reefs.

Ambatoroa. Vessels can anchor in a depth of 7 m (23 ft), sand, abreast the S end of Ambatoroa village (16°46'S, 49°58'E) and 4 cables offshore.

- 3 **Anse Louarea.** Anchorage may be obtained in Anse Louarea, as shown on the chart, 9 cables NNE of Pointe Antsirakaraika (16°44'S, 49°58'E), in a depth of 16 m (53 ft), sand.

Chart 677, with plan of Ambodifototra

Ambodifototra**7.231**

- 1 **General information.** Ambodifototra (Port Sainte-Marie) (17°00'S, 49°51'E), is a small commercial port on the W side of Île Sainte-Marie. It is also the seat of administration for the island. It consists of an open roadstead at the mouth

of a large lagoon, surrounded by marshy land and bordered by mangrove trees.

- 2 The town lies partly on Îlot Madame and partly on the shore NE of the islet which lies at the mouth of the lagoon and is connected to the shore on both sides by a causeway, La Digue de Bellevue to the SW point and La Digue de l'Îlot Madame to the E, thus isolating the lagoon from the sea. North of the E causeway a deep channel has been dredged between the islet and the coast, from 6.5 to 9.5 m (21 to 31 ft) in depth.

- 3 **Approach and entry.** The port is approached from NW, on the alignment of leading marks, between Rocher des Baleiniers (17°00'6S, 49°50'1E) and Pointe des Sorciers, 1½ miles NE (7.224).

7.232

- 1 **Harbour.** An open roadstead fronts the town and extends S on the E side of Îlot Madame. Cargo is worked at the anchorage berths. A small basin, constructed of masonry and used by local small craft, lies about 3 cables NE of the islet.

Landmark:

Hillock (17°00'2S, 49°51'0E), height 45 m (147 ft), dominating the port and surmounted by a barracks.

7.233

- 1 **Directions.** Leading marks:

Îlot Madame Light (white round tower, 8 m in height) (17°00'1S, 49°50'8E).

Church (yellow) (2¼ cables SE of above light).

The alignment (134°) of these marks leads from seaward towards the outer anchorage (7.234), passing SW of a 7.6 m (25 ft) shoal, 4¾ cables NNW of Îlot Madame Light.

- 2 From a position on the approach leading line, 3¼ cables NW of Îlot Madame, the track leads ENE to the inner anchorage (7.234), passing:

N of a 3.7 m (12 ft) shoal, 2 cables NW of Îlot Madame Light.

S of a 4.3 m (14 ft) shoal, 3 cables N of Îlot Madame.

7.234

- 1 **Anchorage berths.** Anchorage areas are as follows, as indicated on the plan (with positions from Îlot Madame Light (17°00'1S, 49°50'8E)):

Outer (4 cables NW), in depths of about 20 m (11 fm).

Inner (2 cables N), in a depth of 12 m (39 ft) but with swinging circle of 1 cable having a least depth of 7.9 m (26 ft).

7.235

- 1 **Facility.** Hospital.

Supplies. Good fresh water available; limited supplies of fresh provisions.

Communications. By sea with other ports in Madagascar. Airfield, at S extremity of Île Sainte-Marie, with an internal air service.

Small craft

Chart 677 (see 1.22)

Anse d'Ampanihy**7.236**

- 1 Anse d'Ampanihy (16°55'S, 49°56'E) may provide a refuge for boats in depths of 3 m (10 ft), sand, sheltered by the coastal reef. The entrance to the cove, through a narrow channel in a gap, about ½ cable wide, in the coastal reef, can be identified by a white cliff at its head. However, it has not been examined and breakers have been seen there.

Antanambe**7.237**

- 1 **General information.** The village of Antanambe (16°26'S, 49°51'E) stands on the SE shore of a small bay

which indents the coast between Cap Lohatrozana and the mouth of Vahibe River, 1½ miles WNW.

Small craft can anchor in the bay but local knowledge is required.

7.238

- 1 **Anchorage.** There are depths of about 7.3 m (24 ft) suitable for anchoring, in the area between a chain of shoals, extending WNW from Cap Lohatrozona, and the coastal bank with depths less than 5.5 m (18 ft) and with several reefs and patches on it, which extends up to 3 cables from the shore of the bay.

- 2 To assist vessels to anchor, a buoy (port hand) marks the

E side of a channel between the W extremity of the main shoal and a 3 m patch, 1 cable farther W. This channel has a least charted depth of 11 m (36 ft).

Other names

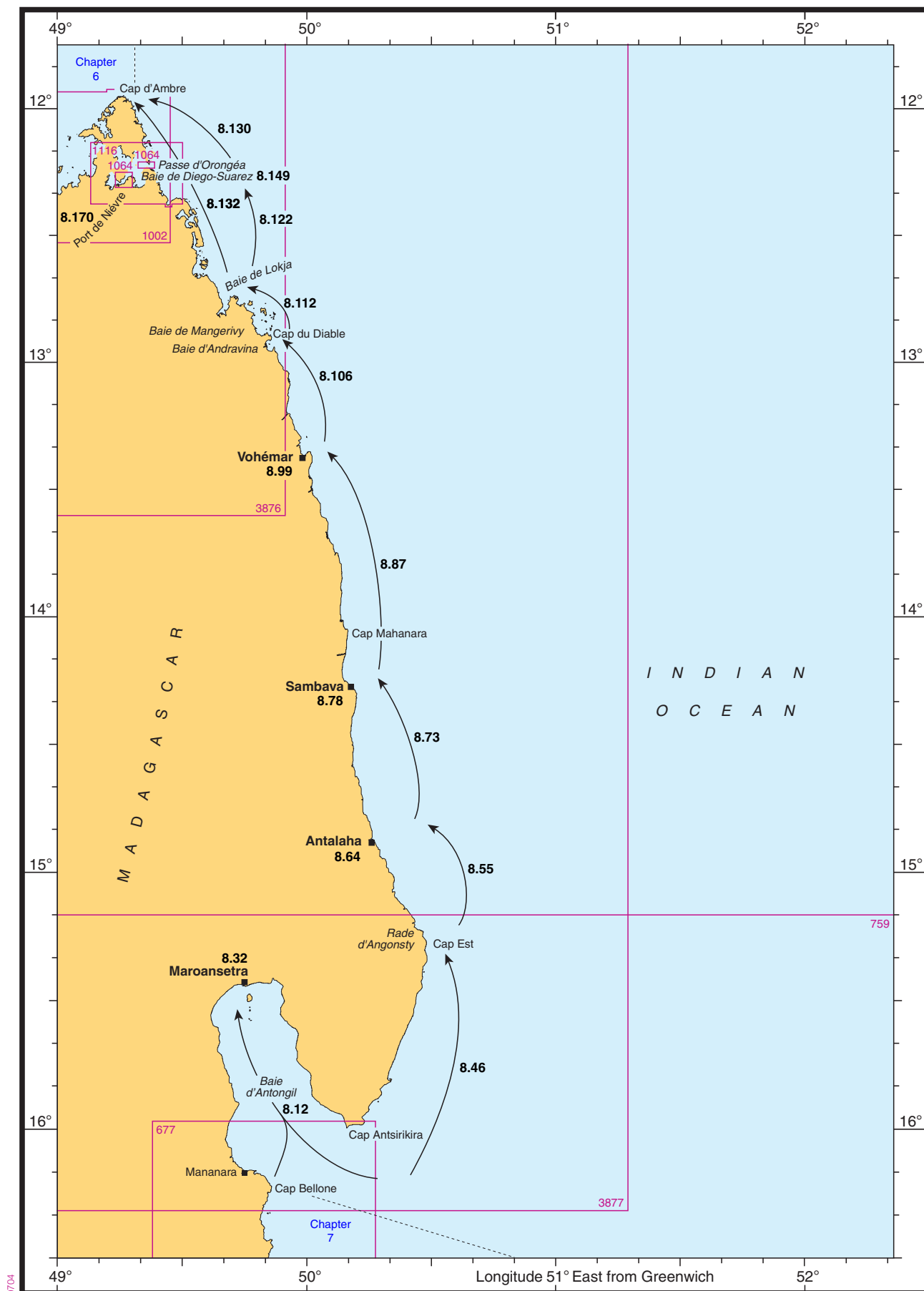
Charts 677, 678

7.239

- 1 Ank-Horraka (16°55'S, 49°58'E).
Baleineaux, Bancs des (16°52'S, 50°00'E).
Maningory Canyon (17°22'S, 49°48'E).
Sable, Îlots au (17°05'S, 49°52'E).



Chapter 8 - North east coast of Madagascar - Baie d'Antongil to Cap d'Ambre



CHAPTER 8

NORTH-EAST COAST OF MADAGASCAR—BAIE D'ANTONGIL TO CAP D'AMBRE

GENERAL INFORMATION

Chart 3877

Scope of the chapter

8.1

- 1 This chapter contains a description of the routes in Baie d'Antongil and in waters off the NE coast of Madagascar between Cap Bellone (16°13'S, 49°52'E), on the SW side of the entrance to Baie d'Antongil, and Cap d'Ambre (11°57'S, 49°17'E), the N extremity of Madagascar, a distance, coastwise, of about 280 miles.

- 2 Also described are the ports, harbours and anchorages associated with the routes, the principal of which is Port de la Nièvre (8.170). This is the port for Antsirana, situated in Baie de Diégo-Suarez (12°15'S, 49°18'E), and is the only place where vessels larger than coasters can berth alongside.

- 3 The chapter is divided into the following sections:
Baie d'Antongil (8.12).
Baie d'Antongil Approaches to Cap d'Ambre (8.44).
Baie de Diégo-Suarez, including Port de la Nièvre (8.143).

Depths

8.2

- 1 A coastal shelf fronts the coast between Cap Bellone and Cap d'Ambre with depths of 50 m or less over it. Beyond the edge of the shelf the soundings drop away very rapidly to depths in excess of 1000 m. Off Cap Bellone, the edge of the shelf lies 28 miles seawards, across the approach to Baie d'Antongil, and then closes, off Cap Masoala, to within 5 miles. Farther N, it varies in width from 1 to 5 miles until, N of Îles Leven (12°49'S, 49°50'E), the shelf is segmented by deep canyons which causes deep water to lie within 5 cables of the shore in some areas while, in others, it lies 5 miles seaward. With much of its length remaining only partially surveyed, uncharted dangers may well exist.

Positions

8.3

- 1 **Satellite-derived positions.** Positions obtained from satellite navigation systems are normally referred to WGS84. The difference between satellite-derived positions and the positions obtained from some charts and plans in this chapter can not be determined. Mariners are warned that these differences may be significant to navigation, and are advised to use alternative methods of position determination, especially when closing the shore or navigating near dangers. See notes on charts.
- 2 **Charted positions.** Positions obtained from some charts in this chapter differ by varying amounts, and therefore positions should be transferred by bearing and distance from common charted objects and not by latitude and longitude. See notes on charts.

Navigational information

8.4

- 1 Because of insufficient information it is not possible to ensure that Admiralty Charts covering the waters of Madagascar are up to date for new dangers or changes to navigational aids. Mariners are advised to exercise particular caution when navigating in these waters. See also 1.7 for information on navigational marks.

- 2 **Caution.** See 1.23 and 1.25 regarding the reliability of navigational aids.

Offshore fishing

8.5

- 1 Fishing with traps, handlines, gillnets, longlines, purse seine nets, and by trolling and trawling, is carried out off the coast. See 1.10 for further information.

Natural conditions

8.6

- 1 **Winds.** The area described in this chapter is subject for much of the year to the influence of the South-east Trade Wind (1.198).

In winter, from June to August, and generally during September, the wind direction is mainly SE, increasing in strength towards Cap d'Ambre.

In October, winds are generally ESE.

- 2 In November, with the warm weather of summer well established, winds are variable in direction, between ESE and NNE, as far as Baie de Diégo-Suarez (8.149). The weather associated with ESE winds is relatively cool and clear and, although humid, there is rarely any heavy rain. By contrast, during winds from a N quarter, the weather is hot and not only humid but stormy with heavy downpours of rain.

- 3 From December to about February winds are generally ESE. However, at Vohémar (13°21'S, 50°00'E) (8.94) NW to NE winds become more frequent while, in Baie de Diégo-Suarez, the weather is mainly calm with occasional W winds.

- 4 During March, the oppressively hot winds from a N quarter gradually weaken. Winds are generally E to ESE, occasionally extending as far as Baie de Diégo-Suarez, although here and farther N the effect of a NW flow of air is still apparent and calms are frequent.

In April, winds are generally SE and, in May, the South-east Trade Wind predominates over the whole area, becoming fully established by June.

8.7

- 1 **Cyclones** are experienced during the warm, rainy season. See 1.209 for further information.

Thunderstorms are common during the warm, rainy season. See 1.207 for further information.

8.8

- 1 **Current.** The N-going branch of the South Equatorial Current (1.167) can attain a rate of 3 kn off this coast.

Tidal streams. See 1.171.

Swell is heavy on this coast, generally during August and September.

Regulations

8.9

- 1 See 1.40 to 1.42 for regulations concerning pollution of the sea, prohibited fishing areas and health requirements on entry.

Landfall

8.10

- 1 **Caution** should be exercised when approaching the NE coast of Madagascar due to the coastal shelf (8.2). Depths outside this bank are great and sounding over it should give

adequate warning of the proximity of land, but this cannot be entirely relied upon.

If possible, landfall should be made with the sun astern. Owing to the unreliability of navigation lights an approach by night is not recommended.

BAIE D'ANTONGIL

General information

Charts 3877, 759

Scope of section

8.12

- 1 In this section are described the coastal routes in Baie d'Antongil, a large bay in the coast between Cap Bellone (16°13'S, 49°52'E) (7.195), and Cap Antsirikira, 22 miles NE.

Also described are Maroantsetra (8.32), a small port at the head of Baie d'Antongil, and anchorages available within the bay.

- 2 This section is arranged as follows:

Directions (8.17).

Anchorages on W side of the bay (8.23).

Anchorages on the E side of the bay (8.28).

Maroantsetra (8.32).

Topography

8.13

- 1 On both sides of the bay there are high mountains covered in forest. Those to the W form a uniform wall parallel to the coast, while those to the E are irregular and descend to the shore in remarkably long slopes with deep valleys between. At the head of the bay there is a wide, low, thickly wooded plain between the mountain ranges on either side which continues N, narrowing as the ranges converge and ultimately combine. The Antanambalana River flows over this plain, entering the bay through a low, shallow delta where it is joined by two other, smaller rivers. Numerous other small rivers enter the bay on both W and E coasts.
- 2 At the head of the bay, 2 miles S of the river delta mentioned above, is the island of Nosy Mangabe (15°30'S, 49°46'E) with a chain of smaller islets extending S of it for 5 miles. These are rocky and wooded.

Depths

8.14

- 1 The bay is moderately deep, being in excess of 60 m (33 fm) at the entrance and decreasing towards its head, but in many places around the bay there are rocks, close offshore. However, these mostly show above water and those that are covered are easily seen from a high vantage point.
- 2 The waters of the bay afford anchorage almost everywhere that depths are convenient, but the E side is the most sheltered. The best anchorage is off Maroantsetra (8.32), the only port at the head of the bay.

Natural conditions

8.15

- 1 **Flow.** When the South-east Trade Wind is blowing there is a strong indraught of water into the bay which continues even during an out-going tidal stream. At spring tides during the ebb stream this has been found to attain a rate of more than 1 kn.
- 2 **Swell.** Mentioned at 8.8, this is considerable at the entrance but diminishes rapidly in the bay. In general, the bay affords excellent shelter.

Rescue

8.11

- 1 See 1.54 and *Admiralty List of Radio Signals Volume I(1)* for details of a reporting system designed to provide information for SAR operations.

Principal marks

8.16

- 1 **Landmarks:**

Cap Bellone (16°13'S, 49°52'E) (7.195).

Nosy Mangabe Lighthouse (white pylon, 8 m in height) (15°30'S, 49°46'E) situated on the SW summit of Nosy Mangabe (8.13). The structure can be seen from a considerable distance throughout the bay.

- 2 **Major light:**

Cap Masoala Light (15°59'S, 50°13'E) (8.48).

Directions

(continued from 7.197 or 7.224)

Approaches

8.17

- 1 In clear weather, approach to Baie d'Antongil presents no difficulty, especially from S, as the marks are easily identified. Account must, however, be taken of the strong indraught described at 8.15, a wide berth being given to the shore and reefs on the E side of the approach, especially at night.

Charts 677, 759, 3877 (see 1.22)

West side of bay

8.18

- 1 From a position 3 miles E of Cap Bellone (16°13'S, 49°52'E) the coastal route on the W side of the bay leads generally NNW to the vicinity of Maroantsetra, passing (with positions from Cap Bellone):
 - ENE of a reef which extends up to 1 mile from the coast close N of Cap Bellone, thence:
- 2 At least 3 miles E of Pointe d'Ambitsika (5 miles NW), the extremity of a wedge-shaped tongue of land, the W and higher part of which is darker than the coast from which it extends ENE. The point is fringed by a reef over which the sea does not always break. Thence:
 - ENE of a chain of black rocks, several of which are awash and over which the sea generally breaks. This extends 3 cables E and NE from the promontory forming Cap Tanjona (21 miles NNW) and is among numerous black rocks, always easily seen, fringing the coast between the mouths of Mananara River (7 miles WNW) and Fanenahana River, close NW of Cap Tanjona. Thence:
 - ENE of the mouth of Rantabe River (35 miles NNW) (8.42) off which a coastal bank, with depths of less than 18.3 m (60 ft) over it, extends 5½ miles, thence:
 - ENE of Cap Nandrasana (15°36'S, 49°39'E).
- 4 The track then continues NNW, passing (with positions from Cap Nandrasana):
 - WSW of the chain of islets at the head of the bay, (7½ miles ENE to 8¾ miles NE). These show up well and form a good guide to Maroantsetra. And:

ENE of banks and reefs, with depths less than 10 m (33 ft) over them, which front the W shore of the bay out to a distance of about 2 miles, thence:

- 6 ENE of La Solitaire (7 miles NNE), a shoal with a depth of 6.4 m (21 ft) over it which is the outermost of several shoals on the W side of the approach to Maroantsetra, and:
- 7 In mid-channel, W of two shoals, with depths of 11 m (36 ft) over them, lying 2 cables apart in a N/S direction, about 5 cables off the middle of the W side of Nosy Mangabe (15°30'S, 49°46'E) (8.13), thence:

To a position about 2 miles WSW of Pointe Antsiraka.

- 8 **Clearing bearing.** For a bearing passing SW of the above bank, see 8.22.

8.19

- 1 **Useful marks:**

Ankirihihi (16°08'S, 49°30'E) (not charted), an isolated conical peak, 820 m high, not visible when bearing more than 283°.

- 2 Pointe Veringotra (15°27'5S, 49°41'8E) (not charted). The point can be identified by the distinct summits of two hillocks which stand on it and forms a good guide to Maroantsetra, 2½ miles ENE.

Marks in vicinity of Mananara village (16°10'S, 49°46'E) (8.23).

(Directions for Maroansetra are given at 8.39)

East side of bay

8.20

- 1 From the entrance to Baie d'Antongil the coastal route on the E side, commencing well clear of Cap Antsirakira (16°00'S, 50°10'E), a low, indistinct tongue of land (see 8.17), leads generally NNW, off the E shore which can usually be seen at night, passing (with positions from Cap Antsirakira):

- 2 WSW and well clear of a black islet (1 mile SW), this being the S-most of a group, the largest being Nosy Behentona (5 cables SW), easily seen against the coast as low, sandy and light-coloured, partly covered with trees, from which a light (grey tower, 13 m in height) is exhibited, thence:

- 3 WSW of Pointe Ampomalobe (11 miles NW), thence: Across the approach to Baie d'Ankasofotsy, situated at the entrance to Ankasofotsy River (15°50'4S, 50°01'2E) (not charted), 5 cables S of which lies a white rock, about 10 m high, with a flat summit covered in trees, thence:

- 4 Across the approach to Antalavia village (15°47'2S, 50°01'2E), on the N side of the mouth of Antalavia River (not charted), which is marked by a small beach of yellow sand, thence:

WSW of Pointe Tampolo (15°44'S, 49°57'E) which can be identified as low-lying while others in the vicinity are high.

8.21

- 1 From the vicinity of Pointe Tampolo a vessel bound for Maroantsetra or other anchorage at the head of the bay may proceed NW across the bay to a position SW of Nosy Milomboky, the S-most islet of the chain described at 8.13 and thence by the directions given at 8.18. Alternatively, the coastal route can be followed NNW, passing (with positions from Pointe Tampolo):

- 2 WSW of Banc d'Ambanizana, with a depth of 16 m (52 ft) over it, (6 miles NNW), lying in the approach to Ambanizana River (8.31), thence:

WSW of Pointe Andranovato (11 miles NNW), thence:

ENE of the chain of islands (15 miles NNW) mentioned above, thence:

ENE of Nosy Mangabe (17½ miles NNW) (8.13), at the N end of the chain.

- 3 The track then leads N of Nosy Mangabe, through a channel 7 cables wide, in depths more than 11 m (36 ft), between the N point of the island and a shallow bank which extends S from Pointe Antsiraka (15°27'S, 49°45'E), a low but salient point composed of sand covered with mangroves. Thence to a position about 2 miles WSW of Pointe Antsiraka.

8.22

- 1 **Leading marks.** From the W end of the channel N of Nosy Mangabe the alignment (153°), astern, of the SW extremity of that island with the NE extremity of Nosy Haramy (2 miles S of Nosy Mangabe), leads NNW towards the anchorage off Maroantsetra, passing WSW of the shallow bank described above. The bank tends to advance SW.

Useful marks. See 8.19.

(Directions for Maroansetra are given at 8.39)

Anchages on west side of bay

Chart 677 (see 1.22)

Mananara

8.23

- 1 **General information.** Mananara village (16°10'S, 49°46'E) stands mainly on the E side of the lesser of two mouths of Mananara River. Anchorage can be obtained off the village.

- 2 **Tidal levels.** At Mananara the mean spring range is about 0.7 m, the mean neap range about 0.2 m. For further information see *Admiralty Tide Tables Volume 3*.

- 3 **Landmarks:**

Residency (16°10'3S, 49°46'4E) situated on a hill, 37 m high.

Mahambolona, 5 cables SE of Residency, is a bare, conical hill, 43 m high, on which stands a beacon (white pyramid).

8.24

- 1 **Directions.** From a distance, E or N, Ankirihihi (8.19) or Cap Bellone (7.195) are, respectively, good guides to the anchorage. On closer approach the locality can be identified by Pointe d'Ambitsika (8.18).

- 2 **Leading marks:**

Light (white beacon, red top, 4 m in height) exhibited from the NW point of Îlot Rocheux (16°09'5S, 49°45'2E, an islet situated between the two mouths of Mananara River.

Sommet Antevialabe, 4¾ miles SSW of the light.

- 3 From a position not less than 2 miles NNE of the light, so as to avoid Banc des Cormorans, 1¼ to 1¾ miles NE of Îlot Rocheux, the alignment (209¾°) of the above marks leads to the anchorage, passing WNW of an 8.2 m (27 ft) patch, about 1½ miles NNE of the light, off the NW side of Banc des Cormorans.

8.25

- 1 By day, a vessel bound for Mananara from N may approach the anchorage on the alignment (153¾°) of a conspicuous tree (painted white with a black stripe) 9½ cables E of the light on Îlot Rocheux, with the beacon on Mahambolona (8.23), about 1¼ miles SSE of the tree.

8.26

- 1 **Anchorage** can be obtained at the intersection of the alignments described above, in the position indicated on the chart, in depths from 13 to 15 m (43 to 49 ft), hard sand.

- 2 Coasters can anchor closer inshore, in a depth of about 10 m (33 ft), at the intersection of the alignment (153¾°) and

the bearing 225° of the light on Îlot Rocheux. About 2¼ cables E of this berth there is a rock with a depth of 3·7 m (12 ft) over it which scarcely shows in calm weather but over which the sea breaks heavily during SE winds. About 2½ cables SSE of the berth there is a 1·5 m (5 ft) patch, on the edge of the coastal reef.

8.27

- 1 **Landing place** is at a small pier near the conspicuous tree. At LW it can be approached through the coastal reef by a narrow, difficult channel about 2 cables long.

Facilities. Small hospital.

Communications. Internal air service from an airfield close NE of the village.

Anchorage on east side of bay

Baie d'Ankasofotsy

8.28

- 1 Anchorage may be obtained in Baie d'Ankasofotsy, about 4 cables W of the mouth of Ankasofotsy River (15°50'·4S, 50°01'·2E) (8.20) in a depth of about 30 m (16 fm). The depth decreases rapidly inshore.

The entrance to the river is encumbered by numerous rocks.

Antalavia

8.29

- 1 **Directions.** Approaching Antalavia village (15°47'·2S, 50°01'·2E) (8.20) from S, the bearing 047° of a prominent whitewashed tree, standing beside a remarkable house in the village, leads to the anchorage.

Approaching from N, the coast should be given a berth of at least 1 mile as there are several rocks and reefs N of the anchorage, in depths less than 10 m (33 ft).

- 2 **Anchorage** may be obtained in depths from 18 to 20 m (59 ft to 11 fm), fine yellow sand, at the intersection of the approach bearing and the bearing 125° of the mouth of Sahaleona River, 5 cables SSW of Antalavia.

Pointe Tampolo

8.30

- 1 Anchorage can be obtained in a depth of 15 m (49 ft), mud, about 4 cables N of Pointe Tampolo (15°44'S, 49°57'E).

Baie d'Ambanizana

8.31

- 1 **Directions.** The anchorage in Baie d'Ambanizana lies SW of Ambatambe village (15°36'·6S, 49°57'·2E) but, as the village is not visible from seaward, the most useful marks are:

The mouth of Ambanizana River, 7 cables SSE of the village (not charted).

Pointe Nandrahana, 1¼ miles WNW of the village.

- 2 Care must be taken to avoid a 5·2 m (17 ft) shoal, 9 cables WSW of Ambatambe (not charted) when approaching the anchorage.

Anchorage can be obtained in depths from 7 to 8 m (23 to 26 ft) 5 cables NW of the mouth of Ambanizana River. Care must be taken not to anchor too close inshore as a sandbank extends up to 3½ cables from the river mouth.

Maroantsetra

Chart 759 (see 1.22)

General information

8.32

- 1 **Position.** Maroantsetra (15°26'S, 49°45'E) stands at the head of Baie d'Antongil, on the delta through which Anjahanambo River flows from W, along the head, into the mouth of Antanambalana River, the central and most important of several rivers which enter the bay in this vicinity.

Function. Small commercial port off which vessels anchor.

- 2 **Topography.** Between Anjahanambo River and the sea there is a narrow strip of the sandy land forming the delta and on which stands the S part of the town. A bridge crosses the river and connects this part to the N and larger part, lying between the Anjahanambo and Antanambalana Rivers. The Residency and administrative buildings are situated in this N section which is surrounded by trees, a church tower in the town centre being barely visible through them.

8.33

- 1 **Approach and entry.** Anchorage off Maroantsetra is approached from SW on the alignment of leading lights. The rivers can only be entered by small craft.

Traffic is coastal.

Arrival information

8.34

- 1 **Port operations.** Lighters work cargoes for coasters at anchor from a beach W of the mouth of Antanambalana River, where shallow draught sea-going vessels also load and discharge, operations being subject to tidal and sea conditions.

8.35

- 1 **Outer anchorages.** Vessels can anchor anywhere around Nosy Mangabe, 2½ miles SSW of Maroantsetra (8.13), in depths from 15 to 18 m (49 to 59 ft), 2 or 3 cables offshore but avoiding a coral reef, partly above water, 2 cables S of the SE point of the island.

- 2 The best anchorage, suitable for coasters, is in Port Memoria, formed by a cove on the W side of the island. The berth is in depths from 13 to 15 m (43 to 49 ft) in the position indicated on the French chart. It affords excellent shelter from S and E winds.

8.36

- 1 **Tugs** are available to work cargo lighters.

Limiting conditions

8.37

- 1 **Tidal levels.** At Maroantsetra the mean spring range is about 0·8 m, the mean neap range about 0·3 m. For further information see *Admiralty Tide Tables Volume 3*.

Harbour

8.38

- 1 **General layout.** The harbour comprises the roadstead and town off which tugs and lighters lie sheltered in the river.

Currents in the vicinity of Maroantsetra are said not to be strong.

Directions for anchorage

8.39

- 1 **Leading lights.** From a position about 2 miles WSW of Pointe Antsiraka the alignment (046°) of leading lights, in the white sector (040°-052°) of the rear light (occasional) leads into the anchorage:

- 2 Front light (white square daymark, black stripe, on white beacon, 10 m in height), exhibited from the S side of Anjahanambo River.
- Rear light (white square daymark, black stripe, on white metal framework tower, 13 m in height), 240 m from front light.

Anchorage

8.40

- 1 Vessels anchor in a depth of 11 m (36 ft), mud, at the intersection of the alignment described above and the alignment (about 155°) of the SW extremity of Nosy Mangabe with the NW extremity of Nosy Haramy, 1¾ miles SSE, in the position indicated on the plan.
- Anchorage is not safe in a strong SE breeze, when shelter should be sought in Port Memoria (8.35).

Supplies

8.41

- 1 Fresh provisions may be available, although vegetables are scarce.

Small craft

Rantabe River

8.42

- 1 Boats can enter Rantabe River (15°41'S, 49°38'E) (8.18) at half-tide in a least depth of 1 m (3 ft) over a bar at the entrance on the S side of which is Rantabe village. Above Rantabe the river is navigable for about 3 miles.
- Landing can always be effected on a small beach E of Rantabe.

Other names

Charts 677, 759 (see 1.22)

8.43

- 1 Antoraka, Banc d' (15°29'S, 49°41'E).
Ivoloina, Récifs d' (15°34'·3S, 49°37'·5E).
Manambia, Banc de (15°31'S, 49°39'E).
Mitomby, Nosy (15°34'S, 49°46'E).
Mouettes, Île aux (16°09'·3S, 49°46'·2E).
Ravina, Nosy (15°32'S, 49°46'E).

BAIE D'ANTONGIL APPROACHES TO CAP D'AMBRE

GENERAL INFORMATION

Chart 3877

Scope of section

8.44

- 1 This section describes the routes in coastal waters between the approaches to Baie d'Antongil (16°07'S, 50°00'E) and Cap d'Ambre (11°57'S, 49°17'E), about 280 miles N. These include routes within Baie de Diégo-Suarez, a large bay in which Port de la Nièvre is situated.
- 2 Also described are the small ports of Antalaha (14°54'S, 50°17'E) (8.64), Sambava (14°15'S, 50°09'E) (8.78) and Vohémar (13°21'S, 50°00'E) (8.94). Coasters can berth alongside at Vohémar while the others have open roadsteads.

The description includes the harbours and anchorages available en route along the coast.

This section is arranged as follows:

- 3 Baie d'Antongil approaches to Cap Est (8.46).
Cap Est to Rade de Antalaha (8.55).
Rade de Antalaha to Sambava (8.73).
Sambava to Vohémar (8.87).
Vohémar to Cap du Diable (8.106).
Cap du Diable to Baie de Lokja (8.112).
Baie de Lokja to Cap d'Ambre (8.122).

Caution

8.45

- 1 The coast is mainly steep-to, particularly so between Cap Est (15°16'S, 50°29'E), and Vohémar, a distance of about 120 miles. In general, a vessel proceeding along the coast in good visibility can keep fairly close inshore as far as Baie de Diégo-Suarez. However, at night or in poor visibility, without reliable radar and especially during the rainy season (8.6), great caution is necessary.
- See 8.129 regarding coastal navigation N of Baie de Diégo-Suarez.

BAIE D'ANTONGIL APPROACHES TO CAP EST

General information

Chart 3877

Route

8.46

- 1 From the approaches to Baie d'Antongil (16°07'S, 50°00'E) the coastal route as far as Cap Est (15°16'S, 50°29'E) passes seaward of a reef which borders most of the coast and extends up to 2 miles offshore.

Topography

8.47

- 1 From Cap Masoala (15°59'S, 50°13'E) on the E side of the approaches to Baie d'Antongil to Cap Tanjona 13 miles NNE, the coast is backed at a short distance by wooded hills. Farther N, just S of Cap Est, there are also wooded hills which slope steeply to the sea or terminate in cliffs and are interspersed by long sandy beaches.
- 2 There are some islets and above-water rocks on the coastal reef in which a few gaps give access to anchorages for small vessels or coasters.

Principal marks

8.48

- 1 **Landmark:**
Ambato, 398 m high (15°16'·2S, 50°20'·6E) (not charted), which has three summits like the teeth of a saw and a fourth separated by a U-shaped gap.
- 2 **Major lights:**
Cap Masoala Light (grey tower, 29 m in height) (15°59'S, 50°13'E).
Cap Est Light (Tanjong Antsirakosy), Baie d'Angontsy (white tower, 21 m in height) (15°17'S, 50°28'E).

Directions

(continued from 7.224)

Chart 3877 (see 1.22)

8.49

- 1 From a position in the approach to Baie d'Antongil, (16°07'S, 50°00'E) E of Cap Bellone (16°13'S, 49°52'E)

(7.195), the track leads generally NNE, passing close outside the coastal reef (see 8.45) as, except in the vicinity of Cap Masoala, the reef is steep-to on the seaward side and the sea usually breaks on it. The track passes (with positions from Cap Masoala (15° 59'S, 50° 13'E)):

- 2 ESE of an extension of the coastal bank, outside the reef, on which there is a least charted depth of 8.3 m (27 ft) (1¼ miles S), giving it a wide berth on account of the flow into Baie d'Antongil (8.15) and the current (1.167) which, except for short periods from October to December, is N-going at an uncertain rate, thence:
- 3 ESE of Cap Masoala, a high, wooded, easily identified cape from which Cap Masoala Light is exhibited, thence:
ESE of Nosy Nepato (2 cables E), a low, wooded islet, easily identified when open of the land and, when not open, can be distinguished by its vegetation which appears darker than that of the mainland, thence:
- 4 ESE of Baie de Vinanibe (2 miles NNE), which is formed by a gap in the coastal reef but, although about 5 cables wide, is not available for anchorage as the entrance is reported to be encumbered by rocks, thence:
ESE of Nosy Ambatoharana (4¼ miles NNE), dome-shaped and fairly high, with cliffs to seaward, thence:
- 5 ESE of the S entrance point of Baie d'Anaovandrano (9¼ miles NNE) which is low and wooded but backed by a prominent high, rounded hill and with an islet lying close NNE, thence:
ESE of Cap Tanjona (13 miles NNE) a long, low but salient and well-wooded cape, clearly distinguishable from SW and NE, thence:
- 6 ESE of the Ratsianarana River (32 miles NNE), whose S entrance point is well defined, thence:
ESE of Nosy Fanala (35 miles NNE), a long low island, thence:
To a position E of Cap Est (15°16'S, 50°29'E), a low sandy point, backed by some wooded hillocks, off which the current (8.57) is strong.
- 7 Nosy Angontsy, a low-lying flat islet, covered with vegetation, lies 2 cables ENE of Cap Est. The vegetation is of a lighter colour to that of the mainland, which helps to identify it, although the islet is not visible until after the hillocks of the mainland are sighted.
(*Directions continue at 8.59*)

Anchorage and landing places

Vinanivao 8.50

- 1 **General information.** There is an anchorage in an indentation in the coastal reef between Nosy Ambatoharana (15°55'6S, 50°15'5E) (8.49) and a point 2¼ miles NNE, the latter being formed by a projection of the coastal reef which extends 1 mile S from the entrance to Andranotsimanga River. Vinanivao village stands on the W side of the entrance with anchorage being obtainable S of the village.
- 2 **Directions.** The bearing 310° of the summit of Ambohitrambobé, 113 m high, 2¼ miles N of Nosy Ambatoharana, leads from seaward into the indentation. Thence, once inside, the line of bearing 020° of an islet on

which there are several trees, 2½ miles NNE of Nosy Ambatoharana, which is the SW and smaller of two islets situated off the SE entrance point of Andranotsimanga River, leads to the anchorage.

- 3 **Anchorage.** Vessels may anchor in a depth of 16 m on the alignment (212°) of the NW extremity of Nosy Ambatoharana with Cap Masoala Light (8.48), 4¼ miles SSW. There is shelter from winds between N and E and swell from ESE is not felt so much at this berth which is suitable for vessels up to 100 m in length.

Anjanazana 8.51

- 1 **General information.** Anjanazana village (15°44'4S, 50°20'4E) stands on the S side of the entrance to Anjanazana River which flows into the sea 4 miles N of Cap Tanjona.
Vessels can anchor SE of the village in a bight formed between the coast and the coastal reef.
Local knowledge is advisable as there are no suitable marks on which to anchor.
- 2 **Directions.** The bearing 270° of the entrance to Anjanazana River leads towards the bight, passing close N of a depth of 8.4 m, 4½ miles NNE of Cap Tanjona, at the N end of an uneven bank which is a branch of the coastal reef, extending 3 miles NE from the cape. The sea usually breaks on this reef.
The bearing 200° of the E side of Cap Tanjona leads to the anchorage.
- 3 **Anchorage** can be obtained on the approach bearing as soon as depths are less than 20 m, about 3½ miles from Cap Tanjona. Farther S, the bight is encumbered by coral heads. A gap between two parts of the coast, one backed by trees and the other by sand, forms a useful guide to the position in which to let go anchor.
The berth affords swinging room of about 2¾ cables and is well sheltered from winds between S and E.

Ampanavoana 8.52

- 1 **Anchorage** which affords no shelter, can be obtained 5½ cables off Ampanavoana village (15°41'2S, 50°21'5E). The village stands on the N side of Ampanavoana River. Depths in the anchorage are about 6 m (20 ft).
Landing by boat is possible about 3 cables S of the village but passage through the coastal reef is difficult without local knowledge.
Communications. An airfield lies close N of the village.

Ratsianarana River 8.53

- 1 **Anchorage** for coasters can be obtained in a clearly visible gap in the coastal reef S of the entrance point of Ratsianarana River (15°27'8S, 50°27'5E) (8.49), on which the village of Ratsianarana is situated. There is swinging room of about ¾ cable in a least depth of 4 m.

Small craft

Baie d'Anaovandrano 8.54

- 1 **General information.** Baie d'Anaovandrano (15°50'S, 50°19'E) is encumbered by coral heads but accessible to small craft. Local knowledge is required.

CAP EST TO RADE DE ANTALAHA

General information

Chart 3877 (see 1.22)

Route

8.55

- 1 From a position E of Cap Est (15°16'S, 50°29'E) the track leads about 26 miles NNW to a position E of Antalaha, passing seaward of reefs, rocks and shoals with depths of less than 11 m over them which border most of the coast to a distance, in places, of 1½ miles.

Topography

8.56

- 1 Between Cap Est and Rade d'Antalaha the coast is thickly forested behind an unbroken sandy beach. The shore is bordered, in places, with a coastal reef extending up to 1 mile seawards.

Current

8.57

- 1 See 8.8. Off Cap Est the current sets strongly N for most of the time and a counter-current, the limit of which is uncertain, forms close inshore off the receding coast NNW of the cape. From about November to January, however, a S-going current predominates.

Principal mark

8.58

- 1 **Major light:**
Cap Est Light (15°17'S, 50°28'E) (8.48).

Directions

(continued from 8.49)

8.59

- 1 From a position E of Cap Est (15° 16'S, 50° 29'E) the coastal track leads generally NNW and, in general, may be navigated fairly close inshore, as directed at 8.45. However, the coast immediately NNW of Cap Est should be given a wide berth to avoid the counter-current described at 8.48, while passing (with positions from Cap Est):
ENE of a 14 m shoal (11 miles NNW) lying 2 miles offshore, thence:
- 2 Well ENE of Cap Tsihananina (21 miles NNW), off which shoal depths extend about 1 mile seaward of a group of above-water rocks (up to 39 m in height) which fringe the cape. These rocks are easily distinguishable from the coast, but there is no passage inshore of them. Thence:
- 3 To a position E of Antalaha (26 miles NNW), well clear of a shoal, (14°53'7S, 50°18'3E), with a least depth of 9.7 m (32 ft) over it which is the outermost danger off Antalaha. The reef which fringes the coast in this vicinity is visible from seaward.

8.60

- 1 **Useful mark:**
Antalaha rear leading light (14°54'S, 50°16'E) (8.68).
(Directions continue for coastal route at 8.76.
Directions for Antalaha are given at 8.68)

Anchorage

Baie d'Angontsy

8.61

- 1 **General information.** Baie d'Angontsy is formed between a sandy spit, 7 cables NNW of Cap Est, and a low point 1¾ miles farther NNW, on the S side of the mouth of Rivière Onibe.

The bay is protected by reefs which extend NNE from the spit and SE from the mouth of Rivière Onibe, leaving an entrance channel 7 cables wide between them.

- 2 Anchorage with shelter from all winds except NE can be obtained off the village of Angontsy which stands on the spit.

Tide levels. At Rade d'Angontsy the mean spring range is about 0.9 m, the mean neap range about 0.3 m. For further information see *Admiralty Tide Tables Volume 3*.

8.62

- 1 **Directions.** It is recommended that the bay be approached from E, account being taken of the counter current described at 8.57.

Leading marks:

- 2 Front beacon (white rectangular daymark), 350½° distant 2.17 miles from Cap Est Light, on W shore of bay.
Rear beacon (similar structure), 240°, distant 4.1 cables from front beacon.
- 3 The alignment (240°) of these beacons leads into the bay between the reefs on both sides of the entrance. The S reef, which is steep-to on the seaward side and partly dries, has several dangerous narrow openings in it where the sea breaks heavily, but none can be mistaken for the entrance.

8.63

- 1 **Anchorage** can be obtained a little W of the alignment (193½°) of the following marks:
White beacon (15°15'2S, 50°28'6E) at Angontsy.
Cap Est Light (15°17'S, 50°28'E) (8.48).
- 2 The recommended berth is in a depth of 10 m on the bearing 145° of Nosy Angontsy (8.49), 9 cables ESE of Angontsy, which can be seen detached from the coast when entering the bay. There is a 3.3 m patch about 1½ cables ENE of this berth.
- 3 **Landing** is easy at Angontsy.
Supplies of fresh provisions may be available at the village.

Antalaha

General information

8.64

- 1 **Position and function.** Antalaha (14°54'S, 50°17'E) is a small commercial port and town off which vessels anchor.
Topography. The town stands between the coast and Pic d'Antalaha. Both the buildings of the town and the hill behind are visible from a considerable distance seaward and, in clear weather, are excellent guides to the roadstead, showing up particularly well at sunrise. To the N of the town there are two isolated trees on the summit of a hill.
- 2 **Approach** to the roadstead is from the E, between shoals, on the alignment of leading lights.
Traffic is mainly coastal and, in 2003 one vessel of 7000 dwt used the port.

Limiting conditions

8.65

- 1 **Tidal levels.** At Antalaha the mean spring range is about 1.1 m, the mean neap range about 0.5 m. For further information see *Admiralty Tide Tables Volume 3*.
Least charted depth is 13.1 m on the approach leading line.

Arrival information

8.66

- 1 **Port operations.** Tugs and lighters work cargoes between vessels in the roadstead and the S pier (14°54'0S, 50°16'6E), one of two small piers at Antalaha.

Signal station. There is a signal station sited near the N pier.

Harbour

8.67

- 1 **General layout.** The harbour consists of the roadstead, piers and signal station already mentioned, and a sheltered area for small craft (8.72).

Storm signals indicating the locality threatened by a cyclone are displayed at the signal station, see 1.48 for details of the signals.

- 2 **Natural conditions.** The roadstead is completely open and cargo operations are restricted by weather conditions, both during the South-east Trade Wind season (8.6) and for the rest of the year when Antalaha is very exposed to the effects of cyclones in the vicinity.

When the South-east Trade Wind is blowing cargo operations are confined to the early morning.

Directions

8.68

- 1 **Leading lights:**

Front light (white beacon, 7 m in height), 2¼ cables NNW of N pier.

Rear light (black and white beacon, 8 m in height), 5½ cables W of front light.

The front light is a direction light and is only exhibited occasionally.

- 2 The alignment (276½°) of these lights leads to the anchorage, passing (with positions from front light):

S of a shoal (1¼ miles E), with a depth of 9.7 m over it, and:

N of a shoal (1¼ miles ESE), with a depth of 10.1 m over it.

8.69

- 1 **Useful mark:**

Light (red pylon, 4 m in height), 2¼ cables SSW of front leading light, exhibited occasionally from root of N pier.

Anchorage

8.70

- 1 The roadstead off Antalaha is only recommended in fine weather.

The best berth is in a depth of 18 m, sand, 8 cables off the town and about 1½ cables seaward of a bank with depths less than 11 m over it fronting the town, in the position indicated on the chart. This berth lies at the intersection of the alignment of the approach leading lights and the alignment (207°) of the following marks:

- 2 Front beacon (black and white bands), 1 mile SSE of front leading light, on foreshore.
Rear beacon (similar structure), 8½ cables SSW of front beacon, on high ground inland.

Port services

8.71

- 1 **Facility.** Hospital.

Communications. Internal air service from Antalaha.

Small craft

8.72

- 1 **Berths.** There is shelter for lighters and other small craft behind a reef N of the S pier. During the South-east Trade Wind season, in the mornings only, and in ordinary weather for the rest of the year, access can be gained, in periods of calm, by passages through the reefs between the piers.

RADE DE ANTALAHA TO SAMBAVA

General information

Chart 3877

Route

8.73

- 1 From a position E of Rade de Antalaha (14°54'S, 50°17'E) the coastal track leads generally N about 38 miles to a position E of Sambava (14°15'S, 50°09'E), passing through waters in which no dangers are charted offshore but of which little else is known.

Topography

8.74

- 1 Between Antalaha and Sambava the coast is still little known. The coastal region is thickly forested behind a sandy beach broken only by several rivers that enter the sea here.

Principal marks

8.75

- 1 **Landmarks:**

Antanamiavitra (14°43'0S, 50°11'5E) (not charted) a bare conical hill, 278 m high.

- 2 Sommet Ambanitazana (14°41'S, 50°11'E) (not charted) which is massive, perfectly circular, and may be seen from a great distance seaward. It appears to be on the coast but is actually 2½ miles inland, the intervening ground being low. In clear weather this feature may be seen at the same time as Fausse Table.

- 3 Fausse Table (not charted), 8 miles S of Sambava, a hill of less regular shape which is a good guide to Sambava when approaching from S. In poor visibility Fausse Table may be mistaken for Sommet Ambanitazana.

Directions

(continued from 8.60)

Chart 3877 (see 1.22)

8.76

- 1 From a position E of Antalaha, well clear of the shoal mentioned at 8.59, the coastal route leads generally N to a position E of Sambava (14°15'S, 50°09'E). For the most part, the route may be navigated fairly close inshore, as directed at 8.45, but passing (with positions from Sambava):

E of a coral shoal (13 miles SSE), with a depth of 10 m over it, lying 3 miles offshore, thence:

- 2 E of a reef which extends 1¼ miles from the coast for a distance of 5 miles SSE from Sambava, thence: Well E of Pointe d'Ampandrozone (1¾ miles SE), which is low, thence:

To a position E of Sambava and well clear of a shoal (1¼ miles NE) with a depth of 14.9 m over it.

8.77

- 1 **Useful mark:**

C Light-beacon (white beacon, 12 m in height) (14°14'S, 50°07'E), situated on a hillock.

(Directions continue for coastal route at 8.91.

Directions for Sambava are given at 8.82)

Sambava

General information

8.78

- 1 **Position and function.** Sambava (14°15'S, 50°09'E) is a small commercial port at the junction of several rivers, including Sambava River, which flow into a lagoon, close W of the town. This then flows to sea over a bar which is not

easily located and is subject to displacement. The anchorage is an open roadstead in which vessels anchor.

- 2 **Topography.** The town stands on a promontory on the E side of the lagoon, mentioned above, and is backed by wooded, higher ground. This, plus the buildings in the town, some of which have corrugated iron roofs, are a good guide to the roadstead, being visible for a considerable distance seaward. The lagoon is also visible from the roadstead.

- 3 **Approach** to the roadstead is from the NNE, facilitated by a leading mark.

Traffic is coastal.

Limiting conditions

8.79

- 1 **Least charted depth** is 12.8 m in the approach to the anchorage.

Arrival information

8.80

- 1 **Port operations.** Lighters work cargoes between vessels in the roadstead and the lagoon, over a bar at the entrance which is dangerous at LW.

Shallow-draught seagoing vessels work cargo on a beach N of Pointe d'Ampandrozone.

Tugs are available to work cargo lighters.

Harbour

8.81

- 1 **General layout.** The harbour comprises the roadstead and beach, near which is a fuel depot, and a small wharf in the lagoon with storage sheds nearby.

Natural conditions. The roadstead is exposed to swell (8.8) and the South-east Trade Wind (8.6), the effects of which make cargo operations very difficult, especially in the afternoon when the wind frequently freshens.

Directions

8.82

- 1 **Cautions:**

Beacons. It is reported (1983) that Light-beacon A (14°15'1S, 50°09'4E) and beacon B, 9½ cables NW of A, had been destroyed and the light on light-beacon D had been extinguished. There have been no further reports on these aids to navigation.

- 2 **Night approach.** The approach to the coast should not be attempted at night, even with reliable radar, as the low coastline does not show up well.

- 3 **Approach.** By day, from a position E of Sambava, the bearing 275° of Piton de Sambirano, a hill higher than those around it, situated 11 miles SSW of Morne de Mahanara (13°57'5S, 49°57'5E) (not charted) (8.90) leads towards the coast N of the roadstead. From NE, and noticeably from N, a lower hill with a large notch and a smaller notch below it will be seen in clear weather a short distance SE of Piton de Sambirano.

- 4 The track passes N of a shoal with a depth of 14.9 m over it, 1¼ miles NE of Sambava.

8.83

- 1 **Roadstead.** Leading lights:

A Light-beacon (white tower, red top, 6 m in height) (14°15'1S, 50°09'4E).

D Light-beacon (white pyramid, 8 m in height) 6 cables S of front light.

- 2 The alignment (196°) of these lights leads into the roadstead, passing:

WNW of a shoal with a least depth of 4.9 m over it (1¼ miles NNE of D Light-beacon).

In 1977, D Light-beacon could be identified in vegetation to the right of, and a little above, a large yellow building.

Anchorage

8.84

- 1 The berth indicated on the French chart, 1¼ miles NNE of D Light-beacon, is not recommended as the holding ground is poor. It is better to anchor farther off the port in a depth of about 14 m, muddy sand, at the intersection of the approach bearing and the bearing 274° of C Light-beacon (14°14'S, 50°07'E) (8.77). The holding ground in this berth is also poor but there is more swinging room.

- 2 Coasters can anchor closer inshore in a depth of about 11 m at the intersection of the approach bearing and the bearing 286° of C Light-beacon, but only if essential.

Landing place

8.85

- 1 It is possible to land at all states of the tide opposite the fuel depot, W of Pointe d'Ampandrozone, 1¾ miles SE of Sambava, even during the South-east Trade Wind season.

At HW boats can enter the lagoon and reach the town.

Port services

8.86

- 1 **Facility.** Small hospital.

Supplies: fish are plentiful; other fresh supplies are available if ordered in advance.

Communications. By internal air service from an airfield 3 km SE of the town.

SAMBAVA TO VOHÉMAR

General information

Chart 3877

Route

8.87

- 1 From a position E of Sambava (14°15'S, 50°09'E), a coastal route leads N for about 56 miles to a position E of Vohémar (13°21'S, 50°00'E), passing seaward of reefs, rocks and shoals which extend up to 3 miles offshore in places.

Topography

8.88

- 1 The thickly forested coastal region continues N to about 14°S latitude where several ranges of low hills rise, running N, parallel to the coast. Here, woodland gives way to a sparse covering of vegetation which is green in the rainy season but dries out to a faded yellow during the season of the South-east Trade Wind. Only the sheltered valleys have a light covering of casuarina and baobab trees.

Local magnetic anomaly

8.89

- 1 Local deflection of the magnetic compass is reported to occur in the vicinity of Vohémar.

Principal marks

8.90

- 1 **Landmarks:**

Morne de Mahanara (13°57'5S 49°57'5E) (not charted) which is low, but isolated, and remarkable on account of its shape and dark colour. From SE it appears wedge-shaped while, from NE, it has the appearance of a truncated cone. A little S and behind this hill there is a distinct gap which must not be confused with that just W of Piton de Sambirano, 11 miles SSW (8.82). Morne de Mahanara is a good landmark when making Sambava from N.

- 2 Morne Noir (106 m high) (13°30'S, 50°00'E) (not charted) a prominent conical hill, most distinctive from S. Due to its dark colour it stands out strongly against a background of flat-topped heights which appear green or yellow according to season. Morne Noir is a good landmark when making Vohémar from S.

Directions

(continued from 8.77)

8.91

- 1 From a position E of Sambava (14°15'S, 50°09'E), seaward of the shoals fronting the port, the coastal route leads generally N. For the most part the track may pass fairly close inshore, as directed at 8.45, but passing (with positions from Sambava):
- 2 Well clear of a shoal (1¼ miles NE) with a depth of 14.9 m over it, thence:
- E of the mouth of Bemariva River (7 miles N), a shallow river bordered by plantations, thence:
- 3 E of a reef fringing Cap Mahanara (12 miles N) over which the sea usually breaks, thence:
- E of the mouth of Mahanara River (15 miles N), easily identified by a depression formed by the valley of the river which is the only valley of its kind on this part of the coast, thence:
- 4 E of a 14 m shoal (23 miles N) lying 3 miles offshore, thence:
- ENE of a reef extending up to 2 miles from the coast for a distance of 13 miles to Cap Anorontany (13°37'S, 50°05'E), a high precipitous bluff. From S there will be seen, standing out clear of the cape, a small, isolated conical hill. Thence:
- 5 ENE of rocks extending 1 mile offshore from Cap Anorontany, thence:
- ENE of l'Anse d'Amboanio (41 miles N), in which is located the isolated conical hill, above, thence:
- ENE of rocks extending 1 mile offshore from Cap des Gouffres (44 miles N), a high, steep cliff, thence:
- 6 To a position E of the coastal reef bordering Pointe de Vohémar (13°20'·8S, 50°00'·5E), giving it a wide berth if bound for Vohémar (see 8.98). The point, which is about 21 m high and thickly wooded, is situated on the S side of the approach to Vohémar and obscures any view of the town from seaward.

8.92

- 1 **Useful marks:**
- C Light-Beacon (14°14'S, 50°07'E) (8.77).
- No 5 Light-beacon (13°21'·3S, 49°58'·2E) (8.99), 2¼ miles W of Pointe de Vohémar.
- Other marks in the vicinity of Vohémar (8.99 to 8.101).
- (Directions continue for coastal route at 8.109.
- Directions for Vohémar are given at 8.98)

Small craft

Anse d'Amboanio

8.93

- 1 **Anchorage** with good holding ground can be obtained in Anse d'Amboanio, on the N side of Cap Anorontany (13°37'S, 50°05'E) (8.91), although swell causes heavy surf. The isolated hill described at 8.91 assists in identifying the cove.

Vohémar

Chart 3877 (see 1.22)

General information 8.94

- 1 **Position and function.** Vohémar (13°21'S, 50°00'E), a small commercial port, is situated on the NW side of Pointe de Vohémar at the entrance to Baie de Vohémar.
- 2 **Topography.** Baie de Vohémar is bordered to the S by Pointe de Vohémar, a low, wooded headland, and W by a group of low, conical hills between which the Mantialac River passes into the NW part of the bay. The W side of the bay has become heavily silted and is covered in dense mangroves. From the N entrance point a large reef extends S to within 2½ cables of Pointe de Vohémar, virtually closing off the bay from seaward apart from the narrow channel at the S entrance. On the seaward side, on the outer part of the reef, there are several islets, the largest being Île Verte to the N, while the smaller group, Îlots Noir, lie 2 miles farther S.
- 3 **Approach and entry.** The inlet is approached from E and entered close N of Pointe de Vohémar by a channel about 1 cable wide through the coastal reef, on the alignment of leading lights.
- Traffic.** In 2003, 46 vessels with a total dwt of 141 950 used the port.

Limiting conditions

8.95

- 1 **Deepest and longest berth:** Vohémar pier (8.103).
- Largest vessels:**
- At anchor: length 100 m.
- Alongside: length 50 m, draught 5.8 m (approximately)
- 2 **Tidal levels.** At Vohémar the mean spring range is about 1.2 m; mean neap range about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

Arrival information

8.96

- 1 **Port operations.** A good time to enter the inlet, especially during the South-east Trade Wind season (8.6), is shortly after sunrise when winds are light and the leading marks can be discerned. A better time, however, may be at LW when more of the dangers are exposed and visible. See also 8.97 regarding flow in the entrance channel.
- 2 **Local knowledge** is necessary for entry. Before attempting to enter it should be confirmed that space is available as there is room for only one vessel of the maximum size given at 8.95.

Harbour

8.97

- 1 **General layout.** The harbour comprises an anchorage and a small pier in front of the town.
- Storm signals** (see 1.48) indicating the locality threatened by a cyclone are displayed at the signal station, 3 cables SW of Pointe de Vohémar. Vessels which anchor may communicate, by day, via this station by *International Code of Signals*.
- 2 **Flow.** The N-going current sets strongly across the approach to the entrance channel.
- Tidal streams follow the channel and attain a rate of 1½ kn at spring tides. Within the inlet the in-going stream is deflected N. Outside it, the out-going stream turns NNE.
- 3 It is reported that at LW there is no flow across the extensive reef on the N side of the channel.
- Local weather** is frequently stormy during the months of December to March. See also 8.6 regarding winds.

Directions

8.98

- 1 **Approach** should be made from a position 4 or 5 miles E of the entrance channel in order to:
Make adequate allowance, which may be as much as 25°, for drift due to current and also:
- 2 Allow sufficient time to positively identify the channel since, during strong SE winds, the entrance is difficult to distinguish as the sea not only breaks right across it but also near the SE end of the coastal reef on the N side, in depths of 5.5 m (18 ft), more than 1 cable outside the reef.

8.99

- 1 **Entry.** In the channel it is essential to keep on the alignment of the channel leading lights, as there are dangers close-to on either side, and also to maintain a good speed to counter the set from the flow across the channel (8.97) which is often strong. Speed must not be reduced before reaching No 4 Light-beacon (8.100) where the flow ceases abruptly. If entering at LW, however, it may be possible to reduce speed once past the wrecks described at 8.101. In any event, care must be taken to reduce speed sufficiently and in time to avoid over-running the anchorage (8.102).
- 2 **Leading lights:**
Front, No 3 Light-beacon (white with green top, 7 m in height), 5 cables W of Pointe de Vohémar, on the S end of the coastal reef mentioned at 8.98. The front light is exhibited when a vessel is expected, or on request.
- 3 Rear, No 5 Light-beacon (white pyramidal tower and hut, 8 m in height), 1¼ miles W of front light, on a hill 55 m in height.
The alignment (260°) of these lights leads through the entrance channel, passing (with positions from No 3 Light-beacon):
- 4 N of No 2 Beacon (red cylinder) (7½ cables E), situated on the N edge of the coastal shelf on the S side of the entrance to the channel, thence:
S of a 1.4 m coral patch (6½ cables ENE), about ½ cable N of the track.

8.100

- 1 **Leading mark.** When clear of the above patch, the bearing 232° of No 8 Beacon (white wall 6 m wide at base, black stripe) situated on a hill (1¼ miles SW), leads towards the anchorage, passing:
¼ cable NW of No 4 Light-beacon (red tower, 6 m in height) (5 cables ESE), situated on the N edge of the coastal reef on the S side of the channel. This light is exhibited on request.

8.101

- 1 **Useful marks** (with positions from No 3 Light-beacon):
Stranded wreck (boiler) (6¼ cables ENE), which is one of two wrecks lying close together at the SE edge of the coastal reef, on the N side of the entrance channel, and reported to be always easy to see.
- 2 No 6 Light-beacon (red and white chequered tower, 4 m in height) (¾ cables SSE), at the root of the pier, exhibited on request.
White mosque (186°, distant 5½ cables), which stands on the shore and is distinctive.

Berths

8.102

- 1 **Anchorage.** An anchorage, with good shelter, can be obtained in the channel described above, NW of the signal station flagstaff, 3 cables SW of Pointe de Vohémar, in a

depth of 20 m. Long vessels (see 8.95 for maximum length) should moor.

- 2 There is anchorage in a depth of 15 m with the signal station flagstaff bearing 145°, distant 1 cable. Vessels should anchor with 1½ to 2 shackles (40 to 50 m) of cable, followed by a stern mooring anchor between the pier and a mooring buoy, about ¾ cable NW. This berth is used by coasters working cargo and is difficult to take up during the out-going stream.

8.103

- 1 **Pier.** The pier at Vohémar is of concrete construction, 50 m in length, with a depth of 5.8 m alongside and can accommodate vessels between two dolphins. For maximum size see 8.95.

Port services

8.104

- 1 **Facility.** Hospital.
Supplies:
Piped fresh water is available adjacent to the pier.
Fresh provisions are readily available although vegetables are only in limited quantities.
Communications. Internal air service.

Small craft

8.105

- 1 **Boat channel** leads from the anchorage to the mouth of Mantialac River 2½ miles NW.
Anchorage can be obtained farther into the bay than the berth already described, depending upon draught.

VOHÉMAR TO CAP DU DIABLE

General information

Chart 3877 (see 1.22)

Route

8.106

- 1 From a position E of Vohémar (13°21'S 50°00'E) the coastal track leads NNW for about 28 miles to a position ENE of Cap du Diable (12°54'S, 49°52'E), passing seaward of islets and reefs which extend up to 2½ miles offshore in places. No dangers are charted farther offshore but little else is known of these waters.

Topography

8.107

- 1 In general the topography N of Vohémar is similar to that to the S, described at 8.88.
Between Vohémar and Cap Manambato, 10½ miles NNW, a mangrove-covered reef fringes the coast. Thence to Pointe Berry, 2 miles S of Cap du Diable, the coast consists of a sandy beach with small, whitish cliffs, covered with a sparse vegetation.
- 2 Manambato River, the largest river on this part of the coast, flows into an inlet on the N side of Cap Manambato but is not navigable, even by boat, its mouth being crossed by a bar.

Principal marks

8.108

- 1 **Landmarks:**
Cap Manambato (13°12'S, 49°55'E), a massive triangular rock which, on account of its dark colour, shows up well against the mountains inland, especially from E. The cape is a good landmark for Vohémar when S-bound.

- 2 Tsaramborona (Le Pouce) (12°57'S, 49°37'E) (not charted), a most distinctive mountain, rising in the form of an eagle's beak with a deep cut on the right side. It is most remarkable when bearing more than 270° and clear of high land in the background.

Major Light:

Nosy Ankoa Light (12°48'·4S, 49°50'·1E) (8.115).

Directions

(continued from 8.92)

8.109

- 1 From a position E of Pointe de Vohémar (13°21'S, 50°00'E), seaward of the coastal reefs on both sides of the entrance channel, the coastal route leads NNW to a position ENE of Cap du Diable. For the most part, the track may be navigated fairly close inshore, as directed at 8.45, but passing (with positions from Pointe de Vohémar):
- 2 ENE of Îlots Noirs (1½ miles N), lying near the edge of the coastal reef N of the entrance to Baie de Vohémar. The reef covers at HW spring tides and the sea always breaks over it, thence:
- ENE of Île Verte (3½ miles N), which is of a darkish colour and lies on the edge of the coastal reef, thence:
- 3 ENE of Cap Manambato (10½ miles NNW) (8.108), which is steep-to, thence:
- ENE of the mouth of Manambato River (10¾ miles NNW) (8.107), the outer line of muddy water from which lies some distance offshore and might easily be taken as an indication of danger, thence:
- 4 Well seaward of foul ground which extends 1¼ miles from Cap Tanjona (19 miles NNW), close off which there are some islets, thence:
- ENE of Pointe Berry (26 miles NNW), the N extremity of a reddish, level and moderately high peninsula. A drying reef extends about 5 cables E from the peninsula. Thence:
- 5 To a position ENE of Cape du Diable (28½ miles NNW), which is the termination of a range of hillocks standing on the peninsula.

8.110

- 1 **Useful marks:**
- Morne Noir (13°30'S, 50°00'E) (8.90).
- Pointe de Vohémar (13°21'S, 50°00'E) (8.94). From N the point will be seen between two high tablelands of which the S is the lower. In front of the high lands are other hills, either of table or saddle form, situated 1½ to 2 miles from the point.
- 2 No 5 Light-beacon (8.99), 2¼ miles W of Pointe de Vohémar, and other marks in the vicinity of Vohémar (8.99 to 8.101).
- Antsivaregna, a small white hill (not charted) close NW of the outlet of Manambato River (13°12'S, 49°55'E); a useful mark when approaching from N or NE but from S it is obscured by Cap Manambato.
- 3 Sommet d'Ambre (12°36'S, 49°09'E) (6.115).
- (Directions continue at 8.116)

Anchorage

Baie d'Andravina

8.111

- 1 **General information.** Baie d'Andravina indents the coast between Pointe Berry (12°56'·3S, 49°52'·2E) and Cap du

Diable, 2¼ miles N, and is exposed to winds between N and E. However, the S part is sheltered from SE winds.

- 2 **Directions.** The bearing, about 265°, of Tsaramborona (12°57'S, 49°37'E) (8.108) leads to the bay which should be entered between Pointe Berry and a reef fringing an above-water rock, 9 cables WNW.

Anchorage. Small vessels can obtain anchorage in a depth of 7 m on the bearing 053° of Pointe Berry, distant 5 cables.

CAP DU DIABLE TO BAIE DE LOKJA

General information

Charts 3877, 3876

Route

8.112

- 1 From a position ENE of Cap du Diable (12°54'S, 49°52'E) the coastal track leads N, then NW, for a distance of about 23 miles to a position, E of Nosy Ankomba (12°41'S, 49°39'E), in the approach to Baie de Lokja. The track passes seawards of numerous islands, reefs and other dangers lying up to 5½ miles from the coast.

Topography

8.113

- 1 The coast between Cap du Diable and Nosy Ankomba is generally low with several hillocks, a chain of which form the peninsula terminating in Cap du Diable (12° 54'S, 49° 52'E). Between Cap du Diable and Pointe Antséránambé the coast is slightly indented, forming Port Leven, and is low-lying and wooded. Offshore, the island of Nosy Manambidy (12°46'S, 49°47'E) is darkly coloured, low and partly wooded and is easily recognisable.
- 2 Îles Leven consists of several islets which lie on the detached coastal reef across the approach to the bay, extending from 1 to 8 miles N of Cap du Diable. These are sandbanks, surrounded by white sand and are hard to distinguish. The main islet of the group, Nosy Ankaos, can be identified by the hillock in the S part upon which stands a light-beacon (8.115).

Current

8.114

- 1 Near Îles Leven the generally N-going branch of the South Equatorial Current (1.167) is strong and deflected N to NE by the islands, leaving between it and the coast a space occupied by an eddy of considerable strength that sets S or SW, the E limit of which is uncertain.

Principal marks

8.115

- 1 **Landmarks:**
- Tsaramborona (12°57'S, 49°37'E) (8.108).
- Sommet d'Ambre (12°36'S, 49°09'E) (6.115).
- Mont Andrahona (12°28'·8S, 49°26'·6E) (8.128).
- Mont Carré (Ankarakatova) (12°25'S, 49°24'E) (8.128).
- 2 **Major light:**
- Nosy Ankaos Light (white eight-sided tower, black top, 20 m in height) (12°48'·4S, 49°50'·1E) exhibited on the island, which is partially wooded, from the summit of a hill in the SE part.

Directions*(continued from 8.110)***8.116**

- 1 From a position ENE of Cap du Diable (12°54'S, 49°52'E) the coastal route leads N until clear of the reef on which Îles Leven are situated (8.113), then NW to a position NE of Nosy Ankomba (12°41'S, 49°39'E), in the approaches to Baie de Lokja. Due to the current described at 8.114 it is advisable to give a wide berth to Îles Leven, passing (with positions from Nosy Ankao Light) (12°48'·4S, 49°50'·1E):
- 2 E of Nosy Vahala (4¼ miles SSE), the S island of Îles Leven, which has a sand bank extending 5 cables S from its shore, thence:
E of Nosy Manampaho (2¼ miles E), the E-most island of the group, on the N end of which there is a disused lighthouse, 7 m in height, thence:
- 3 NE of Îlot du Nord (2¼ miles N), the N-most islet of the group, which is white and more easily seen than the others in the group, thence:
NE of a coral reef bordering Nosy Manambidy (4¼ miles NW) (8.113), thence:
NE of a drying reef bordering Pointe Ambodilamoty (8¼ miles NW), thence:
- 4 To a position E of Nosy Ankomba (13 miles NW), off the N point of which there is a stranded wreck.

*(Directions continue at 8.129)***Anchorage****Port Leven****8.117**

- 1 **General information.** Port Leven indents the coast between Cap du Diable and Pointe Antsérnanambé (12°46'S, 49°45'E) and is exposed N but affords anchorage in its N part, between the coastal reef and the detached reef described at 8.113, which protects it from NE and E.
- 2 Approach and entry to the bay can be made from SE or N but the SE entrance, between Cap du Diable and Nosy Vahala, is encumbered by shoals and almost impracticable and should only be attempted in case of necessity and having been marked.

Tidal levels. At Port Leven the mean spring range is about 1·4 m; the mean neap range about 0·8 m. For further information see *Admiralty Tide Tables Volume 3*.

- 3 **Landmarks** for identifying the bay are:
Tsaramborona (12°57'S, 49°37'E) (8.108).
Mont Andrahona (12°28'·8S, 49°26'·6E) (8.128).
Mont Carré (Ankarakatova) (12°25'S, 49°24'E) (8.128).

8.118

- 1 **Directions.** When approaching the bay the effect of the current described at 8.114 must be guarded against. Entry should not be attempted until the offshore islands have been identified.
- 2 From seaward proceed to a position about 2½ miles N of Pointe de l'Observatoire (12°47'S, 49°50'E), on Nosy Ankao (8.115). Thence the bearing 201° of the E extremity of Îlot Moury, a wooded islet 2½ miles SW of Pointe de l'Observatoire, leads through the N part of the bay to the anchorage, passing between numerous dangers on both sides.

8.119

- 1 Alternatively, the bearing 204° of Îlot Guy (3¼ miles SW of Pointe de l'Observatoire), a barren black basalt islet surmounted by a grey beacon, seen between Îlot Moury and Pointe de l'Artemise, 5 cables NW, leads to the anchorage.

However Îlot Guy is not always easily seen, particularly in the afternoon.

8.120

- 1 **Anchorage** may be obtained W of Pointe de l'Observatoire.

A vessel 65 m in length drawing 4·9 m has anchored 5 cables NW of Pointe de Sable, 1¼ miles S of Pointe de l'Observatoire, on the bearing 150° of the W point of Nosy Safrana, 3¼ miles SSE of Pointe de l'Observatoire.

- 2 Landing is always possible on Nosy Ankao at Pointe de Sable, but only at half tide at Pointe de l'Observatoire.

Baie de Lokja**8.121**

- 1 **General information.** Baie de Lokja is an inlet between Pointe Ambodilamoty (12°44'·3S, 49°42'·7E) and the coast opposite Nosy Ankomba, 5¼ miles NW. The inlet is open N and affected by swell but affords anchorage off the village of Lokja, 4½ miles S of Nosy Ankomba.

The inlet is approached and entered from N.

BAIE DE LOKJA TO CAP D'AMBRE**General information**

Charts 1002, 1116, 3876 (see 1.22)

Route**8.122**

- 1 From a position E of Nosy Ankomba (12°41'S, 49°39'E), on the NW side of the entrance to Baie de Lokja, the coastal route leads NNW to a position ENE of Banc du Nécessaire, 19 miles NNW. The route then leads NW, across the approaches to Baie de Diego-Suarez, for a distance of 33 miles, to a position NE of Cap André (11°57'S, 49°17'E), passing seaward of reefs and banks which extend up to 3½ miles from the coast.
- 2 An inshore route (8.132) exists from Pointe d'Ambodivahibé (12°21'S, 49°31'E) to Nosy Angongo (12°15'S 49°24'E) (chart 1116) situated on the S side of the approach to Baie de Diégo-Suarez, a distance of about 9 miles. This crosses an extensive coastal bank on which there are a number of shoals, SE of the entrance, and is only suitable for small vessels.

Topography**8.123**

- 1 The coast between Nosy Ankomba (12°41'S, 49°39'E) and Baie d'Ampio (12°20'S, 49°25'E) is formed by hills which are generally high and fall abruptly to the sea. The vegetation is sparse and yellow during the South-east Trade Wind season and only green during the rainy season. There is scant vegetation in the valleys. The line of the coast is broken in numerous places but these are mainly water courses of little or no importance, the breaks serving only as points of reference. From Baie d'Ampio to Cap Miné, the S entrance point of Baie de Diégo-Suarez, a distance of about 5½ miles N, the coast is fringed with a chain of islands lying on the coastal reef.

8.124

- 1 On the N side of the approach to Baie de Diégo-Suarez, Cap Tanifotsy (12°13'S, 49°22'E) stands at the end of a peninsula formed by a range of high, lightly wooded hills which run N to Pointe Bemahia, 6½ miles N, reducing in

elevation as they approach the point. The island of Nosy Volana (8.158) lies on the coastal reef, 2 cables off the point. The coast, meanwhile, is composed of sandhills which gradually increase in elevation towards the point. The hills inland, which dominate the remainder of the coast have barren slopes but their summits are covered with grass. A few coves indent the coast but are too exposed to afford shelter. A the barrier reef extends NE from Cap Tanifotsy, curving NNW and terminating 1 mile S of Pointe Bemahia. The few islands lying on this reef are bare.

Depths

8.125

- 1 On the bank mentioned at 8.122 there is a least charted depth of 6·4 m (21 ft), 1¼ miles NNE of Pointe Leviqui, the E entrance point of Baie d'Ampio (12°20'S, 49°25'E).

Natural conditions

8.126

- 1 **Current.** See 8.8 for general remarks.
S of Baie de Diégo-Suarez, off Baie de Rigny (12°25'S, 49°33'E) (8.134), the current sets NW at rates from 1¼ to 2½ kn during the greater part of the year when the South-east Trade Wind is blowing, as described at 8.6. During the remainder of the year it has been found to set SSE at about ½ kn, at times.
- 2 N of Baie de Diégo-Suarez, the current sets mainly NNW along the coast at rates from 1 to 3 kn but, on occasions, particularly during the South-east Trade Wind season, it tends to set inshore. During the rainy season, when winds are variable with NE winds predominating, the rate is said to be greatly reduced. With NE winds of about force 5 a current setting SSE at a rate of about 1 kn has been reported at LW with a slack tidal stream.
- 3 **Tidal streams** along the coast, at spring tides, between Baie de Rigny and Baie d'Ambodivahibé, 7 miles NW, and thence to Baie de Diégo-Suarez are as follows:

	<i>Interval from HW</i>		
	(1) <i>Baie de Rigny</i>	<i>Position</i>	<i>Direction / Rate</i>
4	(2) <i>Dar es Salaam</i>		
5	(1) – 0600	Off Baie de Rigny	Sets N along coast
	(2) – 0635	Abreast Baie d'Ambodivahibé	Sets W into bay at 1½ kn.
6	(1) – 0500	Coast	Sets towards coast
	(2) – 0535	Off Baie d'Ambodivahibé	Sets into bay at 1¾ kn
7	(1) – 0300	Coast	Sets generally NW
	(2) – 0335	Entrance to Baie d'Ambodivahibé	Slack
8	(1) – HW	Coast	Very weak
	(2) – 0035	Baie d'Ambodivahibé	Sets out of bay at about ½ kn
9	(1) + 0100	Coast	Sets S
	(2) + 0025	Baie d'Ambodivahibé	Sets out of bay at about ½ kn
10	(1) + 0300	Coast generally	Very weak
	(2) + 0225	Coast from Baie de Rigny to Baie d'Ambodivahibé	Sets NE at ¼ kn
		Entrance to Baie d'Ambodivahibé	Slack

- 11 **Swell.** See 8.8.

8.127

- 1 **Flow.** The following table is the result of observation of the combined current and tidal streams made in February, 1907, at a position 1 mile SE of Cap d'Ambre:

	<i>Interval from local HW</i>	<i>Direction</i>	<i>Rate in Kn</i>
2	–0600	312°	2
	–0500	312°	2
	–0400	312°	2¼
	–0300	312°	2¾
	–0200	326°	2¾
	–0100	338°	1
3	At HW	000°	½
	+0100	162°	1
	+0200	202°	1½
	+0300	241°	1¼
	+0400	269°	1½
	+0500	309°	2¼

Principal marks

8.128

- 1 **Landmarks:**

- Tsaramborona (Le Pouce) (12°57'S, 49°37'E) (8.108). In clear weather this mountain makes a good landmark for Baie de Diégo-Suarez when inward bound from SE.
Sommet d'Ambre (12°36'S, 49°09'E) (6.115).
2 Mont Andrahona (Raynaud) (12°28'·8S, 49°26'·6E), 402 m high, which is easily identified, from E it has a remarkable flat summit.
Mont Carré (Ankarakatova) (12°25'S, 49°24'E) 423 m high. The remarkably flat summit is easily identified.
3 Mont Andrahona and Mont Carré are easily distinguished from Sommet d'Ambre which is often hidden in cloud.
Mont Ambohibiri (12°05'S, 49°18'E), the most remarkable of the hills mentioned at 8.124.

Major lights:

- Nosy Ankoa Light (12°48'·4S, 49°50'·1E) (8.115).
4 Cap Miné Light (white eight-sided tower and dwelling, black lantern, 14 m in height) (12°14'S, 49°22'E).
Cap d'Ambre (Tanjon'i Bobaomby) Light (white eight-sided tower, black top, 36 m in height) (11°57'S, 49°17'E), exhibited from Cap André (6.118), the E point of Cap d'Ambre.

Directions

(continued from 8.116)

Charts 3876 1002, 1116, (see 1.22)

Coastal route

8.129

- 1 **Caution.** During the passage a distance of at least 2 miles is best maintained off the coastal reefs mentioned at 8.113. From this distance the coastal features can be identified, even if the weather is not clear, but due regard must be had to the effects of currents described at 8.126 and 8.127.
- 2 From a position E of Nosy Ankomba (12°41'S, 49°39'E) the track leads initially NNW, passing (with positions from Nosy Ankomba):
ENE of Îles Lowry (5 miles NW), 26 m high, on the N side of Baie du Rodo which has not been examined, thence:

- 3 ENE of a depth of 11 m (36 ft) (7½ miles NNW), on a projection of the coastal bank off Baie d'Amboloboza, which is shallow, thence:
ENE of Pointe Bigeaut (16½ miles NNW), the E point of Nosy Tendo, situated on the N side of the entrance to Baie de Rigny (8.134) at the S end of Banc du Nécessaire, thence:
- 4 ENE of Banc du Nécessaire (18 miles NNW), on which there are several drying coral heads, patches and two islets, Nosy Ampandrafitra, 2 m high, on the SE part, and Nosy Via, 5 m high, on the NW part, thence:
NE of Banc du Nord-Est (12°16'S, 49°27'E), a coral head on the E side of the coastal bank, thence:
- 5 To a position E of the approach to Passe d'Orongéa (12°13'6S, 49°23'0E) (8.149) at the entrance to Baie de Diégo-Suarez.

*(Directions for Baie de Diégo-Suarez
continue at 8.156)*

8.130

- 1 From here the route now leads NW, passing:
NE of Île Diégo (12°11'S, 49°24'E), a bare island which, together with Île Suarez, close NW and also bare, and some smaller islets and rocks comprise Nosy Lava. The group lies on a barrier reef fronting the coast N of the entrance to Baie de Diégo-Suarez. The sea breaks heavily over the reef from May to November during the South-east Trade Wind season. Great care should be exercised in this vicinity on account of the current. Thence:
- 2 Across the approaches to Baie de Mahejby (12°10'S, 49°22'E), situated between the coast and the barrier reef described at 8.124, thence:
NE of Nosy Antaly Bé (12°07'9S, 49°22'6E), 38 m high, which, with the smaller islet of Nosy Antaliky at its S end, stands on the N part of the same barrier reef.
- 3 The track then leads to a position NE of Cap André (11°57'S, 49°17'E), with the charts being sufficient guide for navigation of the route. At night it is usually possible to identify Cap d'Ambre Light before Cap Miné Light is lost to sight.

8.131

- 1 **Clearing line.** The bearing 315° of Île Suarez (8.130) in line with Mont Ambohibiri (7½ miles NW) (chart 1002) (8.128) passes clear NE of the coastal bank.

Inshore route

8.132

- 1 From a position on the coastal route off Banc du Nécessaire (8.129) the inshore route for small vessels leads NW into the approach to Baie de Diégo-Suarez, passing:
Not less than 1½ miles NE of Pointe d'Ambodivahibé (12°21'S, 49°31'E), which lies at the NW end of Banc du Nécessaire, thence:
- 2 Across the approach to the entrance of Baie d'Ambodivahibé, 2 miles W of Banc d'Antala, the section of coastal bank lying N of Pointe d'Ambodivahibé, thence:
NE of Banc de la Manatangen (12°18'3S, 49°25'8E), and:
- 3 NE of Le Grand Banc, 1¼ miles NE of Banc de la Manatangen, which is the SE part of the coastal bank mentioned at 8.122, thence:
Clear of Banc du Nord-Est (8.131), about 1½ miles N of Grand Banc, thence:

NE of Banc d'Angongo (12°15'S, 49°25'E) with a depth of 11 m (36 ft) over it, thence:

- 4 Clear of Banc de l'Yvonne, (12°14'4S, 49°25'7E), a coral head with a depth of 13 m (42 ft) over it, situated on the N part of the coastal bank, thence:

To a position NE of Nosy Angongo (12°15'S, 49°24'E), a bare rocky island surrounded by breakers lying at the N end of the chain mentioned at 8.122 on the S side of the approach to Baie de Diégo-Suarez.

- 5 From this position a vessel may either make an approach to Passe d'Orongéa, to enter Baie de Diégo-Suarez (8.149), or resume the coastal passage at 8.130.

Useful marks

8.133

- 1 La Basse (12°27'S, 49°34'E) (not charted), a hill of white sand 75 m high.
Mont Barata (12°22'5S, 49°22'6E) (not charted).
Montagne des Français (12°23'5S, 49°20'0E), a large massif, to be seen rising abruptly from lower ground S of the entrance to Baie de Diégo-Suarez as the bay is approached.
- 2 Pain de Sucre (Suene) (12°18'S, 49°19'E) (Dundas Island on Chart 1002) a tall, round islet which, seen over the lower land mentioned above, is an excellent mark, at distances less than 15 miles, for the entrance to Baie de Diégo-Suarez.
- 3 Cap Miné Light (12°14'S, 49°22'E) (8.128) where there is a signal station from which storm signals are displayed (see 8.150 for further information).
Nosy Volana (8.158), 7 cables N of Cape Miné Light, which forms the N entrance point of Baie de Diégo-Suarez.
- 4 Cap Andranomody, 5¼ cables WNW of Cap Miné Light. A precipitous and moderately high cape, it is backed by rising land on which there is a radio station with numerous masts and a conspicuous white building.
- 5 Cap Andranomody Light (white eight-sided tower, red top, 10 m in height) (12°13'7S, 49°21'4E).
Nosy Langoro Light (12°13'S, 49°19'E) (8.157).
Mont Andramaimbo (12°13'S, 49°10'E) (8.154).
Wreck of fishing vessel (12°11'9S, 49°23'5E).
- 6 Two stranded wrecks in vicinity of Rochers du Sud (12°11'7S, 49°23'7E). The rocks are 5 m high.
Bobahala (Bobaala), 2¾ miles S of Cap André (11°57'S 49°17'E). From the NE this is the most distinctive of the hills nearest Cap d'Ambre.
Cap d'Ambre Light (11°57'S, 49°17'E) (8.128).
(Directions for the coastal route, W of Cap d'Ambre are given in the reverse direction at 6.199)

Anchorage

Chart 3876 (see 1.22)

Baie de Rigny

8.134

- 1 **General information.** Baie de Rigny (12°25'S, 49°33'E) is an irregular inlet leading to three other bays. Baie d'Antsabé to the SE and Baie d'Amboulbouzekély to the SW, both dry for the greater part while the third, Baie Français to the NW, forms a shallow basin and is reached by a narrow channel in which anchorage can be found by small vessels.

- 2 The inlet is approached and entered from E on the alignment of leading marks. The navigable channel is 2½ cables wide and the least charted depth is 10 m, off the entrance.

Tidal levels. At Baie de Rigny the mean spring range is about 2 m; the mean neap range about 0.7 m. For further information see the relevant *Admiralty Tide Tables*.

- 3 **Current.** See 8.126.

Landmarks for identifying the inlet are:

- La Basse (12°27'S, 49°34'E) (8.133).
 Mont Andrahona (Raynaud) (12°28'8S, 49°26'6E) (8.128).
 Mont Carré (Ankarakatova) (12°25'S, 49°24'E) (8.128).

8.135

- 1 **Directions.** Leading marks:

Beacon (white wood pyramid) situated at the S extremity of Île aux Huîtres (12°25'1S, 49°32'4E), an island 10 m high.

Mont Carré (Ankarakatova), 8 miles W of Île aux Huîtres.

- 2 The alignment (269°) of these marks leads into the inlet, passing (with positions from Île aux Huîtres):

N of Nosy Laliara (1¼ miles ESE), a round coral islet, about 3 m high, which is situated on the edge of the coastal reef and assists in identifying the entrance, thence:

- 3 N of Pointe Sanson (7 cables ESE), the S entrance point of the inlet, and:

S of Nosy Tendro, on the N side of the entrance, favouring this side as the island is nearly steep-to.

8.136

- 1 Within the entrance, when Nosy Ambatomkéna, 3.9 m high, 6 cables SW of Pointe Sanson, bears about 210°, the track leads WSW towards the entrance to Baie Français (8.134), passing:

NNW of Nosy Ambatomkéna, thence:

NNW of reefs and shoals which encumber the S side of the inlet, thence:

- 2 Half a cable SSE of Pointe Mancel, 1½ miles WSW of Pointe Sanson, thence:

Round Pointe Mancel, which is steep-to, at a distance of ½ cable.

From off Pointe Mancel the track then leads NW between that point and Pointe Pintade, 5 cables WSW, into the NW arm of the inlet.

8.137

- 1 **Anchorage** can be obtained in the middle of the narrows leading to Baie Français, about 4 cables N of Pointe Pintade, in depths from 12 to 15 m, mud.

Chart 1116

Baie d'Ambodivahibé

8.138

- 1 **General information.** Baie d'Ambodivahibé is a deep inlet situated on the SE side of Pointe Leviqui (12°20'S, 49°26'E), much frequented by dhows, which beach. The village of Ambodivahibé stands at the head of the inlet.

Vessels can anchor in the inlet but there is no good berth and a suitable temporary berth is difficult to find as there are depths as much as 48 m (26 fm) within 1 cable of the reef fringing its shores.

8.139

- 1 **Directions.** Approaching from the E the bearing 280° of Pain de Sucre (12°18'S, 49°19'E) (8.133) in line with the S fall of Massif de l'Ambongoabo (12°16'S, 49°10'E) (6.187), about 10 miles W, clears Banc d'Antala (8.132), passing 5 cables N.

From off the entrance, the bearing 204° of Mont Antsahapano, (not charted) (¾ miles SSW of Ambodivahibé village) which is a pointed hill 187 m high, seen between Mont Andrahona (8.128) and Mont Carré (8.128) leads through the inlet.

8.140

- 1 **Anchorage** in a suitable position should be fixed and marked by a buoy in advance.

A small vessel has previously anchored temporarily in a depth of 50 m (27 fm) on the entry leading line with Ambodivahibé village bearing 167°.

Small craft

Baie de Mahajeby

8.141

- 1 Baie de Mahajeby (12°10'S, 49°22'E), situated between the coast and the barrier reef described at 8.124, can be entered from E by boat through a break in the reef, passing:

N of Nosy Toréki (12°09'6S, 49°22'7E) at the extremity of a reef extending N from Nosy Suarez (8.130), and:

- 2 S of Pointe Tortue, 6 cables N of Nosy Toréky, the SE extremity of Nosy Antaliky.

See 8.126 regarding sea conditions during the South-east Trade Wind.

Other names

Charts 1002, 1116

8.142

- 1 Antaly, Baie d' (12°07'S, 49°22'E).
 Dune, Baie de la (12°03'S, 49°20'E).
 Grappin, Le (12°03'S, 49°21'E), a rock.
 Long, Îlot (12°00'S, 49°19'E).
 Maxime, Baie (12°00'S, 49°19'E).

BAIE DE DIÉGO-SUAREZ, INCLUDING PORT DE LA NIÈVRE

GENERAL INFORMATION

Chart 1116

Scope of the section

8.143

- 1 This section covers the waters within Baie de Diégo Suarez and includes a description of Port de la Nièvre. It is arranged as follows:

- Baie de Diégo-Suarez (8.149).
 Port de la Nièvre (8.170).

Description

8.144

- 1 Baie de Diégo-Suarez is an extensive, irregular bay entered from E through Passe d'Orongéa (8.157) which lies between Cap Andranomody (12°13'7S, 49°21'4E) (8.133) and Cap Tanifotsy, 1 mile NE.

- 2 The shores of the bay are indented, on the S side by Baie des Français and Port de la Nièvre and, on the N, by Baie du Tonnerre and Baie des Cailloux Blancs. Anchorage for ocean-going vessels can be obtained in these bays, sheltered

according to season. In Port de la Nièvre, (8.170), there is a commercial port and a naval base.

Topography 8.145

- 1 The land S of the entrance to the bay is described at 8.123 while the peninsula which forms the N side of the entrance is described at 8.124.

The shores of the bay are generally rather rugged and backed by moderately high land with elevations up to about 400 m, except to the SW of Port de la Nièvre where the land is low-lying, as described later in the text.

Depths 8.146

- 1 In the fairway of Passe d'Orongéa, which is 3½ cables wide, there is a least charted depth of 14 m (46 ft) (Chart 1064 plan of Passe d'Orongéa). In the bay, charted depths are generally greater, except in Port de la Nièvre. See 8.177 for further details.

Pilotage 8.147

- 1 **Pilotage district.** The whole of the bay is included in the Pilotage district, with the exception of the Port Militaire (8.188) in Port de la Nièvre.

Pilotage is compulsory for vessels of more than 150 gt W of the meridian of Nosy Langoro, 2½ miles W of Cap Andranomody (12°13'7S, 49°21'4E), and optional E of that meridian. Although not part of the pilotage district pilotage is also compulsory in Port Militaire.

- 2 **Pilots** are available at any time but requests for services of a pilot required in the morning must reach the Port Authority (8.176) at Port de la Nièvre before 1630 local time the previous day. Pilots required in the afternoon must be requested by the morning of the same day.

- 3 **Pilot boarding stations.** If optional pilotage is required the pilot boards off Passe d'Orongéa, otherwise at the seaward limit of the compulsory area. If the pilot is unable to board off the entrance, a frequent occurrence from April to November during the South-east Trade Wind season, he will lead a vessel into the harbour in the pilot boat. If the pilot boat cannot leave harbour it will wait on the entrance leading line (8.157), the pilot then boarding in sheltered water.

- 4 **Pilot boat** is equipped with RT. Communication should be established about 5 miles from Cap Andranomody (8.133).

Piracy 8.148

- 1 Incidents of piracy have been reported in Baie de Diégo-Suarez. For possible preventative measures see 1.58.

BAIE DE DIÉGO-SUAREZ

General information

Charts 1116, 1064 plan of Passe d'Orongéa

Route 8.149

- 1 From a position to the E of the entrance to Baie de Diégo-Suarez the route leads through Passe d'Orongéa to a position about 1 mile E of Nosy Langoro (12°13'S, 49°19'E). The track then leads SW, for about 3½ miles, to Port de la Nièvre (12°16'S, 49°17'E).

Signal station

8.150

- 1 There is a signal station at Cap Miné (12°14'S, 49°22'E) (8.128).

Storm signals. Signals indicating the locality threatened by a cyclone and international storm signals are shown from a flagstaff close W of the light see 1.48 for details of cyclone warning signals.

Natural conditions

8.151

- 1 **Current.** See 8.126.

Tidal streams. The following have been observed in the vicinity of the entrance to Baie de Diégo-Suarez at spring tides:

	<i>Interval from HW</i>	<i>Position</i>	<i>Direction / Rate</i>
2	(1) <i>Antsirana</i> (2) <i>Dar es Salaam</i>		
3	(1) -0600	S of entrance	Sets towards entrance
	(2) -0645	N of entrance	Sets generally N
4	(1) -0500 (2) -0545	S of entrance	Sets slightly towards S
5	(1) -0300 (2) -0345	Entrance	Sets directly into entrance at 2½ kn
6	(1) At HW (2) -0045	S and N of entrance At Entrance	Stream very weak Sets into entrance at ¼ kn
7	(1) +0100 (2) +0015	S of entrance N of entrance Entrance	Sets SE Sets S along coast Sets out of entrance at ¼ kn
8	(1) +0300 (2) +0215	Entrance Off the coast	Sets ESE at 1½ kn Slightly deflected S and N

8.152

- 1 In Passe d'Orongéa the stream attains rates from 1 to 2½ kn.

Within the entrance the in-going stream lasts from +0545 HW at Antsirana (+0500 HW at Dar es Salaam) to +0030 HW at Antsirana (-0015 at Dar es Salaam).

8.153

- 1 **Sea and swell.** During the South-east Trade Wind season (see below) the swell from SE is heavy. At the same time the sea is often very rough in Passe d'Orongéa, especially during the out-going tidal stream. Within Passe d'Orongéa the sea is smooth.

- 2 **Local weather** is usually clear from May to about October, during the South-east Trade Wind season. From about November to April, during the rainy season, squalls can obscure the land.

Principal marks

8.154

- 1 **Landmarks:**

Montagne des Français (12°22'5S, 49°20'0E) (8.133).
Pain de Sucre (Suene) (12°18'S, 49°19'E) (8.133).
Pointe du Corail (12°16'S, 49°18'E), easily recognised by a large hospital (yellow with a red roof).
Residency (large grey house, flat roof), 3 cables WSW of Pointe du Corail, on the coast.
2 Port de la Nièvre Light (yellow tower on house, black cupola, 12 m high) (12°16'0S, 49°17'3E).

Promontory (8.172) of which the SE extremity is Cap Diégo, 1 mile WNW of Pointe du Corail. Even on a dark night the great mass of this promontory can be seen throughout the approach to Port de la Nièvre from the vicinity of Nosy Langoro.

- 3 Mont Andramaimbo (12°13'S, 49°11'E) (6.163), which is a good landmark for making the entrance to Baie de Diégo-Suarez. It can be seen from a great distance E from which direction it has the shape of a bishop's mitre.

8.155

1 Major light:

Cap Miné Light (12°14'S, 49°22'E) (8.128).

Directions

(continued from 8.129)

Approach

8.156

- 1 The approaches to Baie de Diégo-Suarez are not difficult to navigate, by day or night. At night, Cap Miné Light (8.128), Nosy Langoro Light (8.157) and Cap d'Ambre Light (8.128) are sufficient guides for approaching the bay, but it is prudent to keep a little farther offshore than by day (see 8.131). In low visibility it is essential to identify the various marks, either visually or by radar, before standing in towards the coast.
- 2 Approaching from N, Nosy Lava (12°11'S, 49°23'E) (8.130) should be identified and no attempt should be made to close Passe d'Orongéa until Nosy Volana (12°13'S, 49°22'E) (8.158) is seen, either visually or by radar, with Cap Andranomody, 8 cables SW (8.133), open S of it. Visually the cape appears reddish when seen above and behind the islet. As the entrance to the bay is neared, Cap Andranomody is more easily identified than Cap Miné Light with Mont Andramaimbo in the background.
- 3 At all times, care must be taken to allow for the current (8.151).

Entry

8.157

- 1 **Leading mark.** From a position in the E approach to Passe d'Orongéa, by day, the bearing 275° of Nosy Langoro Light (white building, black top, 8 m in height) (12°13'3S, 49°19'0E) exhibited on Nosy Langoro which is 9 m high and flat, seen midway between Mont Andramaimbo (12°13'S, 49°11'E) and Mont Ankaramisampana, 2 miles E, (6.119), a distinctive hill on the same ridge, leads nearly midway through the fairway of Passe d'Orongéa into Baie de Diégo-Suarez.
- 2 **Light sector.** At night, the white sector (272°-275°) of Nosy Langoro Light leads through the fairway of the entrance to the bay.

8.158

- 1 Both by day and at night the track leads W, passing (with positions from Cap Andranomody (12°13'8N, 49°21'4E)):
- 2 S of a bank, with depths less than 18.3 m (60 ft) over it, extending from Nosy Volana (8 cables NE) which is wedge-shaped and slopes S with a ruined chimney, visible from about 2 miles, at the NW end, near the summit of the islet, and a stranded wreck on the SW side, thence:
- 3 N of the S shore of Passe d'Orongéa which consists of cliffs and can, if necessary, be approached fairly closely, thence:

N of Cap Andranomody (8.133) that extends to Mamelons d'Ankorika (1½ miles S) some nearby hillocks, thence:

- 4 N of a shoal (1 cable N), with a depth of 0.6 m (2 ft) over it, in which vicinity it is advisable to keep slightly N of the leading line. At night, keep in the green sector (265°-272°) of Nosy Langoro Light (2¼ miles W) and do not, on any account, enter the red sector (275°-285°) which covers this danger. Thence:
- 5 N of the largest of several above-water rocks lying close off Cap Andranomody, from which Cap Andranomody Light (8.133) is exhibited, thence: Over a shoal (existence doubtful) (7 cables WNW), with a depth of 14 m (46 ft) over it, thence: Over a shoal with a least charted depth of 15.8 m (52 ft) (8½ cables WNW), thence:
- 6 To a position about 1 mile E of Nosy Langoro, and close E of a shoal with a least charted depth of 12.8 m (42 ft). (Directions for deep-draught vessels continue at 8.160)

Nosy Langoro to Port de la Nièvre

8.159

1 Leading marks and light sector:

Front beacon (masonry pyramid, white with black base) (12°12'3S, 49°21'3E).
Rear beacon (masonry pyramid, black with white base) (½ cable NE of front beacon).

- 2 From a position about 1 mile E of Nosy Langoro and about 1¼ miles WNW of Cap Andranomody, the alignment (050¼°) astern, of these beacons leads to Port Nièvre. At night, keep in the white sector (220°-227°) of Port de la Nièvre (Antsirana) Light (8.154) exhibited from the Harbour Master's office building, passing (with positions from Cap Andranomody (12°13'7S, 49°21'4E)):
- 3 SE of a shoal (1½ miles WNW), with a least depth of 12.8 m (42 ft) over it, thence:
NW of Banc d'Orongéa (1½ miles W) with a least depth of 5.9 m (19 ft), at night keeping in the NW part of the light sector, as the SE part passes close to the bank, thence:
- 4 Over a shoal with a least charted depth of 11.9 m (39 ft) (1½ miles E), thence:
SE of two rocky shoals (2¼ miles W), with a depths of 2.7 m (9 ft) and 4.5 m (15 ft) over them, thence: Over a shoal (3 miles WSW), with a depth of 11.9 m (39 ft) over it, thence:
- 5 Over a shoal (3¼ miles WSW), with a depth of 11 m (36 ft) over it, thence:
Close NW of shoal (3½ miles WSW), with a depth of 12.8 m (42 ft) over it.
- 6 The last three shoals lie on the NW edge of the white sector of Port de la Nièvre (Antsirana) Light. When clear of these shoals, the track leads SW into Port de la Nièvre passing:
SE of a wreck (4¼ miles WSW), with a depth of 9.1 m (30 ft).

8.160

(continued from 8.158)

- 1 **Deep-draught vessels.** From a position 6 cables E of Nosy Langoro Light (12°13'3S, 49°19'0E), and on the boundary (220°) of the green and white sectors of Port de la Nièvre Light, the line of bearing 220° of the light initially leads towards the harbour avoiding the shoals in the approach, passing (with positions from Cap Andranomody (12°13'7S, 49°21'4E)):

- 2 Between the 11.9 m (39 ft) shoal off the W edge of Banc d'Orongéa (8.159) and the two rocky shoals (8.159) S of Nosy Langoro, thence:
To a position about 7½ cables S of Nosy Langoro Light, thence:

- 3 The track leads WSW towards Pointe Andrahompotsy (4¼ miles WSW) (8.161) until where Nosy Langoro Light, bearing 035° in the white sector (033°-038°) astern, leads to the harbour entrance. Note the wreck (4¼ miles WSW) (8.159) lies in this white sector.

- 4 A deep water route clear of shoals may be found by passing N of Nosy Langoro and thence between Nosy Langoro and Cap Vatomaity, 1 mile NW (8.161), and thence S to the 035° bearing (astern) of Nosy Langoro Light (see above).

8.161

- 1 **Useful marks:**

Pointe des Sables, 1¾ miles SSW of Cap Andranomody. The point is low, sandy and bordered by a thick screen of trees. It is dominated by Mamelons d'Ankorika (8.158).

Pointe Andrahompotsy (12°14'4S, 49°17'0E), on which there is an observation platform.

Cap Vatomaity, 2 miles NNE of Pointe Andrahompotsy, a precipitous dark barren hill which slopes gradually downward to the NW.

(Directions continue for Port de la Nièvre at 8.193)

Anchorage and harbours

Orongéa

8.162

- 1 **Anchorage**, which is well sheltered, can be obtained in a depth of 24 m (13 fm) off the village of Orongéa (12°14'S, 49°21'E) which stands on the shore of a shallow cove, immediately within Passe d'Orongéa, between Cap Andranomody and Pointe de l'Aigle, 4½ cables SW. The berth lies at the intersection of the bearings:

285° of Nosy Langoro in line with Bobaombyvatobe (12°11'8S, 49°13'0E), about 6 miles WNW, and:
202° of the W extremity of trees on Pointe des Sables (8.161), in line with the summit of Pain de Sucre (Suene), 3 miles SSW (8.133).

- 2 **Landing** can be effected at a stone pier, close S of Cap Andranomody, although it may be affected by breakers during the South-east Trade Wind season.

Between the pier and Pointe de l'Aigle there is a dangerous below-water rock.

Nearer Orongéa village there is a small pier, close S of Pointe de l'Aigle, usable by boat.

Baie des Français

8.163

- 1 **General information.** Baie des Français indents the S side of Baie de Diégo-Suarez, between Pointe des Sables (12°15'S, 49°20'E) (8.161) and Pointe du Corail, 2½ miles WSW (8.154). Its shores are fringed with coral reefs and bordered in many places by a thick strip of mangroves. The W shore of the bay S of Pointe du Polygone, 1½ miles SE of Pointe du Corail, is rocky and steep, rising S to the mouth of Betaitra River which flows along the W slope of Montagne des Français (8.133) through mangroves into the bay.

- 2 The bay, which is approached and entered from N, affords excellent anchorage, well sheltered particularly from the South-east Trade Wind.

Landmark:

Conspicuous building on a point, 39 m (128 ft) high, 8 cables ESE of Pointe du Corail, with a radio mast close E.

8.164

- 1 **Directions.** From a position on the leading line (8.159) for Port de la Nièvre, about 1¾ miles W of Pointe de l'Aigle the bearing 180° of Pain de Sucre (Suene) (8.133) leads safely into the bay, passing (with positions from Pointe de l'Aigle (12°14'0S, 49°21'1E):

- 2 W of a sandbank with depths less than 1.8 m (6 ft) over it (1¾ miles SW), which extends 8 cables WSW from Pointe des Sables; a buoy (white conical) marks the W edge of the bank, thence:
E of shoal patch (2¾ miles WSW)) with 14.6 m (48 ft) over it, thence:

E of Pointe du Polygone (3¾ miles SSW), thence:

- 3 To a position clear of a stranded wreck, the position of which is approximate, 4 cables SSE of Pointe du Polygone.

8.165

- 1 **Prohibited anchorage** exists in the N part of the bay, within the pecked area shown on the chart.

Anchorage can be taken up as convenient, clear of the prohibited area, in depths more than 9.1 m (30 ft), mud, very good holding ground.

- 2 **Small craft** can use:

A pier on the N side of Pointe des Sables (8.161), in poor condition (1988), near the village of Ramena (Camp d'Ankorika) which stands on a hill.

A jetty (not charted) in the SW corner of Anse Melville, close S of Pointe du Corail (Chart 1064, plan of Port de la Nièvre).

Baie du Tonnerre

8.166

- 1 **General information.** Baie du Tonnerre indents the N side of Baie de Diégo-Suarez, between Cap Tanifotsy (12°13'S, 49°22'E) and Cap Vatomaity, 3¾ miles W. The E side of the bay is a steep-to, cliffy peninsula. The W side is formed by Presqu'île Anoritabé, which is a little lower and fronted by an extensive drying coral reef on which lies a flat black rock, 1¾ miles N of Cap Vatomaity.

- 2 **Anchorage** in Baie du Tonnerre is not recommended, particularly during the South-east Trade Wind. The whole bay is open to this wind and the holding ground of coral under a thin layer of mud is not good.

Baie des Cailloux Blancs

8.167

- 1 **General information.** Baie des Cailloux Blancs forms the NW part of Baie de Diégo-Suarez. On the W side of the bay there is a range of partially wooded hills which include Mont Andramaimbo (8.154) and Mont Ankaramisampana (6.119), the two highest, and Bobaombyvatobe (12°11'8S, 49°13'0E)

- 2 The bay, which is approached and entered from E affords anchorage in all of a number of coves which indent its shores

Landmark:

Sommet Trapèze (12°13'5S, 49°12'4E), prominent at the foot of the range just described.

8.168

- 1 **Directions.** From the vicinity of Nosy Langoro (12°13'S, 49°19'E) (8.157), clear of the shoals described at 8.159, the track through Baie des Cailloux Blancs leads generally NW, passing (with positions from Pointe Andrahompotsy (12°14'4S, 49°17'0E)):

- 2 SW of Cap Vatomainty (2 miles NNE) (8.161), thence:
Clear of a shoal (7 cables NNE) with a least depth of
9.4 m (31 ft) over it, lying 6½ cables NNE of Pointe
Andrahompotsy (8.161), thence:

3 Either:

N of Île du Sepulcre (1¾ miles WNW), an islet
perforated with caverns previously used as tombs,
lying off the W entrance point of Anse du Bivouac
(8.169), and:

S of rocky heads (nearly 2½ miles NW) with a buoy
(safe water mark) 2 cables E, and with a least depth
of 4 m (13 ft) over them, if proceeding into Anse
Andohazampo,

4 Or:

Across the approach to Anse Farafakabé (2½ miles N)
(8.169), and:

NE of the rocky heads mentioned above, if proceeding
farther into Baie des Cailloux Blancs, thence:

SW of Nosy Koba (¾ miles NNW), an islet lying off
an unnamed cove (8.169) and distinguished by three
isolated palm trees near the N end, thence:

5 Either:

N of Presqu'île Ankorokorobe (¾ miles NW), and:

S of Nosy Fano (12°10'·5S, 49°14'·3E), a bush
covered islet, if proceeding into Anse des Rafales
(8.169),

6 Or:

E of a 10.1 m (33 ft) patch, 4½ cables E of Nosy
Fano, if proceeding into Baie Tsiala at the head of
Baie des Cailloux Blancs.

7 **Useful marks:**

Distinctive boulder (12°10'·4S, 49°13'·1E) lying on
hillside.

Stranded wreck, E side of head of Anse des Rafales.

8.169

1 **Anchorage:**

Anse du Bivouac. Although anchorage can be
obtained here a heavy surf may be experienced
when the South-east Trade Wind is blowing
strongly.

Anse Farafakabé. Anchorage is excellent in depths
from 12 to 20 m (39 ft to 11 fm), mud.

2 **Unnamed cove,** E of Nosy Koba. A similar anchorage
can be obtained here but it is best entered from S as
shoal water extends 1½ cables N from a coral reef,
covered in sand, which dries, fringing the N and E
sides of the island.

3 **Anse des Rafales.** A good anchorage, in depths from
12 to 13 m (39 to 43 ft), mud, is to be found at the
intersection of the bearing 030° of the E side of
Nosy Fano and the bearing 099° of the N extremity
of Presqu'île Ankorokorobe in line with the S
extremity of Nosy Koba, the position being
indicated on the chart.

PORT DE LA NIÈVRE

General information

Charts 1064 plan of Port de la Nièvre, 1116

Position

8.170

- 1 Port de la Nièvre (entrance 12°15'·6S, 49°17'·4E) is
situated in the middle of the S side of Baie de Diégo-Suarez,
the waterway lying NE to SW between the ends of an
unnamed peninsula on the S side of the bay and Péninsule
d'Andrakaka on the W side.

Function

8.171

- 1 Port de la Nièvre comprises a commercial port and port
of entry formed by Port de Commerce, in its NE part, and a
naval base, formed by Port Militaire, in its SW part.

The city of Antsirana, with an estimated population
54 418 in 1990, is situated on the SE side of the harbour
and is the provincial capital.

Topography

8.172

- 1 The NW side of the entrance is a bare promontory with
overhanging cliffs, of which Cap Diégo (12°15'·4S,
49°17'·0E) is the SE extremity. The promontory, the E
headland of Péninsule d'Andrakaka, has three summits, the
W and highest of which is 66 m high and surmounted by a
mast.

- 2 The NW side of the harbour is formed by steep hills on
Péninsule d'Andrakaka while, on the SE side, there are hills
which slope more gently to the coast and on which stands
Antsirana.

Cul-de-sac Gallois, a shallow bay at the SW end of the
waterway, is bordered by mangroves through which several
rivers enter the bay.

Port limits

8.173

- 1 The limits of Port de Commerce and Port Militaire are
indicated on the plan. In addition, the waterway SW of these
limits, including Cul-de-Sac Gallois, are considered part of
Port de Commerce.

Approach and entry

8.174

- 1 The port is approached from NE, through Baie de
Diégo-Suarez, as described at 8.159 and 8.160 and entered
between Cap Diégo (8.172) and Pointe du Corail (8.154),
1 mile ESE.

Traffic

8.175

- 1 In 2003, 182 vessels with a total dwt of 738 578 used the
port.

Port Authority

8.176

- 1 The Port Authority is Service Provincial de la Marine
Marchande, represented by a Harbour Master.

Address: PO Box 109, Antsiranana.

Office: N end of Quai du Commerce.

Limiting conditions

Controlling depths

8.177

- 1 For berthing alongside, the least charted depth is 8.2 m
(27 ft) off Quai du Commerce (12°16'·0S, 49°17'·3E).

In the roadstead there are depths up to 26 m (14 fm).

Deepest and longest berth

8.178

- 1 Quai du Commerce (8.200).

Tidal levels

8.179

- 1 At Port de la Nièvre (Antsirana) the mean spring range is
about 1.8 m; the mean neap range about 0.7 m.

For further information see *Admiralty Tide Tables
Volume 3*.

Density of water**8.180**

- 1 Water density at this port is 1.025 gm/cm³.

Maximum size of vessels handled**8.181**

- 1 Maximum draught for berthing alongside is 8.5 m.

Arrival information**Port operations****8.182**

- 1 Vessels can berth and sail at any time. However, on account of sea conditions described at 8.153, it is advisable for low-powered vessels to proceed out of harbour during the in-going tidal stream.

See 8.200 regarding berthing alongside and 8.202 for entry to the dry-dock.

Port radio**8.183**

- 1 There is no port radio station at Antsirana. Tugs equipped with RT are available, however.

Signal station. There is a signal station situated at the N end of Quai du Commerce.

Notice of ETA**8.184**

- 1 A vessel's ETA should be reported to the Harbour Authority at least 24 hours in advance, giving draught on arrival and length.

Outer anchorage**8.185**

- 1 Vessels can anchor temporarily in depths from 20 to 24 m (11 to 13 fm) off the entrance to Port de la Nièvre, E and N of Cap Diégo, 7 cables from the coast.

Pilots**8.186**

- 1 **Pilotage.** See 8.147.

For dry-dock. A vessel requiring to enter the dry-dock is boarded by a naval pilot at the seaward limit of Port Militaire.

Tugs**8.187**

- 1 **Tugs** are available for manoeuvring and berthing, at 24 hours notice, and for transporting lighters if required to work cargo in the anchorage.

When manoeuvring, one tug is obligatory for vessels of more than 3000 gt, while vessels in excess of 5000 gt are required to use two.

Harbour

Chart 1064 plan of Port de la Nièvre

General layout**8.188**

- 1 The harbour comprises:
Commercial berths and port facilities in Port de Commerce, between Port de la Nièvre (Antsirana) Light (12°16'0S, 49°17'3E) (8.154) and Darse des Torpilleurs, 3½ cables SSW.
- 2 Naval berths and facilities in Port Militaire, which includes Darse des Torpilleurs and Baie des Amis, 7½ cables SSW of Port de la Nièvre (Antsirana) Light. Facilities include a dry-dock on the NE side and a large workshop at the head of Baie des Amis.

Anchorage and buoy berths in Port de Commerce and Port Militaire off the areas previously described.

Storm signals**8.189**

- 1 Signals indicating the locality threatened by a cyclone and international storm signals are shown at the signal station, see 1.48 for details of cyclone warning signals.

See 8.198 for details of anchorages affording shelter during cyclones.

Natural conditions**8.190**

- 1 **Tidal streams** in Port de la Nièvre attain a rate of 1 kn.

Off the N end of Quai du Commerce the in-going stream sets W and the out-going stream sets E. In the rainy season (8.6) they can attain a rate of 3 kn. These streams meet an eddy that sets along the quay, N with the in-going stream and S with the out-going stream. After heavy rain there is an outflow that can persist throughout the whole tidal cycle.

8.191

- 1 **Local weather.** Winds in the harbour blow strongly during the day in the South-east Trade Wind season.

In the past a cyclone has caused damage to some harbour installations and craft.

Principal marks**8.192**

- 1 **Landmarks** (with positions from Port de la Nièvre (Antsirana) Light (8.154)):

Lookout station (Signal Tower) (5¼ cables SSW).

Radio masts (6 cables S).

Radio masts (red lights) (1½ miles SSW).

Directions

(continued from 8.161)

Port de la Nièvre**8.193**

- 1 From the entrance to Port de la Nièvre, between Cap Diégo (12°14'4S, 49°17'0E) and Pointe du Corail, 1 mile ESE, the track leads SW through the harbour, in depths according to draught, to the vicinity of Pointe des Mapous (12°17'5S, 49°15'2E). Care must be taken to avoid the charted mooring buoys (8.199), although not all these exist, and three stranded wrecks, the masts of which were visible in 1991, lying in the fairway between about 5 cables and 1 mile within the entrance, their positions being marked on the plan. The track leads SW, passing (with positions from Port de la Nièvre (Antsirana) Light (12°16'0S, 49°17'3E) (8.154)):

- 2 Clear of a shoal (4½ cables WNW) with a least depth of 7.3 m (24 ft) over it, situated in the middle of the fairway, thence:
NW of the entrance to Darse des Torpilleurs (4½ cables SW) (8.201), thence:
- 3 NW of Baie des Amis (8¼ cables SW), noting that the buoys charted off the W entrance point are no longer in place, thence (with positions from Pointe des Mapous (12°17'5S, 49°15'2)):
NW of a shoal (7 cables E), with a least depth of 4.6 m (15 ft) over it, and:
- 4 SE of a shoal (5½ cables NE), with a least depth of 4.9 m (16 ft) over it extending from the coastal bank off Andrakaka Peninsula, thence:
NNW of a shoal (3 cables SE) with a least depth of 22.7 m (15 ft) over it, thence:
SSE of a least depth of 3.6 m (12 ft) on the coastal bank, close S of Pointe des Mapous, and:

- 5 N of a shoal (2½ cables S), with a least depth of 4·8 m (16 ft) over it, thence:
 NNE of the coastal bank (4 cables SSW), surrounding Île des Maques (12°18'·0S, 49°12'·3E), with a least depth of 0·3 m (1 ft) over it, and:
 SSW of the coastal bank off Pointe des Mapous with a least depth of 4·5 m (15 ft) over it, thence:
- 6 To a position, 4 cables SW of Pointe des Mapous, in an area of deep water with a maximum charted depth of 23·7 m (13 fm).

Useful marks:

- Cathedral (tower) (5 cables SSE of Port de la Nièvre (Antsirana) Light.
 Oil tanks (about 1 mile S of Port de la Nièvre (Antsirana) Light.
 Stranded wrecks in the vicinity of position 12°16'·4S, 49°16'·0E.
- 7 Stranded wreck (small drying hull on beach; two very large cylinders off beach) (12°16'·7S, 49°16'·9E) in Baie des Amis.
 See also 8.200 regarding a wreck off Quai du Commerce.

Cul-de-sac Gallois

8.194

- 1 From the deep water area described above the track leads WNW between the coastal banks on both sides, passing (with positions from Pointe des Mapous (12°17'·5S, 49°15'·2E):
 Clear of a stranded wreck (7 cables W), thence:
 Clear of a shoal (7¼ cable W), with a depth of 5·5 m (18 ft) over it.
- 2 To the W, beyond this shoal, the bay opens out, forming a series of coves bordered by mangroves, while the depth reduces rapidly to 2 m (6½ ft) or less with a bottom of mud and coral. Cul-de-sac Gallois is included in the prohibited anchorage area of the port (8.196).

Entry to Darse Torpilleurs

8.195

- 1 **Leading Lights:**
 Front (green pylon, 5 m in height) (12°16'·5S, 49°17'·1E).
 Rear (green metal framework tower, 6 m in height) (80 m SE of the front light). Both are exhibited occasionally.
- 2 **Directions.** The alignment (124°) (charted as 124° 50') of these lights leads through the N entrance between breakwaters, the outer parts of which have subsided and cover at HW.
 In addition:
 A light (white metal framework tower, red bands) marks each side of the entrance.
- 3 The charted beacons marking the S entrance (about 1 cable S of the N entrance) no longer exist.

Basins and berths

Prohibited anchorage

8.196

- 1 As indicated on the plan, anchorage is prohibited in the port SW of a line drawn from a position on the W entrance point of Baie des Amis, bearing 222° distant 9 cables from Port de la Nièvre (Antsirana) Light, to a position on

Andrakaka Peninsula bearing 263° distant 1 mile from the same light. This includes Cul-de-sac Gallois.

Anchorage

8.197

- 1 Vessels can anchor anywhere in Port de la Nièvre, outside the prohibited area, in depths according to draught and in a position indicated by the pilot.
 A good berth for coasters during the South-east Trade Wind is in depths from 8 to 9 m (26 to 30 ft), mud, at the intersection of the bearing 203° of the W side of the N breakwater of Darse des Torpilleurs and 121° of the cathedral tower, 5½ cables E. The breakwater covers at HW but its position is indicated by the lights described at 8.201.
- 2 The charted mooring buoys in the vicinity of the berth no longer exist but see 8.200 regarding a large stranded wreck, about 1 cable E, lying off the S end of Quai du Commerce. With NE winds it is prudent to anchor a little farther offshore.

8.198

- 1 Anchorage off Antsirana affords shelter during the first phase of a cyclone passing N of the port, with the wind between S and NE. If the wind backs farther than NE shelter should be sought in the lee of Cap Diégo (8.172).
 During the passage of a cyclone S of the port, when the wind between SW and W begins to freshen, vessels of suitable size should anchor in the cove W of Cap Diégo, as close inshore as possible. Care must be taken to avoid a 6·7 m (22 ft) shoal, 4 cables W of Cap Diégo, and the charted mooring buoys.

Mooring buoys

8.199

- 1 In addition to the mooring buoys in the cove W of Cap Diégo there are others in Port Militaire and in the Baie des Amis, their positions being marked on the plan.
Caution. Some mooring buoys are believed to have been removed.

Port de Commerce

8.200

- 1 Vessels can berth alongside at Quai du Commerce, which extends S from Port de la Nièvre (Antsirana) Light, and at Quai des Caboteurs, which extends E from the S end of Quai de Commerce.
 Quai du Commerce, the largest berth, is of concrete construction, 300 m in length, but shoaling at the S end, and a reported depth alongside of 8·5 m. It is used by cargo vessels and tankers.
- 2 During the South-east Trade Wind it is recommended that ocean-going vessels berth in the calm periods which occur at daybreak and at nightfall. Since the out-going tidal stream can set very strongly round the N end of the quay as described at 8.190 it is also better to berth with the in-going stream.
- 3 A stranded wreck, 150 m in length (not charted), lies ½ cable SW of the junction of Quai du Commerce and Quai des Caboteurs.

Darse des Torpilleurs

8.201

- 1 **Berths.** There are some mooring buoys and a small wooden wharf in this basin which has depths up to 4·9 m (16 ft) and is part of the naval base.

Port services

Repairs

8.202

- 1 Major repairs can be undertaken by La Société d'Exploitation de Construction et de Réparation Navale (SECREN), located at Quai De Commerce.

Underwater repairs can be effected in a government-owned dry dock situated on the NE side of Baie des Amis, particulars being:

2	Measurement	Top	Bottom
	Extreme length	200 m	196 m
	Entrance Breadth	29 m	25 m
	Depth at sill	(At MHWS)	11.7 m
	Least charted depth	(In approach channel)	7 m

- 3 Requests to use the dry dock should be sent to the Port Authority at least 10 days in advance, if possible together with the relevant ship's drawings.

- 4 Great care is necessary when entering and leaving the dock on account of the prevailing winds and tidal streams. During the South-east Trade Winds a vessel can dock at any time, but the best time to undock is between 0500 and 0600 local time, when the wind is light.

Other facilities

8.203

- 1 **Facilities:** compass adjustment; issue of deratting exemption certificates; hospital; there are no facilities for the disposal of garbage or oily residues.

Supplies

8.204

- 1 Good fresh water; provisions may be available; fuel not available.

Communications

8.205

- 1 Airport (7 km) with daily internal connections to Antananarivo International Airport.

Regular maritime connections with the Comores, Africa and France.

Harbour regulations

8.206

- 1 No repairs of any kind may be undertaken on board a vessel without the Harbour Master's permission.

Small craft

Berths

8.207

- 1 Small craft can berth:

In a boat harbour, protected by breakwaters, at the N end of Quai du Commerce. Port Authority craft berth here, or:

At a small jetty, W of the entrance to the dry dock.

8.208

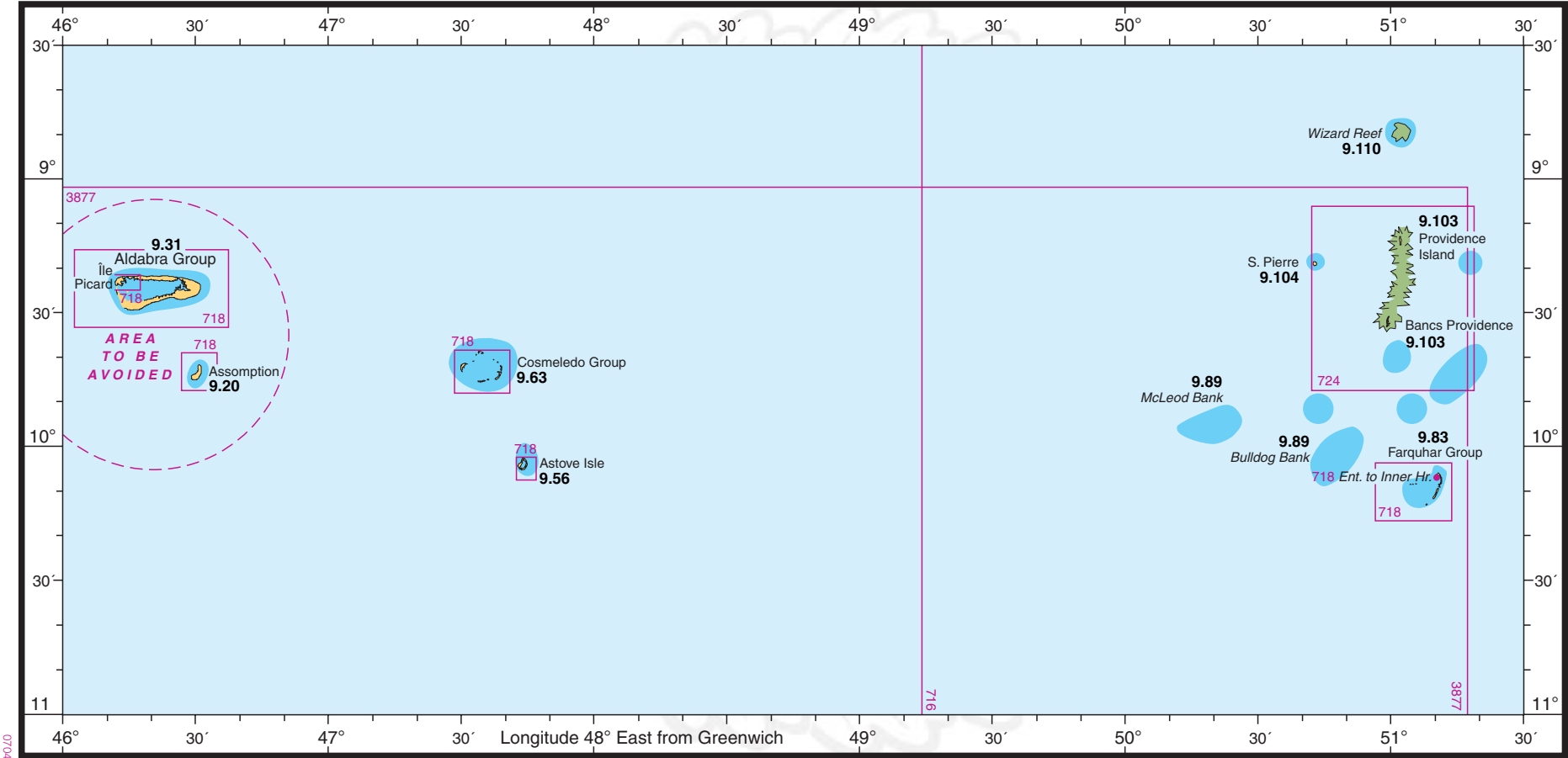
- 1 **Landing place.** At LW, boats can use a small pier at the head of a cove, W of Cap Diégo, off which is a stranded wreck.

Repairs

8.209

- 1 Patent slips are available.

Chapter 9 - Islands north of Madagascar



CHAPTER 9

ISLANDS NORTH OF MADAGASCAR

GENERAL INFORMATION

Charts 3877, 4701

Scope of the chapter

9.1

- 1 In this chapter are described the principal sea passages and ocean routes in the vicinity of the islands and groups of islands N of Madagascar, which are:

Assumption Island (9°44'S, 46°30'E) (9.20).

Aldabra Island (9°25'S, 46°20'E) (9.31).

- 2 Astove Island (10°04'S, 47°44'E) (9.56).

Cosmoledo Group (9°43'S, 47°35'E) (9.63).

Farquhar Group (10°11'S, 51°07'E) (9.83).

Providence Group (9°25'S, 51°04'E) (9.102).

- 3 Anchorages available are described with the appropriate passages; there are no ports or harbours. The chapter is arranged as follows:

- 4 Through routes (9.7).

Assumption Island and Aldabra Island (9.19).

Astove Island and Cosmoledo Group (9.55).

Farquhar group and Providence Group (9.81).

Offshore fishing

9.2

- 1 Fishing with long lines is carried on in these waters, more comprehensive information on which is given at 1.10.

Hazards

9.3

- 1 Navigational marks. See 1.7.

Weather

9.4

- 1 From about April to November the South-east Trade Wind (1.198) prevails. For the remainder of the year the area is influenced by NW Monsoon winds (1.199).

Cyclones are rare and generally limited to the extreme E part of the area, with the season from December to April.

See 1.199 regarding the incidence of thunderstorms and associated squalls during the NW Monsoon.

- 2 **Swell** is a regular feature, for details of which see 1.176.

Current. For most of the year the area lies within the W-going South Equatorial Current described at 1.166. The other currents which may be experienced are described later in the text.

Regulation

9.5

- 1 **Area to be Avoided.** Such an area, adopted by the IMO, has been established around Assumption Island and Aldabra Island as an environmental protection measure, the islands being the habitat of a species of giant tortoise (*Testudo Elephantina*). The area, with a radius of 30 miles, is centred on position 9°36'S, 46°21'E.

- 2 Vessels over 500 gt carrying oil or hazardous materials should avoid entering this area, the limits of which are shown on the charts.

Rescue

9.6

- 1 See 1.49 to 1.54 for details of reporting systems designed to provide information for SAR operations.

THROUGH ROUTES

GENERAL INFORMATION

Charts 3877, 4701

Scope of section

9.7

- 1 In this section are described those parts of the ocean routes between the South African coast and that of the Indian sub-continent and the Bay of Bengal which pass through the waters around some of the islands mentioned at 9.1.

For full details of the routes see *Ocean Passages for the World* and *Routeing Chart 5126*.

- 2 The section is arranged as follows:

Route NW of Aldabra Island (9.8).

Route between Assumption Island and Cosmoledo Group (9.12).

Routes SE of Astove Island (9.16).

ROUTE NORTH-WEST OF ALDABRA ISLAND

General information

Charts 3877, 718

Routes

9.8

- 1 Ocean routes from the coast of South Africa to Bombay, Sri Lanka and Bay of Bengal pass NW of Aldabra Island (9°25'S, 46°20'E).

Topography

9.9

- 1 See 9.31 for a description of Aldabra Island.

Current

9.10

- 1 See 9.36 for information about currents in the vicinity of Aldabra Island.

Directions**9.11**

- 1 In the vicinity of Aldabra Island the ocean routes mentioned at 9.7 lead generally NE, passing NW of the group. Attention is drawn to Area to be Avoided.

Useful mark:

Île Picard Light (9°24'0S, 46°12'4E) (9.39) which, if sighted, will give an indication of the vessel's proximity to the Area to be Avoided.

ROUTE BETWEEN ASSOMPTION ISLAND AND COSMOLEDO GROUP

General information

Charts 3877, 718 plans of Assomption and Cosmoledo Group.

Route**9.12**

- 1 An ocean route from the South African coast to Bombay passes between Assomption Island (9°44'S, 46°30'E) and the Cosmoledo Group, 58 miles E.

Topography**9.13**

- 1 See 9.20 and 9.63 for descriptions of Assomption Island and the Cosmoledo Group, respectively.

Current**9.14**

- 1 In the vicinity of the Cosmoledo Group the currents are very similar to those described at 9.36, off Aldabra Island.

ASSOMPTION ISLAND AND ALDABRA ISLAND

GENERAL INFORMATION

Chart 3877,

Scope of section**9.19**

- 1 In this section are described the sea passages in the vicinity of Assomption Island (9°44'S, 46°30'E) (9.20) and Aldabra Island (9.35), 17 miles NW, together with the anchorages available.

The section is arranged as follows:

Assomption Island (9.20).

Aldabra Island (9.31).

ASSOMPTION ISLAND**General information**

Chart 718, plan of Assomption Island

Topography**9.20**

- 1 Assomption Island consists mainly of raised coral, with a maximum elevation of about 6 m, covered with low, thick bushes. At the SE end of the island there is a chain of sand dunes and hills.
- 2 Most of the coast is formed by abrupt overhanging cliffs, except for a bay on the W side, the shore of which is a

Directions**9.15**

- 1 The ocean route between Assomption Island and the Cosmoledo Group is recommended for use in daylight only and leads generally NE, passing:

SE of Assomption Island, thence:

NW of the Cosmoledo Group.

Attention is drawn to the charted Area to be Avoided.

- 2 **Useful mark:**

A conspicuous sand dune (35 m high), at the SE end of Assomption Island which, if sighted, will give an indication of the vessel's proximity to the Area to be Avoided.

ROUTES SOUTH-EAST OF ASTOVE ISLAND

General information

Charts 3877, 718 plan of Astove Island.

Routes**9.16**

- 1 Ocean routes from the Indian sub-continent to South Africa pass SE of Astove Island (10°04'S, 47°44'E).

Topography**9.17**

- 1 See 9.56 for a description of Astove Island.

Directions**9.18**

- 1 In the vicinity of Astove Island the ocean routes mentioned at 9.16 lead generally SW, passing about 15 miles SE of the island.

If possible the passage between Astove Island and Île Mayotte, about 210 miles SW, should be made in daylight.

sloping sandy beach. At the S end of this bay there is an abandoned settlement among casuarina trees while a second abandoned settlement lies among similar trees at the N end of the island.

Depths**9.21**

- 1 The waters around Assomption Island (9°44'S, 46°30'E) appear to be deep a few cables off a narrow reef which fringes the island. There are no known dangers other than a bank on the SE side of the island, described at 9.24.

Tidal stream**9.22**

- 1 Off the NW corner of Assomption Island the tidal stream sets WSW and attains a rate up to 3 kn at spring tides while the tide is rising. While falling, it sets ENE and attains a rate of 1 kn at neap tides. During the WSW-going stream, tide rips and eddies may be encountered off the SW end of Assomption Island.

Principal mark**9.23**

- 1 **Landmark:**

Conspicuous sand dune 35 m high, at the SE end of the island.

Directions

9.24

- 1 The plan is sufficient guide for navigation of the waters around Assumption Island. Attention is drawn to the Area to be Avoided. Other vessels should pass seaward of:
- 2 A spit which extends about 3 cables from the SW extremity of the island.
A bank with depths less than 37 m over it which extends 1¼ miles from the SE side of the island. In 1964, this bank appeared to have shoal water 9 cables from the shore.
- 3 Shoal water which extends 3 cables from the N point of the island.

9.25

- 1 **Useful marks:**
Leading beacons (9.26).
Flagstaff (9.30) near the old settlement at the S end. (9°44'S, 46°30'E).

Anchorage

West side of island

9.26

- 1 **Leading marks.** The alignment (148½°) of two prominent beacons (concrete, triangular topmark, about 4 m in height) situated close E of the abandoned settlement (9°44'S, 46°30'E), leads to an anchorage in the S end of the bay which indents the W side of the island, indicated on the plan, in a depth of 55 m, with a flagstaff bearing 199°. This is the best berth during the South-east Trade Wind and was used without difficulty by HM Surveying Ship *Vidal* (length 91 m, draught 3.4 m) in 1967. Care should, however, be exercised when approaching the anchorage as it appears to be dangerously close to the LW line. It is advisable to anchor with sternway on.

9.27

- 1 During the South-east Trade Wind (9.4) anchorage can also be obtained in the bay for about 2 miles NNE of the abandoned settlement. Vessels should anchor about 1 cable offshore in depths of about 9 m, with the stern in deep water. Care should be exercised as described at 9.26. If a vessel swings with the tidal stream against the wind it is necessary to weigh and proceed.

9.28

- 1 Vessels can anchor 4 cables W of the N point of the island in Saint Thomas Anchorage, as indicated on the plan, off the second abandoned settlement (9.20).

East side of island

9.29

- 1 During the NW Monsoon there is an anchorage in a depth of 29 m, about 1¼ miles E of the conspicuous sand dune mentioned at 9.23.

Small craft

Berth

9.30

- 1 There is a pier, with a flagstaff at its inner end, opposite the abandoned settlement in the S part of the island. In 1967, the pier was in a bad state of repair and all but the inner part was unusable, except as a breakwater.

ALDABRA ISLAND

General information

Chart 718 plan of Aldabra Island

Topography

9.31

- 1 **Aldabra Island Group.** This consists of four lesser islands which lie on the rim of an atoll, around a lagoon, and which are separated by narrow channels.

The atoll is composed of raised coral with an elevation of about 5 m and has a rugged surface, much eroded by rain water, generally covered with dense scrub. There are small groups of poor coconut palms in places and groups of casuarinas, 20 m high, occur along the coast.

- 2 The seaward face of the atoll consists, for the most part, of abrupt cliffs of coral rock, often undercut by wave erosion. There are many coves, the largest of these having small beaches at their heads.

9.32

- 1 **Grande Terre** forms the S part and E end of the atoll. This end and the seaward coast of the island are more barren than other parts of the atoll on account of spray and sand blown over it for most of the year. All along the S coast there is a low, gravelly sand, storm ridge. At intervals in the central S part of the island there are coastal sand dunes or hills rising to about 15 m which are the highest parts of the atoll.

9.33

- 1 **Île Picard**, situated at the NW end of the atoll, is flat. The W coast is formed by a long sandy beach, the only one on the atoll, behind the S end of which, in the vicinity of a water tower (9°24'0S, 46°12'4E) (Chart 718 plan of Île Picard) are the buildings of a scientific research centre. About 6 cables N, near Pointe dans Nord, are a few houses of a former settlement, now occupied by local employees of the research centre.

9.34

- 1 **Île Malabar**, on the N side of the atoll, has a continuous row of trees more than a mile long, at the E end of the N coast. A clump of casuarinas stands at the W end.

Polymnie Island, lying between Île Malabar and Île Picard on the N side, completes the circumference of the atoll.

Depths

9.35

- 1 The waters around Aldabra Island (9°25'S, 46°20'E) are deep and clear of charted dangers outside a narrow fringing reef which is steep-to except at the E end of the atoll.

Natural conditions

9.36

- 1 **Tidal stream.** See information on the chart for details of the tidal streams off the W coast of Île Picard (NW Aldabra Island).

Current. In the vicinity of Aldabra Island the W-going South Equatorial Current is of low to moderate constancy with an average rate of 1½ kn. In the early part of the year, however, this current may be temporarily replaced by a low constancy NE-going current with an average rate of 1¼ kn.

Tidal levels

9.37

- 1 At Aldabra Island the mean spring range is about 2.8 m, the mean neap range about 1.0 m. For further information see *Admiralty Tide Tables Volume 3*.

Principal mark**9.38****1 Landmark:**

Conspicuous white sandhill (9°27'S, 46°23'E).

Directions**9.39**

- 1 The chart is sufficient guide for navigation of the waters around Aldabra Island. Care should be taken to keep vessels described at 9.5 outside the Area to be Avoided, as noted on the chart. Unless proceeding to anchorage, it is well for other vessels to pass seaward of an uneven bank with depths less than 37 m, which extends about 1½ miles from the E end of the atoll.

2 Useful marks:

Black sandhill (9°28'2S, 46°19'6E).

Stranded wreck (SS *Glen Lyon*, 1913), 7½ miles E of the above sandhill.

Île Picard (West Island) Light (metal post on water tower, 13 m in height) (9°24'0S, 46°12'4E).

- 3 Pointe Hodoul (9°24'0S, 46°31'4E), which is bordered by a plain of white sand, partly covered by low bushes.

Small hut (9°22'1S, 46°23'1E), most easily seen from N.

Anchorage*Chart 718 plan of Île Picard***West side of atoll****9.40**

- 1 **Anchorage** during the South-east Trade Wind is best obtained off Pointe dans Nord in a position, indicated on the plan, 4¼ cables WNW of a flagstaff (9°23'S, 46°12'E) which, like the houses of the former settlement nearby, is somewhat obscured by trees. The depth is about 64 m. A vessel lies parallel to, and about 2 cables off, the edge of the reef under the influence of wind and stream. It is better to anchor here rather than farther S where overfalls occur on change of streams.

- 2 In March, 1964, HM Surveying Ship *Owen* (length 91 m, draught 4.3 m) anchored comfortably during the NW Monsoon, 3½ cables from the flagstaff in a depth of 37 m. However, this position is only 1¼ cables off the reef and vessels should be prepared to move, should the wind blow with any strength from NW.

Smaller vessels can anchor opposite Passe Femme, 1 mile S of Pointe dans Nord, about ¾ cable off the reef.

9.41

- 1 **Landing** can be made by boat on the beach described at 9.33 but the reef should only be crossed at HW, or as advised by the staff of the research centre.

Communication is maintained by schooner between the research centre and Mahé in the Seychelles Group.

*Chart 718 plan of Aldabra Island***East side of atoll****9.42**

- 1 **Anchorage** during the NW Monsoon can, as an alternative to that described above, be found E of Pointe Hodoul (9°24'S, 46°31'E) (9.39), on the bank extending from the E end of Grande Terre (9.32). As the bottom is uneven, however, vessels should anchor in depths more than 18 m, about 6 cables off the atoll. Should the wind change to SE, a steep sea soon builds up over this part of the bank.

Lagoon*Chart 718 plan of Île Picard, plan of Aldabra Island***General information****9.43**

- 1 **Topography.** The lagoon of Aldabra Island contains many mud flats and islets of which only Île Esprit near the W end, and Île Michel at the E end, are of any size. There are trees on both these islets and, while Île Michel is partly sandy, with long grass, the other islets are composed of coral rock and are small and low.

- 2 Dense mangroves, up to 21 m high, border the coasts of the islets and shores of the lagoon, except on the E side of Île Picard and W side of Polymnie where there are overhanging cliffs.

The bottom of the lagoon is sand on the W side and white chalky mud on the E side, with coral only in the vicinity of the channels leading into it.

9.44

- 1 **Entry.** Of the four breaks in the reef between the lesser islands of Aldabra Group only Grande Passe (9°22'S, 46°14'E) gives access to the lagoon. The other channels are suitable only for small craft or boats.

Limiting conditions**9.45**

- 1 **Depths.** Grande Passe has depths from 11 to 24 m over a least width of about 1 cable for about 1½ miles within the entrance. Thence a drying reef divides the channel into two branches, both having moderate depths but a width of only ½ cable. See 9.53 for depths in other channels.

- 2 The lagoon itself is generally shallow, particularly the E half which is only navigable by flat-bottomed craft at HW spring tides.

9.46

- 1 **Largest vessel.** HM Surveying Ship *Owen* (9.40) has anchored in Grande Passe.

Vessels of coaster size can navigate the lagoon for a short distance within Grande Passe, otherwise it is accessible only to small craft.

Local knowledge is necessary to navigate within the lagoon.

Natural conditions**9.47**

- 1 **Tidal streams.** The in-going stream sets through the channels which lead to, or into, the lagoon until about 2 hours after HW. The out-going stream sets through them until a similar time after LW.

- 2 Around headlands and islands bordering Grande Passe spring rates up to 9 kn occur locally. Along the edges of the reefs on both sides, strong counter-stream eddies constantly occur. Other variable eddies, overfalls and upwellings occur locally in the channel itself, especially at spring tides.

- 3 Throughout Grande Passe and its branches the stream at springs attains a rate of 7½ kn, with scarcely any slack water. Even at neaps, the stream can attain a rate of 2½ kn.

See information on the chart as regards the streams at an anchorage in Grande Passe, described at 9.51.

9.48

- 1 **Sea,** which is dangerously confused, suddenly occurs in the entrance to Grande Passe, and up to 1 mile seaward, during any wind from N with an out-going tidal stream.

Directions for entry**9.49**

- 1 Grande Passe should be entered about 45 minutes after LW, against the last of the out-going tidal stream. The entrance lies between rocky cliffs on which stand thick

groves of casuarina trees. The W side should be favoured to avoid a bank with depths less than 11 m which extends NW from the entrance point.

- 2 From the entrance a vessel should follow the channel, the sides of which descend, in places, vertically from the drying reefs on both sides. The reefs are well defined, even at HW, and have several mushroom-shaped islets up to about 5 m high on them.

9.50

- 1 **Lagoon.** The SW branch of Grande Passe can be followed to anchorage in the lagoon N of Île Esprit. Drying reefs extend NW, SW and S from the island and both branches of the channel terminate in a labyrinth of coral patches between which navigation should not be attempted.

Anchorage

9.51

- 1 Sheltered anchorage can be obtained 1¼ miles within the entrance to Grande Passe, in a depth of about 10 m, in the position shown on the plan, with Point Tanguin, the SE extremity of Île Picard, bearing 257° distance 4 cables. In this position there is a distance of just under 1 cable to the reef on both sides. Vessels should moor with open hawse E and a good scope on each cable in view of the strength of the tidal streams and poor holding ground. No mooring swivel is required during the South-east Trade Wind as this causes a vessel to swing the same way and thus keeps the hawse clear.

ASTOVE ISLAND AND COSMOLEDO GROUP

GENERAL INFORMATION

Chart 3877

Scope of section

9.55

- 1 In this section are described the sea passages in the vicinity of Astove Island (10°04'S, 47°44'E) and the Cosmoledo Group, 18 miles NNW, together with the anchorages available.

The section is arranged as follows:

- Astove Island (9.56).
- Cosmoledo group (9.63).

ASTOVE ISLAND

General information

Chart 718, plan of Astove

Topography

9.56

- 1 Astove Island (10°04'S, 47°44'E) virtually encircles a very shallow lagoon, being broken by a channel on the S side which gives access to the lagoon from seaward. The W half of the island is covered with trees and is lower than the E part, the coast of which is composed almost entirely of generally bare sand dunes.

Near the N end of the W coast there is a small settlement.

Depths

9.57

- 1 The waters around Astove Island appear to be deep outside a steep-to reef which fringes the island and are clear of charted dangers at a distance of about 6 cables from the coast.

- 2 HM Surveying Ship *Owen* (9.40), when using this anchorage in 1962, kept power on main engines to stem the tidal stream and to assist the turn at slack water.

9.52

- 1 Vessels of coaster size can anchor N of Île Esprit (9°25'S, 46°15'E), in a depth of about 7 m, in a limited space between coral heads, but the strong streams are inconvenient.

Small craft channels

9.53

- 1 **West Channels** separate a number of islets between Grande Terre and Île Picard. The channels lead into the lagoon but are narrow and dry out. Local knowledge is essential, even for boats.

Passe Gionnet, between Polymnie and Île Malabar, is only about 8 m wide with depths of 7.3 m midway between the islands, but it does not reach the lagoon and is only suitable for boats at HW.

- 2 **Passe Houareau**, between Île Malabar and Grande Terre, has some depth at LW but is much narrowed by drying reefs and can only be used by large boats. The channel ends a short distance within the lagoon.

Tidal streams. See 9.47.

Other names

9.54

- 1 Passe Femme, Pointe (9°24'·0S, 46°12'·4E).
Vacoas, Pointe aux (9°29'S, 46°15'E).

Natural conditions

9.58

- 1 **Tidal streams** at an anchorage (9.60) near the settlement set continually N at a rate of ½ kn.

Winds. The South-east Trade Wind blows from early May to mid-November with only slight variation in strength or direction.

Sea off the settlement is generally smooth with little or no swell.

Directions

9.59

- 1 The plan is sufficient guide for navigation of the waters around Astove Island. The E side and N point of the island, where the fringing reef is not so steep-to as elsewhere, should be given a wide berth of at least 5 cables.

Useful mark:

White wooden cross at the N end of the settlement, easily visible among trees.

Anchorages

West side of island

9.60

- 1 **Anchorages.** Although there is no recognised anchorage anywhere around Astove Island vessels may anchor off the settlement during SE winds in a depth of 64 m with the white cross at the settlement bearing 110° distant 2 cables. In 1968 HMS *Barrosa* (length 108 m, draught about 5 m) anchored on this bearing, distant 2¾ cables, depth not known. The reef here is steep-to and several attempts may be necessary to get the anchor to hold. It should be let go as close to the reef as possible and the cable laid out with stern way on.

- 2 If depths permit, a second anchor should be let go under foot to limit swing. However, it is reported that, during the

South-east Trade Wind season (9.4), the wind and N-going stream keep the vessel comfortably off the reef.

In 1964, it was reported to be customary for inter-island schooners to lay out an anchor on the edge of the reef and ride to the steady SE wind.

- 3 **Landing** can be effected by boat in front of the white cross. The reef can be crossed from 3 hours before to 3 hours after HW. There is no other landing place.

Communication is maintained at infrequent intervals by schooner from Mahé in the Seychelles Group.

East side of island

9.61

- 1 **Anchorage** during the NW Monsoon could be found in the lee of the island, but this would be remote from the settlement and not very well sheltered.

Useful mark:

Conspicuous stranded wreck (10°05'9S, 47°45'5E).

Lagoon

General information

9.62

- 1 **Entry** to the lagoon can only be gained near the S point of the island, through Gueule Bras Channel which is narrow and dries to a sandy bottom.

Flow in the entrance channel is very weak.

Depths in the lagoon are not more than about 1.4 m, with very little change of level at any time.

COSMOLEDO GROUP

General information

Chart 718 plan of Cosmoledo Group

Topography

9.63

- 1 **The Cosmoledo Group** (9°43'S, 47°35'E) consists of a number of islands and islets of raised coral with generally sandy surfaces lying on an atoll. The seaward edge of a reef fringing the group dries 0.6 to 0.9 m. Several gaps in the reef lead into the lagoon.

Depths

9.64

- 1 The waters around the Cosmoledo Group appear to be deep and are clear of charted dangers a short distance from a steep-to reef on which the group lies, except in the vicinity of Grande Passe, near the SE point of the reef.

9.65

- 1 **Menai Island** lies on the W end of the atoll. The seaward coast of the island is sandy and generally wooded with two points (9.69) projecting, one each side of a small settlement situated in the middle of the coast. The settlement is occupied from Mahé, in the Seychelles Group, the inhabitants staying for about a year at a time.

- 2 North of the settlement there are sandhills with an elevation of 12 m, well wooded, while elsewhere the island is fairly open with patches of dense scrub.

9.66

- 1 **Île Sud-Oest**, at the S point of the atoll, rises to sandhills covered with bush. Near the W end of the island there is a fisherman's shelter.

Grande Île, the SE island of the group, is largely composed of sand and gravel. The seaward coast consists of low cliffs rising steeply to sand dunes with sparse trees. At the N end of the island there are some fishermen's shelters.

- 2 **Grand Polyte Island**, on the E point of the atoll, is mostly covered with sand and gravel. Petit Polyte Island, lying off the S end of Grand Polyte, is low.

Natural conditions

9.67

- 1 **Currents** in the vicinity of the Cosmoledo Group are very similar to those described at 9.36 for Aldabra Island.

Tidal streams at an anchorage off Menai Island can be strong. The stream sets NE during a falling tide, augmenting the current when it temporarily sets NE.

On a falling tide, at neaps, it barely neutralises this current. At other times there is a SW-going flow.

Directions

General remarks

9.68

- 1 The plan is sufficient guide for navigation of the waters around the Cosmoledo Group, avoiding areas in which there are no soundings charted and passing S of a bank with depths less than 11 m which extends nearly 1 mile SE from the S point of Grande Île (9°45'S, 47°39'E).

- 2 An area of discoloured water, which gives the appearance of shoal depths, about 1 mile W of Île Sud-Oest, is due to outflow from the lagoon through Passe Sud-Ouest (9.76) during the out-going tidal stream.

Useful marks

9.69

- 1 **West side of atoll** (with positions from Pointe Cimetièrre (9°42'S, 47°30'E)):

Île Moustiques (1¼ miles S), which is wooded.

Pointe Cimetièrre, which is prominent, rocky and wooded.

Beacon (pole) (1 cable N) (9.73).

- 2 Prominent point (2 cables NE), composed of bare black rock.

Île Macaque (1½ miles E), which is wooded.

Île l'Anse (2 miles ENE), bare and eroded.

Astove (2¾ miles ENE), bare and eroded.

9.70

- 1 **East side of atoll:**

Sandhills at SW and N ends of Grande Île (9°45'S, 47°39'E).

Hummock, elevation 11.0 m, on S end of Grand Polyte, 5 cables N of Grande Île.

Île du Trou, 2 miles NW of Grand Polyte, a low rock.

9.71

- 1 **North side of atoll:**

Île du Nord (9°39'S, 47°34'E), rocky and covered with low bushes.

Île Nord-Est, 6½ cables E of Île du Nord, largely covered with sand and guano.

Anchorage

West side of atoll

9.72

- 1 **Anchorage** can be obtained during the South-east Trade Wind (9.4) in a depth of about 27 m about 2 cables from the edge of the reef off the settlement on Menai Island, in the position shown on the plan. The coastal bank is very steep-to here but the sea is smooth and little swell passes round the island.

9.73

- 1 **Landing place.** The alignment (130°) of a beacon (pole) on the seaward edge of the reef, opposite the settlement, with a white prison building leads on to the reef where boats

can usually land safely at LW. Coral heads are cleared from the landing place in the vicinity of the beacon.

Fresh water supplies are maintained in large rain water tanks for use by the inhabitants.

Communication is maintained with Mahé by schooner.

East side of atoll

9.74

- 1 **Anchorage** can be obtained during NW Monsoon:
In depths from 18 to 37 m, about 1 mile SE of the S part of Grande Île.
In depths from 9 to 18 m, 6½ cables E of the N part of Grande Île.

These positions are shown on the plan but neither anchorage has been surveyed and they should be used with caution.

Lagoon

General information

9.75

- 1 **Topography.** The lagoon of the atoll is generally shallow and encumbered with rocks, particularly in the W part. Only some deeper areas in the E part may appear to be clear. The inner side of Menai consists of creeks and mud flats, covered by mangroves up to 25 m high. Three islets off the E extremity are wooded.

At the W end of Île Sud-Ouest there are some high mangroves.

9.76

- 1 **Entry** can be gained through Passe Sud-Ouest (9°45'S, 47°33'E) and Grande Passe, 4 miles E, on the S side of the reef. These are the principal channels but other gaps do exist on the W and E sides (9.80).

Limiting conditions

9.77

- 1 **Depths.** There is a least charted depth of 2.1 m over a least width of about 2 cables in Grande Passe. Passe Sud-Ouest has a least charted depth of 3.7 m over a least width of about 2½ cables, with shallows at the inner end.

- 2 **Largest vessels.** The lagoon is only accessible to vessels of coaster size through Grande Passe. Boats are able to enter by Passe Sud-Ouest and the other channels.

Local knowledge is advisable since both Passe Sud-Ouest and Grande Passe are dangerous.

Natural conditions

9.78

- 1 **Tide streams** are strong in the two principal channels. In Passe Sud-Ouest the rate of the out-going stream is from 4 to 6 kn at spring tides. In Grande Passe it attains rates up to 4 kn at springs.

- 2 **Sea and swell.** During the South-east Trade Wind the sea is tolerably smooth at the entrance to Passe Sud-Ouest, but swells run across it.

The wind and sea set straight into Grande Passe, making conditions very rough at this entrance although there is smooth water within the line of breakers.

Directions for entry

9.79

- 1 **Passe Sud-Ouest.** The track for boats using this passage leads NE for about 1 mile into the shallower W part of the lagoon.

Grande Passe. This is ill-defined, the reefs on both sides of the entrance between Pagode (9°45'S, 47°36'E) and Grande Île, 1½ miles E, not being steep-to, and the water generally so clear that the bottom is almost as distinct in depths of 9 m as in 4 m.

- 2 From the entrance the track into the E central and deeper part of the lagoon leads N for about 1½ miles and then NE. The reef on the E side of this part of the passage is more easily seen.

A deeper area in the S part of the lagoon is entered by a track which leads NW from about 6 cables within the entrance to the passage.

Other boat channels

9.80

- 1 The best boat channels over the reef are:
Close N of Astove (9°42'S, 47°33'E), where there are depths of 0.9 m at HW neap tides.
Close SE of Goëlette (9°41'S, 47°38'E).

FARQUHAR GROUP AND PROVIDENCE GROUP

GENERAL INFORMATION

Chart 3877

Scope of section

9.81

- 1 In this section are described the sea passages around and between Farquhar Group (10°11'S, 51°07'E) (9.83) and the Providence Group of islands (9.105), the latter made up of:
Bancs Providence (9°32'S, 50°59'E), (9.103),
Providence Island (9.103), 18 miles N of Bancs Providence, and:
Saint Pierre Island (9.104), 20 miles NW of Bancs Providence.
- 2 Also described are the anchorages available off the islands.
- 3 The section is arranged as follows:
Farquhar group and approaches (9.83).
Providence group and approaches (9.102).

Ocean routes

9.82

- 1 Routes from the South African coast and the Cape route to Sri Lanka and the Bay of Bengal pass about 30 miles NW of Wizard Reef (8°51'S, 51°04'E). Details of the routes are given in *Ocean Passages for the World*. See also *Routeing Chart 5126*.

FARQUHAR GROUP AND APPROACHES

General information

Charts 3877, 718 plan of Farquhar Islands

Routes

9.83

- 1 In this sub-section the approaches to the Farquhar group (10°11'S, 51°07'E) are described along with routes passing NW and SE of the islands.

Topography

9.84

- 1 The group, formed by a number of islands and small islets, lies on the reef of an atoll surrounding a lagoon, the ones on the E side being covered with coconut palms and casuarina trees.

South Island (10°11'S, 51°10'E) is distinguished by a ridge of sand dunes about 21 m high along its E (seaward) side.

- 2 Manaha Islands, three smaller islets between South and North Islands, are low and flat.

North Island (10°07'S, 51°11'E) is flat with a maximum elevation of 3 m, except for the N part on which there are some sand dunes, one of which (Turtle Hill, see 9.91) attains 12 m. In this part there is also a settlement (9.96).

- 3 Goëlettes Island, 2 miles SW of South Island, is a small, flat islet with a single palm tree. Beyond this, the reef extends a farther 5 miles W, drying in patches at low water.

On the N side of the atoll, 5 miles NW of South Island, the edge of the reef is marked by Trois Îles, a line of several small islets in an east-west orientation, including Déposé (10°09'S, 51°04'E), notable for a stand of five prominent trees, and Île du Milieu and Île Lapin, both of which have a covering of bushes.

- 4 A further, very low islet of sand or coral, reported in 1969, lies 2¼ miles SW of Trois Îles. In addition, several wrecks help to mark the limits of the reef.

Depths

9.85

- 1 Approaches to the Farquhar Group of islands (10°11'S, 51°07'E) are clear of charted dangers except between W and N where there are a number of banks and shoals at distances up to about 44 miles, S of latitude 9°50'S. The charted dangers farther N are described at 9.105.

- 2 Coastal waters around the generally steep-to atoll on which the islands lie appear to be moderately deep. There are no charted dangers, with depths less than 16.5 m over them, lying more than 8 cables outside the reef, except for a sand bank, described at 9.90, on the NW side of the atoll.

Natural conditions

9.86

- 1 **Currents.** In the vicinity of the Farquhar Group the currents are similar to those of the Providence Group (9.107), the W-going South Equatorial Current being of mainly moderate constancy with an average rate of 1¼ kn. In the early part of the year, however, in both areas this current may be temporarily replaced by a somewhat erratic, mainly N-going current with a similar average rate.

- 2 **Tidal streams.** Off the entrance to the inner harbour:

Interval from HW Local (Dar-es-Salaam)	Remarks
+0300 (+0340)	Stream sets W at a rate of about ½ kn or is slack
-0610 (-0530)	Stream sets NE attaining spring rate from ¼ to 1¼ kn

9.87

- 1 **Winds** in the NW Monsoon (9.4) are variable.
Cyclones. The group lies near the W limit of the zone in which cyclones generally originate (1.212).

Principal marks

9.88

- 1 **Landmarks:**
Conspicuous stranded wreck of fishing vessel (10°15'2S, 51°03'2E) (*No 12 Kwang Myong*,

1969). The wreck is reported to show up well on a radar display (1985).

- 2 Conspicuous stranded wreck (10°14'3S, 51°06'2E) (*Lion of Piraeus* 1985).
Stranded wreck (10°09'3S, 51°03'0E) (*SS Aymesty*, 1964).

Directions

Approaches

9.89

- 1 **Caution.** It is not advisable to approach the Farquhar Group at night, even with reliable radar. By day, an approach from W should only be made in clear weather.

Navigation. The charts are adequate guides for navigation of the approaches but, depending on draught, care should be taken to avoid (with positions from North Point (10°06'S, 51°11'E)):

- 2 Bulldog Bank (22 to 29 miles WNW), comprising two banks separated by deep water, which was surveyed by HM Surveying Ship *Beagle* in 1972. It was reported (2001) to have a least depth of 16.5 m over it.
- McLeod Bank (51 miles WNW). This bank has not been closely examined but it was reported by HMS *Pearl* in 1903 that the bottom could be plainly seen and that the edge of the bank was very steep.
- 3 Bank (about 13 miles NNW), the position of which is approximate, reported in 1884 to have a depth of 20.1 m over it. In 1905 HM Surveying Ship *Sealark* obtained a sounding of 1628 m (890 fm) in this position.
- Shoal (32 miles WNW), the existence of which is doubtful, but reported in 1935 to have a depth 15.5 m over it.

Chart 718 plan of Farquhar Islands

Passage north-west of the Farquhar Group

9.90

- 1 Mariners making a passage NW of the Farquhar Group, between the SW and N points of the atoll, should proceed NNW initially, and then ENE, passing:

WSW of a stranded wreck (*SS Torridge*, 1910) (10°11'9S, 51°01'5E). In 1971 only the ship's boiler was in evidence. Thence:

- 2 Seaward of or over, depending on draught, a sandbank with a least charted depth of 11 m which extends 3½ miles NW from the W point of the atoll, the bottom being plainly visible.
The track then continues ENE, passing (with positions from Déposé (10°09'S, 51°04'E)):
- 3 NW of a stranded wreck (*SS Aymesty*, 1964) (1¼ miles W), thence:
NNW of a very low islet (1¼ cables W), thence:
NNW of a depth of 5.5 m (4½ cables N), thence:
- 4 Across the approach to the entrance of the inner harbour (5¼ miles ENE), thence:
NNW of the reef bounding the NW side of North Island (5½ to 6½ miles ENE) on which the sea breaks heavily, giving the island coast a berth of at least 1 mile.

9.91

- 1 **Useful marks** (with positions given from Déposé (10°09'S, 51°04'E)):

Islet (2¼ miles SW), with low shrubs.

- 2 Low sand islet (5½ cables WSW).
Île du Milieu (4½ cables E), covered with bushes.
Île Lapin (1 mile E), covered with bushes.

Turtle Hill, a sand dune about 12 m high, near Race Point (5½ miles ENE) (Chart 718 plan of Entrance to Inner Harbour).

(Directions for the inner harbour are given at 9.97)

Passage south-east of the Farquhar Group 9.92

- 1 Mariners making a passage SE of the Farquhar Group, between the SW and N points of the atoll, should proceed generally NE, passing (with positions given from Manaha Hill (10°09'·8S, 51°10'·6E) at the NE point of South Island): SE of first conspicuous wreck (*No 12 Kwang Myong*) (9¼ miles SW) (9.88), thence:
- 2 SE of second conspicuous wreck, (*Lion of Piraeus*) (6¼ miles SW), thence:
SE of Goëlettes Island (4½ miles SW), which is low and flat and is difficult to identify at a distance of more than 4 miles. A lone palm tree stands on the island. Thence:
- 3 ESE of Manaha Hill (15 m high), which forms the NE point of South Island (9.84), thence:
Clear of a depth of 16·5 m (3½ miles NNE), thence:
Round North Point at a distance of not less than 1 mile. There is a sand dune about 6 m high about 7½ cables SE of North Point.
(Directions for passage NW of the Farquhar Group are given at 9.90 and for the inner harbour at 9.97)

Anchorage

Chart 718 plans of Farquhar Islands and Entrance to Inner Harbour.

Inner harbour entrance 9.93

- 1 **Directions.** The line of bearing, about 173°, of Race Point (10°07'·4S, 51°09'·5E) leads, in rapidly decreasing depths, to anchorage off Passe Vingt Cinq Francs, the entrance to the inner harbour.
Useful mark:
Turtle Hill (1¾ cables ENE of Race Point) (9.91).
- 2 **Anchorage.** A good anchorage can be obtained on the narrow bank off the entrance to the inner harbour in the vicinity of the position shown on the plans, except during the cyclone season (9.4). The best berth is in a depth of 13 m with Race Point bearing about 173° and North Point about 083°. Little or no swell is felt at this anchorage although there may be a heavy sea farther to seaward.
- 3 On two occasions in August, 1964, HM Surveying Ship *Dampier* (length 91 m, draught 4·3 m) anchored in a depth of 37 m with Race Point bearing 160° and North Point 087°.

Inner harbour

General information 9.94

- 1 **Position.** An inner harbour (10°07'·5S, 51°09'·8E) is formed by the N end of the lagoon.
Entry to the harbour is by Passe Vingt Cinq Francs, a narrow, tortuous channel through the reef W of Race Point.

Limiting conditions 9.95

- 1 **Least charted depth** is 6·4 m in the fairway of the entrance channel but there are numerous coral heads over which there may be lesser depths.
Largest vessel. Draught 3 m.

Tidal levels. At Farquhar Islands the mean spring range is about 1·6 m, the mean neap range about 0·6 m. For further information see *Admiralty Tide Tables Volume 3*.

- 2 **Tidal streams.** See information on the plan of the entrance to the inner harbour.

Local knowledge is advisable.

Harbour 9.96

- 1 The harbour consists of a small bay at the inner end of Passe Vingt Cinq Francs, off a small settlement E of Race Point. The channel, with a depth of 6·4 m, is bordered here by the reef on the S side, distant about 1½ cables, E of which the passage becomes shallow as it enters the lagoon, narrowing to 1 cable. For berths see 9.98.
Much of the remainder of the lagoon is encumbered with banks and coral patches and can only be entered by boats.

Entry 9.97

- 1 **Caution.** It is advisable to obtain local knowledge before attempting an entry. Vessels moving from the anchorage off the entrance to the inner harbour, should give the NW side of Race Point a wide berth but pass close to its SW extremity.

Berths 9.98

- 1 **Anchorage** can be obtained in depths from 4 to 5 m in a cove S of the settlement, 2 cables ESE of Race Point, in the position shown on the plan of Entrance to Inner Harbour.
- 2 **Pier** of wooden construction, situated SE of the settlement, has a depth of 3 m at its head. A white cross stands close NW of the pier.

Services 9.99

- 1 **Supplies.** Fresh water is available from rain water storage tanks.
Communication is maintained by sea with Mauritius and the Seychelles Group.

Small craft

9.100

- 1 Boats can enter the lagoon through a shallow break in the reef at the W extremity of the atoll.

Other names

9.101

- 1 Grande Anse (10°07'S, 51°11'E).
Maillet, Pointe (10°12'S, 51°09'E).

PROVIDENCE GROUP AND APPROACHES

General information

Charts 716, 724 plan of Providence and Saint Pierre Islands
Routes

9.102

- 1 In this subsection the approaches to the Providence Group (9°25'S, 51°00'E) are described along with areas to avoid.

Topography 9.103

- 1 **Bancs Providence** (9°32'S, 50°59'E) is one of a number of sand cays which lie, with some banks that dry about 1 m, on the reef. There are coconut palms on the island and on the surrounding cays with which it may merge from time to

time to form a single, larger, island. On the N end there are some huts.

Providence Island, (9°13'S, 51°02'E) is well wooded, mainly with coconut palms.

9.104

- 1 **Saint Pierre Island** (9°20'S, 50°43'E), is formed of raised coral, with elevations up to 9 m, and is bare except for a clump of casuarina trees which rise to about 12 m on its N part. The surface of the island has become phosphatised by large numbers of sea birds.

- 2 The coast consists of abrupt coral cliffs about 3 m high, undercut and worn into blow holes by constant swell. Flat shelves have also been worn away on the SE corner of the island.

Depths

9.105

- 1 **Approaches** to the Providence Group are generally clear of dangers except between S and ESE of the S end of the group where some banks and shoal depths are charted at distances up to about 20 miles from the group. Other dangers, farther S, are described at 9.89.

Isolated dangers are charted E and N of the group.

9.106

- 1 **Coastal waters.** On the W side of the extensive reef on which Bancs Providence (9°32'S, 50°59'E) and Providence Island lie, the waters are deep at distances varying from about 5 cables to 1 mile off the reef. The only known dangers are those fringing the reef.

To the E and S an extensive area of breakers extends to 3 miles E of the reef and depths within this area are not known.

- 2 A coral bank with a least depth of 16.8 m lies 6 miles S of Bancs Providence.

To the N, the waters are less deep, a patch with a depth of 45 m being reported in 1992, 4 miles N of Providence Island.

Depths of about 500 m exist at a distance of 5 cables all around Saint Pierre Island, 20 miles NW of Bancs Providence.

Natural conditions

9.107

- 1 **Currents.** In the vicinity of the islands of the Providence Group the W-going South Equatorial Current is of mainly moderate constancy with an average rate of 1¼ kn. In the early part of the year, however, this current may be temporarily replaced by a somewhat erratic, mainly N-going current with a similar average rate.

9.108

- 1 **Tidal streams.** Off Bancs Providence, at an anchorage described at 9.113, the tidal stream sets N at a rate of ¼ to ½ kn, possibly more at springs, while the tide is rising. While the tide is falling it sets SW at about the same rate, but irregularly. The stream is slack for about 1 hour at the turn of the tide.

- 2 Off Providence Island, at an anchorage described at 9.114, the streams are stronger and markedly different, as follows:

<i>Interval from local HW</i>	<i>Remarks</i>
-0300	Stream sets N at a nearly constant rate of 1½ kn at spring tides
+0600	Stream slackens, then sets SSW at a rate of nearly 1½ kn
-0300	Stream turns rapidly N

9.109

- 1 **Winds.** Those from NW (9.4) are strong at times in January and February.

Sea caused by the South-east Trade Wind is heavy and makes it impossible to approach the E side of the reef described at 9.106.

Directions

Approaches

9.110

- 1 The charts are sufficient guide for navigation of the approaches to the Providence Group. Depending on draught, care should be taken to avoid (with positions given from Bancs Providence (9°32'S, 50°59'E)):

A bank (18 miles SE), with a least depth 25 m over it.

- 2 A depth of 18.3 m (21 miles ESE).

Umzinto Bank (2¼ miles NNW of the 18.3 m depth), coral and steep-to.

A shoal (20 miles NE), with a depth of 8.7 m over it, reported in 1884 by a resident of the Farquhar Group. Its position is approximate.

- 3 Wizard Reef (8°48'S, 51°02'E) which is 2½ miles long in a W/E direction and 1 mile wide. The reef dries near the W end and descends steeply into deep water except at the E end. The sea breaks heavily on the reef.

Chart 724 plan of Providence and Saint Pierre Islands

Coastal waters

9.111

- 1 The plan is sufficient guide for navigation of coastal waters, but a wide berth should be given to:

The S end of the reef off Bancs Providence from which breakers extend about 2 miles. Deep-draught vessels should pass S of a bank, with a least charted depth of 16.8 m over it, which extends 6½ miles SSE from the reef.

- 2 The E edge of the reef.

Useful mark

9.112

- 1 Providence Island Light (white metal framework tower) (9°12'6S, 51°01'7E).

Anchorage and landings

Bancs Providence

9.113

- 1 **Anchorage**, which is the most sheltered in the Providence Group, can be obtained about 2½ miles NW of Bancs Providence, in the position shown on the plan.

Landing during the South-east Trade Wind is easy at or near HW.

Providence Island

9.114

- 1 **Anchorage** can be obtained in the position shown on the plan, NW of a village situated under an avenue of casuarina trees. The bottom here is more uneven than off Bancs Providence. Anchoring depths do not extend so far from the reef and caution is necessary as they decrease rapidly. The anchorage is also exposed to the South-east Trade Wind but free from much swell.

- 2 There is a boat-house in the village and a long, low, red-roofed building is situated near the extremity of the island.

It is reported that vessels can anchor E of Providence Island during the winds described at 9.109.

- 3 **Landing** is risky at all times but in fine weather can be effected over the reef with the village bearing about 097°. **Facility.** Hospital on Providence Island. **Communication** is maintained by sea, periodically, with the Seychelles Group.

Saint Pierre Island

9.115

- 1 **Anchorage** can be obtained in a depth of 37 m with a pier on the N side of the island bearing 180°. The holding ground of coral is bad and a vessel should be ready to put to sea should the wind freshen from N.

- 2 **Landing** can be made at the pier, but this is in a bad state of repair.

It is also possible to land in two small indentations at the N end of the island, but only in fine weather and at LW when a small area of sand dries.

Small craft

Reef

9.116

- 1 Boats cannot cross the reef between Bancs Providence and Providence Island. Although there are several openings on the E side no passage has been found.



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CHAPTER 10

SEYCHELLES BANK INCLUDING THE SEYCHELLES GROUP
WITH OUTLYING ISLANDS

GENERAL INFORMATION

Charts 721, 740

Scope of the chapter**10.1**

- 1 In this chapter are described the islands and groups of islands on, or in the vicinity of, the Seychelles Bank which are part of the Republic of Seychelles. The bank extends from Le Constant Bank (6°20'S, 56°20'E) in the S to Île Denis (3°48'S, 55°40'E) and Île aux Vaches, 28 miles WNW, in the N, and from Owen Bank (4°40'S, 54°00'E) in the W to La Junon Bank (5°11'S, 57°02'E) in the E and is formally adopted by IMO as an environmentally protected area (10.8).

- 2 The principal passages and routes to and between these islands are also described and, in addition, those parts of a number of ocean routes which pass through the area.

The chapter is divided into the following sections:

Through routes (10.10).

Les Amirantes and the outlying islands S of Seychelles Bank (10.30).

- 3 Seychelles Bank - recommended approaches to Mahé (10.89).

Seychelles Bank - passages and islands within the restricted areas (10.118).

Mahé including the port of Victoria (10.177).

Topography**10.2**

- 1 The Seychelles group and the outlying islands form an archipelago of 115 islands. The group itself are granitic and are hilly or mountainous with elevations up to 914 m. They are fringed in places by islets and rocks and bordered by extensive coral reefs.

The outlying islands are coralline and low-lying, consisting of sand cays or raised reefs. Some are waterless.

Depths**10.3**

- 1 Waters over the Seychelles Bank are moderately deep but many shoals and patches are charted on it, especially around the edge of the bank where there is generally a relatively shallow rim broken by some deep passages.

The extremities of the bank are mainly of coral but many of the pinnacles around the islands on the bank are granitic.

- 2 In addition to the numerous charted dangers on Seychelles Bank others may exist, particularly on the rim of the bank. Much of the area has not been systematically surveyed and many depths are from miscellaneous lines of sounding or leadline soundings. Shoals and dangers depicted without contours on chart 740 have been derived from incomplete satellite imagery; see notes on charts.

- 3 The rim of the bank should not be crossed N of latitude 5°S except through one of the areas covered by modern surveys (see plan of source data on the chart), or by one of the routes described later in the text.

Caution. When crossing the bank great caution and vigilance should be exercised and vessels should sound continually.

Fishing**10.4**

- 1 Offshore fishing with traps, handlines, longlines, gillnets, purse seine nets and by trolling is carried out in the waters described. See 1.10 for further information.

Fishery rafts. Rafts, under the control of the Seychelles Department of Fisheries and displaying a red flag, are moored in various locations throughout the group. Many are charted but all should be given a wide berth.

Hazards**10.5**

- 1 Offshore oil and gas operations. See 1.11.
Navigational marks. See 1.7.

Weather**10.6**

- 1 **Winds.** From April to November the South-east Trade Wind (1.198), sometimes called the SE Monsoon in this area, prevails. For the rest of the year the NW Monsoon (1.199) prevails.

- 2 **Thunderstorms.** See 1.199 regarding the incidence of thunderstorms and associated squalls during the NW Monsoon.

Swell. This is a regular feature of the area. See 1.176 for details.

Flow**10.7**

- 1 **Currents.** The area lies within the variable limits of the Equatorial Counter-current (1.164) and South Equatorial Current (1.166).

From December to April the Equatorial Counter-current sets E over Seychelles Bank. At the beginning and end of this period it is of high constancy with an average rate of 1½ to 2 kn. From January to March its constancy is moderate with a rate of about 1 kn.

- 2 At the end of the period the W-going South Equatorial Current begins to move N so that between April and July the current, although much influenced by the winds, tends to set E in the N and W in the S. This current is of low constancy with average rates from ¾ to 1¼ kn.

By July the W-going South Equatorial Current covers the whole bank and persists until October. This current is of moderate to low constancy with an average rate of 1 kn.

- 3 In October the E-going Equatorial Counter-current returns to the N part of the bank and gradually replaces the W-going current so that, during November, it covers the entire bank. Conditions in October and November thus resemble those from April to June. During December the Equatorial Counter-current again becomes predominant.

- 4 Onshore sets may be experienced in the vicinity of the islands in the area.

Overfalls. These may cause locally strong and erratic currents and are formed on Seychelles Bank, especially from April to June and from October to December.

Tidal streams. See 1.172.

Regulations**10.8**

- 1 **Pollution** of the sea; see 1.43 regarding national regulations.
- 2 **Areas to be Avoided.** Two areas, adopted by the IMO as an environmental protection measure, have been established on Seychelles Bank and these are separated by a N/S channel, varying from 6 to 20 miles in width. This permits access to the port of Victoria, on the E coast of Mahé island, which lies within the W area. Vessels of more than 200 gt, whether bound for ports in the Seychelles or on passage, should avoid entering these restricted areas.

- 3 All other vessels should proceed with caution and are advised to avoid crossing the edge of the bank except by one of the routes described in this chapter.

Entry. No vessel may call at any island of the Seychelles group unless permission has been obtained from the appropriate authorities in Victoria.

Quarantine regulations. See 1.44.

Rescue**10.9**

- 1 See 1.52 for details of a reporting system designed to provide information for SAR operations.

THROUGH ROUTES**GENERAL INFORMATION**

Chart 721

Scope of section**10.10**

- 1 In this section are described those ocean routes which pass through the area covered by this chapter, being those between:

The S coast of Africa, Sri Lanka and Bay of Bengal (10.11 or 10.16).

Port Louis (Mauritius), Aden and Red Sea ports (10.13 or 10.24).

- 2 The S coast of Africa and W coast of India (10.16).
The E coast of Africa and Sunda Straits (10.20).

Also described is the route (10.28) through the S approaches to Seychelles Bank, between Port Louis and Mahé.

For full details of these routes see *Ocean Passages for the World* and Routeing Chart 5126.

to have a depth of 27 m over it, lies 3 miles NE of the bank.

ROUTES WEST OF SEYCHELLES BANK**General information**

Chart 721

Routes**10.13**

- 1 Routes between Mauritius and ports in the Gulf of Aden and Red Sea areas pass between the W end of Seychelles Bank (4°40'S, 54°00'E) and the N end of a bank, 35 miles WSW, on which the islands of Les Amirantes group is situated.

Currents**10.14**

- 1 For information on currents around the N end of Les Amirantes bank see 10.35.

Directions**10.15**

- 1 From the vicinity of 6°50'S, 54°15'E the through route leads NNW, passing:

Well ENE of a steep-to atoll on which Desroches (5°41'S, 53°40'E) (10.47) is situated and from which a light (10.51) is exhibited, thence:

Well ENE of a pinnacle of rock, 8½ miles NNE of Desroches, reported in 1882 to have a depth of 3.7 m over it, thence:

- 2 ENE of Bancs Africains (4°54'S, 53°23'E) (10.68) which are steep-to and from which North Island Light (10.37) is exhibited, and:

WSW of Owen Bank (4°40'S, 54°00'E) which is steep-to. In this vicinity vessels described at 10.8 should keep outside the charted Area to be Avoided.

ROUTES NORTH-WEST OF SEYCHELLES BANK**General information**

Charts 721, 740

Routes**10.16**

- 1 Seasonal routes between Cape Town and SW Africa and ports on the W coast of India, Sri Lanka and Bay of Bengal pass NW of the N end of the bank on which the islands of Les Amirantes group are situated and NW of Seychelles Bank.

ROUTES SOUTH OF SEYCHELLES BANK**General information**

Chart 721

Routes**10.11**

- 1 Seasonal routes between Cape Town and SW Africa and Sri Lanka and Bay of Bengal pass S of Seychelles Bank.

Directions**10.12**

- 1 From the vicinity of 7°30'S, 52°20'E the through route leads ENE, passing:

SSE of Saint François (7°09'S, 52°44'E) (10.71), thence:

SSE of La Perle Reef (6°00'S, 55°18'E) (10.85), thence:

- 2 Clear of Le Constant Bank, an extension of Seychelles Bank and separated from it by a channel (6°08'S, 56°19'E) in which there are depths of 190 m, noting that depths as little as 10 m are charted on, and in the vicinity of, the bank. Thence:

- 3 SSE of a depth of 20.7 m (5°47'S, 56°47'E), on the SE edge of Seychelles Bank, in which vicinity the route passes close SE of the charted Area to be Avoided, thence:

Clear of a bank (5°55'S, 57°30'E), with a least depth of 20 m over it. An isolated shoal, reported in 1953

Currents**10.17**

- 1 For currents around the N end of Les Amirantes bank see 10.35.

Directions**10.18**

- 1 From the vicinity of 5°30'S, 52°20'E the through route leads NE in depths over 1000 m and, in the vicinity of Seychelles Bank, outside the Charted Area to be Avoided, passing:
NW of Lady Denison-Pender Shoal (4°50'S, 53°19'E) (10.37), thence:
2 NW of the W end of Owen Bank (4°40'S, 54°00'E), thence:
NW of Hermes Bank (4°30'S, 54°05'E), thence:
NW of Roberts Bank (4°22'S, 54°11'E), thence:
NW of a ridge (4°12'S, 54°20'E), with a least known depth of 13.7 m over it on the edge of Seychelles Bank, thence:
3 NW of a depth of 15.2 m (4°01'S, 54°30'E) at the W end of a bank on which Swan Shoal is situated, thence:
NW of Vigilant Shoal (3°54'S, 54°40'E), at the W end of a ridge lying close to the edge of Seychelles bank, thence:
4 NW of Andromache Shoal (3°51'S, 54°50'E), at the E end of the same ridge, thence:
NW of a bank (3°47'S, 54°57'E), with a least charted depth of 11 m over it, thence:
NW of Île aux Vaches (3°43'S, 55°12'E) (10.109) which lies on the N edge of Seychelles Bank. An area of shoaling extends 7 miles W from the island.

10.19

- 1 **Useful mark:**
North Island Light (4°52'8S, 53°23'2E) (10.37).

ROUTES NORTH OF SEYCHELLES BANK**General information**

Charts 721, 740

Routes**10.20**

- 1 Routes between Central E African ports and Australia, and also the Far East via Sunda Strait, pass N of Seychelles Bank.

Currents**10.21**

- 1 For information on currents around the N edge of Seychelles Bank see 10.7.

Directions**10.22**

- 1 From the vicinity of 3°30'S, 54°40'E the through route leads E, passing:
N of Andromache Shoal (3°51'S, 54°50'E), with a least charted depth of 9.1 m over it, thence:
N of a bank (3°47'S, 54°57'E), with a least charted depth of 11 m over it, thence:
2 N of Île aux Vaches (3°43'S, 55°12'E) (10.109) which lies on the N edge of Seychelles Bank, thence:

N of Île Denis (3°48'S, 55°40'E) (10.112) which lies on the N edge of Seychelles Bank and has a bank extending 3 miles N with scattered coral heads, thence:

N of Bar de l'Est (3°47'S, 55°50'E), a bank with least charted depth of 8.8 m over it.

10.23

- 1 **Useful mark:**
Île Denis Light (3°47'8S, 55°40'0E) (10.114).

ROUTES EAST OF SEYCHELLES BANK**General information**

Charts 721, 740

Routes**10.24**

- 1 Routes between Port Louis (Mauritius) and Gulf of Aden and Red Sea ports pass E of Seychelles Bank.

Directions**10.25**

- 1 From the vicinity of 7°40'S, 57°30'E the through route leads initially N, passing:
Well E of Fortune Bank (7°18'S, 56°53'E) which has not been fully examined and on which depths of less than those charted have been reported (1991), thence:
Clear of Correira Bank (6°29'S, 57°10'E), and:
2 Clear of a shoaling area, (6°20'S, 58°00'E), the existence of which is doubtful. A patch, with a depth of 20 m over it, was reported (1985) to lie about 8 miles SE of the shoaling area. Thence:
E of La Junon Bank (5°11'S, 57°02'E), and the charted Area to be Avoided.

10.26

- 1 When clear of La Junon Bank the track leads NW, outside the charted Area to be Avoided, and it is advisable to remain in depths over 1000 m while passing:
NE of a 16.5 m patch (5°03'S, 56°54'E), the outermost of a number of charted patches which extend from Zoroaster Shoal, 15 miles WNW, thence:
2 NE of Topaze Bank (4°39'S, 56°22'E), from which uncharted shallows extend SE, thence:
NE of the NE point (3°51'S, 56°06'E), of Seychelles Bank, in the vicinity of which there is evidence that the edge of the bank lies about 1½ miles NE of its charted position, thence:
3 NE of Bar de l'Est (3°47'S, 55°50'E), a bank with least charted depth of 8.8 m over it.

Other name**10.27**

- 1 Adelaide Bank (6°35'S, 56°49'E).

ROUTE THROUGH SOUTHERN APPROACHES TO SEYCHELLES BANK**General information**

Chart 721

Route**10.28**

- 1 A route between Port Louis, Mauritius, and Mahé passes through the S approaches to Seychelles Bank.

Directions

10.29

- 1 From the vicinity of 7°30'S, 55°20'E the track leads N, passing:
Either side of a detached bank on which lie La Perle Reef (6°00'S, 55°18'E) and Île Plate, 10 miles NNE.

See 10.86 for directions in the vicinity of the bank. Thence:

- 2 To the vicinity of 5°07'S, 55°12'E, or 5°15'S, 55°26'E, from which routes lead across Seychelles Bank to Mahé.
(*Directions continue at 10.96*)

LES AMIRANTES AND THE OUTLYING ISLANDS SOUTH OF SEYCHELLES BANK

GENERAL INFORMATION

Chart 721

Scope of section

10.30

- 1 In this section are described Les Amirantes group of islands and reefs (5°35'S, 53°15'E) (10.32) lying WSW of Seychelles Bank and other outlying islands to the S, together with the passages through their surrounding waters (10.36).
- 2 The outlying islands are comprised of:
Alphonse (7°00'S, 52°43'E) (10.71) and the adjacent islets of Bijoutier and Saint François, 4 and 9 miles S respectively.
- 3 Coëtivy (7°08'S, 56°17'E) (10.79).
Île Plate (5°52'S, 55°23'E) (10.85).
The section is arranged as follows:
Les Amirantes (10.32).
Outlying islands (10.71).

LES AMIRANTES

General information

Chart 721

Routes

10.31

- 1 In this sub-section directions are given for routes passing W and E of Les Amirantes. Passages across Les Amirantes have also been described.

Topography

10.32

- 1 Les Amirantes group consists of:
A chain of small islands lying mainly on the E side of an extensive bank of growing coral and sand, parts of which dry, centred about position 5°35'S, 53°15'E, and:
Desroches (5°41'S, 53°40'E) (10.47), a detached island lying on the drying S edge of the almost circular coral reef of an atoll.
- 2 The chain of small islands is comprised of:
Desnœufs (6°14'S, 53°02'E) (10.54) and Marie Louis (10.56), 7 miles NE.
Boudeuse (10.37), 15 miles NW, and Étoile, 21 miles N of Desnœufs respectively.
Poivre (5°45'S, 53°18'E) (10.59) and Île du Sud (10.59), 1 mile S.
- 3 Sand Cay, 6½ miles NW of Poivre.
Saint Joseph (5°26'S, 53°22'E) (10.62), and some smaller islets lying on a coral atoll, with D'Arros (10.62), 2½ miles WNW.
Rémire (5°07'S, 53°19'E) (10.66) and some smaller islets lying on Bancs Africains (4°54'S, 53°23'E) (10.68).

10.33

- 1 All the islands are flat and sandy and fringed with coral reefs. None reach an elevation more than 6 m but, except as

stated later in the text, coconut palms and casuarina trees with heights up to 27 m grow on the islands and these may be seen from a distance.

Depths

10.34

- 1 There are least charted depths of 3.7 m (5°49'S, 53°06'E) and 2.7 m (5°21'S, 53°18'E) on the W and E sides of the bank, respectively, over shoals on a lip which extends along both edges. There are average depths of 20 m over the lip, within which they are generally greater but irregular.
- 2 The bank on which Les Amirantes lie forms the top of a ridge with steep-to sides around which the depth increases rapidly beyond 1500 m within 2 miles of the reef edge in places.
The sides of the mount supporting the atoll of Desroches are also steep-to, being surrounded by extreme depths similar to those of the main group.

Natural conditions

10.35

- 1 **Currents.** Those in the vicinity of the bank on which the islands lie can be strong and erratic. They are generally similar to those around the Seychelles group, described at 10.7, but the Equatorial Counter-current does not wholly occupy the area of Les Amirantes until the beginning of the year and is of mainly moderate constancy with an average rate of about 1 kn. The South Equatorial Current, which has been known to produce a strong NW set around the N end of the bank, does not usually begin to be replaced from N by an E-going current until November.
- 2 **Overfalls** which give rise to strong and erratic currents are formed in places on the bank.
- 3 **Tidal streams.** In March and April, 1882, HM Surveying Ship *Alert* found that the tidal streams were fairly regular throughout Les Amirantes. Near the islands and shoals they were found to follow their edges but, as a general rule, the stream set NW during a rising tide and SE during a falling tide, turning at HW and LW, the greatest rate observed being 2½ kn.
- 4 Some exceptions to this general rule are described at the appropriate places in the text. It should also be noted that later observations have shown that the streams are sometimes strong and variable.
Flow. When a tidal stream setting NE combines with a NE-going current, a flow of up to 4½ kn may be experienced.

Passage directions

Caution

10.36

- 1 Unless bound for one of the islands the bank on which they lie should be avoided, due to the nature of the currents described at 10.35 and because sounding gives little or no warning of approach to it.
When bound for the islands the bank should not be crossed unless essential and then only with extreme caution.

Passage west of Les Amirantes**10.37**

- 1 From a position S of Desnœufs (6°14'S, 53°02'E) (10.54), giving the bank on which the islands lie a wide berth, the track leads initially NW, thence NNW, passing:
 - WNW of Boudeuse (6°05'S, 52°50'E), which is a sandy and bare cay, thence:
- 2 WNW of Étoile, 16 miles NE of Boudeuse, composed of bare sand on a coral knoll, about 1 mile in extent, thence:
 - WNW of Lady Denison-Pender Shoal (4°50'S, 53°19'E) on which the bottom can be seen clearly, thence:
- 3 To a position N of Lady Denison-Pender Shoal. See 10.35 for the currents experienced off the N end of the bank.

Useful marks:

- Rémire Light (5°07'·0S, 53°18'·8E).
- North Island Light (white metal framework tower) (4°52'·8S, 53°23'·2E).

Charts 721, 724 plans of D'Arros and Saint Joseph Islands, Desroches and Bancs Africains

Passage east of Les Amirantes**10.38**

- 1 **Desnœufs to Poivre.** On passage E of Les Amirantes the bank on which the islands lie should be given a wide berth. From a position S of Desnœufs (6°14'S, 53°02'E) the track leads initially NE, passing:
 - SE of Desnœufs (10.54), thence:
- 2 SE of a 5·5 m shoal, 3½ miles ENE of Desnœufs, the position of which is usually indicated by tide-rips, thence:
 - SE of Marie Louise (10.56), 6½ miles NE of Desnœufs, thence:
 - SE of Île du Sud (5°47'S, 53°18'E) (10.59), thence:
 - SE of Poivre (10.59), 1 mile N of Île du Sud.

10.39

- 1 **Poivre to Saint Joseph.** On passage between Poivre and Saint Joseph Island, 18½ miles N, the atoll of which Desroches (5°41'S, 53°40'E) (10.47) is a part may be passed on either side. A good lookout from a high vantage point is the best guide to the shallow water of the atoll which shows plainly.
- 2 If passing W of the atoll a vessel should be kept in mid-channel, passing:
 - W of a depth of 6·4 m over the reef on the W side of the atoll, thence:
 - E of a depth of 18·3 m (reported 1952), 16 miles NNE of Poivre, thence:
- 3 E of Saint Joseph (10.62).

A current setting strongly NW and causing overfalls was experienced between Poivre and Desroches by HMS *Pearl* in 1904.

10.40

- 1 If proceeding E of Desroches the atoll should be given a wide berth, noting that it is steep-to with considerable depths in all directions outside the reef (10.34), passing:
 - SE of reefs, which are readily identified on radar display when dry, extending 5 cables from the W side and S side, and about 1 mile from Pointe Hélène, the NE extremity of the island, near which a light (white metal framework tower) is exhibited, thence:
- 2 E of the atoll, where strong overfalls were experienced by MV *British Avon* in May 1975, thence:

E of a depth of 3·7 m (reported 1882) over a pinnacle of rock 8½ miles NNE of Desroches, thence:

NE of Shark Rocks which occupy the N part of the atoll, thence:

E of Saint Joseph (10.62).

10.41

- 1 **Saint Joseph to Bancs Africains.** From E of Saint Joseph a vessel bound N should pass:
 - E of Rémire Reef, 20 miles N of Saint Joseph. It dries in patches and is steep-to on its SE side, over which there is a heavy surf. A light is exhibited from Rémire (10.66), close SE of the reef. Thence:
 - 2 E of a depth of 9·6 m, 1 mile NE of Rémire Reef, thence:
 - E of Bancs Africains, 9 miles N of Rémire Reef, on which lie South Island and North Island. A light (10.37) is exhibited from North Island. Thence:
- To a position N of Lady Denison-Pender Shoal (4°50'S, 53°19'E) (10.37). See 10.35 for currents off the N end of these banks.

Charts 721, 724 plans of Bancs Africains, D'Arros and Saint Joseph Islands

Passages across Les Amirantes bank**10.42**

- 1 **Caution.** See 10.36 regarding passage across the bank on which Les Amirantes are situated.
- Channel between Marie Louise and Île du Sud.** When proceeding across that part of Les Amirantes bank which lies between Marie Louise (6°11'S, 53°08'E) (10.56) and Île du Sud (10.59), 26 miles NNE, care should be taken to avoid (with positions from Marie Louise):
- 2 Boudeuse (19 miles WNW) (10.37),
Étoile (19 miles NNW) (10.37), and;
A 3·7 m coral shoal (22 miles N).

10.43

- 1 **Channel between Poivre and Saint Joseph.** When crossing Les Amirantes bank between Poivre (5°45'S, 53°18'E) (10.59) and Saint Joseph (10.62) 18 miles N, care should be taken to avoid Bertaut Reef, 7 miles NW of Poivre. The sea breaks heavily over the steep edge of the reef. Sand Cay, on the S part of the reef, is bare.

10.44

- 1 **Channel between D'Arros Island and Rémire.** The bank on which Les Amirantes lie is generally shoal between D'Arros Island (5°25'S, 53°18'E) (10.62) and Rémire (10.66), 17 miles N. At night, this part of the bank should be given a wide berth. By day, an area in which many shoals were reported in 1975 to exist between 13 and 5 miles SSW of Rémire should not be entered. The existence of the channel in depths of more than 20 m charted close to Rémire is doubtful and it is possible that there are only isolated depths greater than 20 m in the area.

10.45

- 1 **Channel between Rémire and Bancs Africains.** Between Rémire (5°07'S, 53°19'E) (10.66) and Rémire Reef (10.41) 1¼ miles ENE, on the S, and Bancs Africains, 14 miles NNE of Rémire, on the N, several patches are charted. In addition, many shoals are reported (1975) to encumber the area. Passage over this part of the bank should be avoided, except in daylight and in fair weather. A good lookout should be kept from a high vantage point as, in favourable weather, the bottom can plainly be seen in depths of 22 m. The least charted depth is 7·7 m (4°56'·3S, 53°21'·7E) over the S end of Bancs Africains.

2 **Useful marks:**

Rémire Light (5°07'·0S, 53°18'·8E).

North Island Light (4°52'·8S, 53°23'·2E) (10.37).

Passage between Les Amirantes and the Seychelles Group**10.46**

- 1 On passage between Les Amirantes and the Seychelles group (10.2) a vessel may pass either:

S of Seychelles Bank to position 5°07'S, 55°12'E in the S approaches to Mahé, or:

W of Owen Bank (4°40'S, 54°00'E), and, if of 200 grt or less, to position 4°33'S, 53°50'E in the W approaches to Mahé. Vessels over 200 gt should keep outside the charted Area to be Avoided (10.8).

(*Directions continue, for S approaches to Mahé at 10.96 and for W approaches to Mahé at 10.121*)

Desroches

Chart 724 plan of Desroches

General information**10.47**

- 1 **Topography.** Desroches (5°41'S, 53°40'E) is tree-covered and lies on the drying edge of the steep-to, almost circular, coral reef of an atoll. The island appears to be subject to erosion along its SE side where there are large gaps in the drying part of the reef (1964). In the middle of the NW side there is a settlement, the island being under the supervision of the manager of a company producing copra and firewood for export.

10.48

- 1 **Tidal streams.** Those at the anchorage (10.52) were found by HMS *Alert* (1882) to be slight but, near Shark Rocks, 6 miles N of the island, the stream set NW during a rising tide and SE during a falling tide, at a rate of nearly 1 kn.

10.49

Tidal levels. At Desroches the mean spring range is about 1·4 m; mean neap range about 0·4 m. For further information see *Admiralty Tide Tables Volume 3*.

Directions for approach**10.50**

- 1 A vessel bound for Desroches should approach from NW, through an opening in the reef, 7 miles NW of the island. The opening is 2¾ miles wide and has charted depths from 12·8 to 18·3 m. The tidal streams set strongly over the reef and across the opening. See 10.39 regarding lookout for shoal water.

- 2 **Caution.** Crossing the reef at any place other than the NW side is hazardous, there being less water elsewhere. There are also below-water coral knolls over which there is usually a considerable swell.

10.51

- 1 **Leading mark.** The line of bearing, about 132°, of a white cross at the settlement leads to the anchorage, passing close NE of a 10·7 m shoal, 2¾ miles NW of the settlement. The cross is reportedly visible at about 4 miles (HMS *Leopard*, 1974).

- 2 **Useful mark:**

Desroches Light (5°40'·7S, 53°41'·2E) (10.40). The structure is visible when approaching from NW but becomes obscured by trees near the anchorage.

Anchorage and landing places**10.52**

- 1 **Anchorage.** An anchorage can be obtained in the position shown on the plan, in depths of 22 to 24 m, about 7 cables NW of the settlement. During the South-east Trade Wind this is an excellent anchorage although a slight swell may be experienced.

- 2 Previously, HM Survey vessels have found safe anchorage in the following positions:

In a depth of 24 m with the white cross in the front of the settlement bearing 133° and Pointe Hélène, about 1½ miles NE of the settlement, bearing 096°.

In a depth of 18 m, sand and coral, good holding ground, with the white cross bearing 132° and Pointe Hélène bearing 092½°.

- 3 **Landing places.** Landing can be effected on the NW side of Desroches, at all states of the tide, on a beach directly in front of the settlement except during strong NW winds. However, great care is necessary as the approach is encumbered by coral heads.

During the NW Monsoon, from December to March, landing can be made on the SE coast using Passe Thérèse, one of the gaps mentioned at 10.47.

Services**10.53**

- 1 **Facility.** Small hospital in the settlement.

Supplies. A large quantity of rain water is stored in a tank underground for the use of the inhabitants of the island.

Communications. Desroches is visited every three months by a vessel from Mahé.

Other anchorages and landing places

Chart 721

Desnœufs**10.54**

- 1 **Topography.** Desnœufs (16°14'S, 53°02'E) is low and sparsely covered by grass with a few stunted coconut palms near its centre. There is a steady build-up of guano deposits on the island due to large numbers of breeding seabirds.

The island is almost surrounded by a rocky ledge or reef on which there is a stranded wreck (1989) believed to be that of the Seychelles vessel *Nordvaer* (about 500 grt, 50 m in length).

The island is reported to be easily identified by radar.

10.55

- 1 **Landing place.** On the N point of the island there is a steep-to sandy beach opposite which is a shelter. At HW the sea may break heavily on the beach but, at LW, it is used to load eggs collected on the island by the inhabitants of Marie Louise, 7 miles NE.

Marie Louise**10.56**

- 1 **Topography.** Marie Louise (6°11'S, 53°08'E) is low, sandy and covered with trees. On the E side of the island there is a coral reef on which the sea breaks. A small settlement is situated on the NW point of the island.

- 2 **Tidal streams.** See 10.35. Off Marie Louise the streams set W during a rising tide and E during a falling tide at a rate of about 2 kn. An eddy, reported in 1882, which formed W of the island during the rising tide, extended about 1½ miles and set directly back towards the island.

10.57

- 1 **Tidal levels.** At Marie Louise Island the mean spring range is about 1·6 m; mean neap range about 0·6 m. For further information see *Admiralty Tide Tables Volume 3*.

10.58

- 1 **Anchorage.** Previously, HM Survey vessels have found safe anchorage in the following position:

In a depth of 35 m, sand, 3¼ cables off the NW end of Marie Louise, with the E edge of the island bearing 120°, the white cross of a church in the settlement bearing 160° and the W edge of the island 165°.

- 2 In this berth there was a little shelter from the SE wind and swell, but it would be uncomfortable in a W wind when a berth farther offshore would be preferable.

Anchorage N of the island is not recommended as it has no shelter and is fouled by a dangerous wreck, the charted position of which is approximate only.

- 3 **Landing place.** A sandy beach on the NW side of the island provides a landing place but landing is rarely easy, due to surf.

Facility. There is a small hospital in the settlement.

Poivre and Île du Sud**10.59**

- 1 **Topography.** Poivre (5°45'S, 53°18'E) is the N and smaller of two tree-covered sand cays situated on an atoll which has no lagoon. On the E point of the island there is a settlement.

A reef, which dries, forms a causeway at LW connecting Poivre to Île du Sud, the S cay, on which there is also a small settlement.

- 2 **Tidal streams.** Those off the W end of Poivre set between NNE and NNW from 3 hours before to 3 hours after HW at a rate from ¼ to 1 kn. For the rest of the time they set between S and W at a maximum rate of ½ kn. There is a short period of slack water between streams.

10.60

- 1 **Anchorage.** The best anchorage is off the W end of Poivre where there is a considerable area with depths of about 22 m, well sheltered from wind and swell.

Previously, HM Survey vessels have found safe anchorage in the following position:

- 2 In a depth of 18 m, fine sand and coral, good holding ground, with the W end of the island bearing 198° and the E end bearing 150°, well sheltered from SE wind and swell.

Anchorage is also available in depths from 22 to 37 m, 2 cables off the edge of the reef E of Poivre, but a heavy sea may arise when the wind is opposed to the tidal stream.

10.61

- 1 **Landing place.** This is a concrete block jetty, 5 m in length and 3 m wide, near the settlement on Poivre. It is approached by a narrow channel, normally kept clear to depths of 0.3 to 0.6 m at LW, which is entered NNE of the settlement and leads about 198° to the jetty. Boats secure to the jetty but it is not connected to the shore.

- 2 **Facility.** There is a small hospital in the settlement.

Supplies. Ample fresh water, stored in tanks.

Communications. Regular sea service with Mahé for the shipment of copra which is prepared on both islands.

Chart 724 plan of D'Arros and Saint Joseph Islands

Saint Joseph and D'Arros islands**10.62**

- 1 **Topography.** Saint Joseph Island (5°26'S, 53°22'E) is the largest and E-most of a number of small islands, situated on a coral atoll, with a small settlement on its NW side. The position of the other main islands can best be seen on the plan; from S to N they are:

Île Chien, a sand cay covered with bushes.

- 2 Grand Cacassaye Island which joins the SW edge of Saint Joseph Island.

Paul Island, on which there are a few coconut palms. Benjamin Island, similar to Paul Island.

Banc Coco, a sandbank on which there are a few bushes.

- 3 Fouquet Island, planted with coconut palms.

Resource Island, similar to Fouquet Island.

D'Arros, 2¾ miles WNW of Saint Joseph, is of the usual coral reef type described at 10.33. The land is nowhere more than 3 m high but the island is distinguished by a large clump of casuarina trees. On the N side of the island there is a settlement

10.63

- 1 **Tidal streams.** See information on the plan. The stream sets WSW from 4 hours before to 4 hours after local HW. For the remainder of the time it is either slack or sets ENE.

Tidal levels. At D'Arros the mean spring range is about 1.5 m; mean neap range about 0.5 m. For further information see *Admiralty Tide Tables Volume 3*.

- 2 **Directions.** The trees on D'Arros show as a large square clump before the remainder of the island is seen.

If making for anchorage N of D'Arros from S, the channel between the island and the atoll on which Saint Joseph is situated, although clear, should only be attempted with caution. The tidal streams set with considerable strength off a spit which extends NE, from D'Arros, and the edges of the reefs on both sides of the channel are difficult to see unless the sun is in a favourable position.

- 3 If approaching from W (see caution at 10.36) an extensive 7 m shoal (Chart 721), 4½ miles WSW of D'Arros, should be avoided.

Approaching from N, care should be taken to avoid a large shoal (10.34) with a least depth of 2.7 m over it, 2¾ miles N of the island.

10.64

- 1 **Anchorage.** The most convenient anchorage is in the position shown on the plan, in a depth of about 45 m, sand and coral, 3 cables N of D'Arros, opposite the settlement, sheltered from SE wind and swell.

- 2 Anchorage has been obtained in a depth of 22 m), sand and coral, 8 cables N of D'Arros, with the E end bearing 139° and the W end 195°.

Facility. There is a small hospital in the settlement at D'Arros.

10.65

- 1 **Small craft.** A boat passage exists at HW, 5 cables SW of Resource Island, as shown on the plan. The passage lies close S of a small sandbank and is shallow.

Anchorage out of the tidal stream can be found off the settlement on D'Arros within 3 cables of the shore.

Chart 721

Rémire**10.66**

- 1 **Topography.** Rémire (5°07'S, 53°19'E) is formed of coral rock covered with trees and is bordered by low cliffs in many places.

On the N side of the island there is a small settlement in front of which are the remains of Guano workings.

A light is exhibited from a position 5°07'0S, 53°18'6E on the island.

- 2 **Tidal streams.** See 10.35. Off Rémire the streams set between N and NE during a rising tide and between WNW and SW during a falling tide, the latter being the weaker and less regular. Spring rates are about 1 kn and neap rates are about ¼ kn.

- 3 **Directions.** When making for anchorage off Rémire the channel between the island and Rémire Reef (10.41), 1¾ miles ENE, should only be attempted in case of necessity.

If approaching from the W (see caution at 10.36) a vessel should pass N of an 11 m coral shoal, 2¾ miles WSW of Rémire, which gives the appearance of shallow water.

10.67

- 1 **Anchorage.** An HM Survey vessel has found safe anchorage in a depth of 15 m about 2 cables from Rémire, with the E extremity bearing 137° and the W extremity bearing 186°. This anchorage, protected by Rémire, appeared to be good.

- 2 **Landing place.** A steep sandy beach on the N side of the island offers an easy landing. On the S side of the island, which is exposed to the South-east Trade Wind, a reef extends 3 cables to seaward.

Communication. The island is visited periodically by sea from Victoria, Mahé.

Chart 724 plan of Bancs Africains

Bancs Africains

10.68

- 1 **Topography.** South Island (4°54'7S, 53°22'6E) and North Island, 1¾ miles NNE, lie on Bancs Africains at opposite ends of a drying coral reef. South Island consists of bare sand with a height of 3 m. On North Island, 3 m in height, there are a few low coconut trees (1980).

- 2 **Current.** In June 1971, the yacht *Barbara* experienced a current setting NNW at a rate of 4 kn off the N end of Bancs Africains.

Tidal streams. See information on the plan.

Seas. During the South-east Trade Wind seas break on the SE side of the Bancs Africains, causing heavy surf.

Wind and current frequently cause heavy seas off the N end of the banks.

10.69

- 1 **Directions.** By day, North Island may be seen from a distance. At night, without reliable radar, and if North Island Light (10.37) is not seen, it is dangerous to approach Bancs Africains from S, through E to N, since a vessel could be off the E side of the reef and approaching it without the islands being seen.

10.70

- 1 **Anchorage.** About 1 mile W of North Island, in a depth of about 14 m, anchorage can be obtained in the position shown on the plan. The holding ground is indifferent but there is protection from the long SE swell.

Previously, a small vessel has anchored NW of South Island in a depth of 10 m, coral rock, and this berth may be preferable to that off North Island. Closer inshore, in lesser depths suitable for small craft, quite smooth water may be found.

- 2 **Landing.** Except at LW, landing is easily made on North Island.

Communications. A vessel calls periodically from Victoria, Mahé, to service North Island Light.

OUTLYING ISLANDS

Saint François, Bijoutier and Alphonse

Chart 721

General information

10.71

- 1 **Topography.** Saint François (7°09'S, 52°44'E) is in the form of a ridge, covered with coconut palms, lying on the S

side of a steep-to atoll which consists mainly of sand and coral banks around a lagoon and is itself surrounded by a reef which dries in places. Bijoutier, 5 miles N, stands on a detached reef and is similarly covered with palms.

- 2 Alphonse, 9 miles N, lies on a separate, steep-to coral reef and is also mainly covered with coconut palms. On the SE side of the island there is a small settlement with a jetty, previously found to be disused.

10.72

- 1 **Depths.** The reefs on which Alphonse and Bijoutier lie are separated by a deep channel, 1 mile wide.

The lagoon, N of Saint François, has depths of 18 m.

- 2 **Tidal streams.** Those in the channel between Alphonse and Bijoutier set between W and SW during a falling tide and between E and NE during a rising tide, with no period of slack water. At neap tides the streams attain rates from ½ to 2½ kn. Eddies form in the channel and small tide-rips pass through periodically.

10.73

- 1 **Tidal levels.** At Alphonse the mean spring range is about 1.6 m; mean neap range about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

10.74

- 1 **Landmarks:**

Three stranded wrecks (7°10'3S, 52°44'1E), on the reef immediately S of Saint François.

Two stranded wrecks (7°07'5S, 52°46'5E) on the reef, 2½ and 3 miles NE of Saint François.

These are all wrecks of fishing vessels and all were conspicuous in 1978.

Directions

10.75

- 1 The chart is sufficient guide for navigation of the waters surrounding the islands described above. All three islands are visible from a distance while Alphonse is reported to be readily identified on a radar display.

Useful mark:

Stranded wreck, 2 miles E of Alphonse, on the outer edge of the reef.

Anchorage

10.76

- 1 An HM Survey vessel has found safe anchorage in a depth of 29 m about 2 cables off the W side of the steep-to reef on which Saint François lies.

Anchorage off Alphonse requires local knowledge and is generally bad and dangerous, being exposed to SE swell or affected by tidal streams.

Facility

10.77

- 1 Small hospital in the settlement on Alphonse.

Small craft

10.78

- 1 **Depths** over the atoll reef are not sufficient for boats to pass over it at LW.

Tide-rips. At the change of the tidal stream in the channel, N of Bijoutier, the tide-rips are heavy and are dangerous for boats.

- 2 **Anchorage** can be obtained off the E side of Alphonse reef where a small boat channel leads through the reef. This anchorage is used by small craft visiting the island.

Another anchorage is in a depth of 22 m just E of a boat channel leading into the lagoon, N of Saint François.

- 3 **Alphonse.** The lagoon at Alphonse is entered through a channel from the entrance of which the centre of Alphonse

bears 355°. The channel is only suitable for boats near HW as the sea breaks right across it at half-tide.

Coëtivy

Chart 724 plan of Coëtivy

General information

10.79

- 1 **Topography.** Coëtivy (7°08'S, 56°17'E) is covered with trees, mainly coconut palms, except at the S end where it is more open. There are several sandhills but none higher than the trees and they cannot be seen from seaward. On the W coast of the island there is a small settlement.

- 2 The island lies on the E edge of a rectangular-shaped bank, occupying the northern half of that side. It is partially surrounded by a coastal reef which partly dries and borders the entire E coast and which extends 2¾ miles farther SW, beyond the island, to occupy another quarter of the E side of the bank. There is an extensive area of rocks to the W and SW of the S half of the islands and reef.

- 3 **Depths.** A shoal area with a least charted depth of 3·7 m extends SSW of the island, bordering the reef mentioned above which partially dries at LW and on which the sea breaks heavily during the South-east Trade Wind. The main bank extends W from the island a distance of about 9 miles, having depths between 6 m and 20 m over it. Beyond the edges of the bank and E of the island the depth increases rapidly beyond 300 m.

- 4 **Overfalls** form at LW about 1 mile W of the S point of the island.

10.80

- 1 **Tidal levels.** At Coëtivy the mean spring range is about 1·0 m; mean neap range about 0·3 m. For further information see *Admiralty Tide Tables Volume 3*.

Directions

10.81

- 1 **Passage south of Coëtivy.** The island should be given a wide berth in order to avoid the bank and shoaled area described at 10.78.

- 2 **Passage west of Coëtivy.** From a position not less than 8 miles SW of the island a vessel on passage W of the island should proceed generally N, passing W of the shoaled area described at 10.79. Deep draught vessels should attempt to pass not less than 10 miles W to avoid passing over the main bank.

Passage east or north of Coëtivy. The plan is sufficient guide.

- 3 **Useful marks:**

Small sand cay, 1¼ miles SW of the island.

White cross, about 3 m in height, situated in the settlement. Approaching from N the cross cannot be seen until it bears 120°. In 1978 it was reported as not having been sighted.

Anchorage

10.82

- 1 Excellent shelter from the South-east Trade Wind can be obtained anywhere on the bank, W of Coëtivy. The most convenient berth for communication with the shore is off the settlement, but it is not advisable to anchor less than 5 cables from the shore due to the presence of coral heads.

Previously, HM Survey vessels have found safe anchorage in the following positions:

- 2 In the position shown on the plan, in a depth of 26 m, with a prominent sand dune close S of the

settlement bearing 130° and the NW point of the island bearing 037°.

In a depth of 15 m, 7½ cables offshore, with the S point of the island bearing 176½° and the NW point bearing 036°.

Landing

10.83

- 1 A boat channel leads to a beach off the settlement. The channel should be used with extreme caution as there are coral heads up to 4 cables off the beach.

Facilities and communications

10.84

- 1 There is a hospital on Coëtivy.

A vessel from the Seychelles group calls every two months at Coëtivy from which copra, salted fish and firewood are exported.

Île Plate

Chart 721

General information

10.85

- 1 **Topography.** Île Plate (5°52'S, 55°23'E) is low and wooded and lies on the NE quadrant of an extensive bank, surrounded by barrier reefs upon which the sea breaks heavily.

There is a small settlement in the centre of the island, the inhabitants of which are employed in the production of copra.

- 2 **Radar characteristics.** The island is reported to be easily identified on a radar display from W.

Depths. The bank upon which the island lies extends about 3 miles N and 10 miles SSW of the island, being about 9 miles wide in the E/W direction. It forms a basin with charted depths of 12 m or less at its outer rim while, within the basin, depths increase to 26 m.

- 3 Depths of 2·7 m exist over numerous coral heads which lie within 2 miles W of the island.

La Perle Reef lies on the rim, 10 miles SSW of Île Plate, with depths of 3·7 m or less over it and is marked by breakers.

Directions

10.86

- 1 **Deep-draught vessels** navigating in the area should pass well clear of the bank on which Île Plate lies.

Other vessels should pass well clear of the barrier reefs surrounding Île Plate, on which the sea breaks heavily, and of La Perle Reef, 10 miles SSW of the island, on which breakers may be seen.

Anchorage

10.87

- 1 Previously, HM Survey vessels have found safe anchorage in the following positions:

In a position 2 miles W of Île Plate, in a depth of 13 m. An approach was made with the centre of the island bearing 090° and the berth was reported free of coral heads.

- 2 In a position 16½ cables W of the island with the N extremity bearing 084°, the settlement 094° and the S extremity 104°. This berth was reported free of coral heads but unexposed shoal patches were clearly visible NE and SW at a distance of 2½ cables.

Small craft**10.88**

- 1 **Anchorage.** Local craft anchor W of the island, not less than 1 mile offshore.

Reef passages. Local knowledge is required for the two complex passages which lead through the barrier reef, on the NW side of the island, into a lagoon which is quite smooth.

Landing is safely and easily achieved from the lagoon.

SEYCHELLES BANK — RECOMMENDED APPROACHES TO MAHÉ**GENERAL INFORMATION**

Charts 721, 740

Scope of the section**10.89**

- 1 In this section are described the recommended routes of approach to the port of Victoria, on the island of Mahé, having due regard for the regions adopted by the IMO as Areas to be Avoided (10.8).

The section is arranged as follows:

West and South approaches to Mahé (10.92).

Northern approaches to Mahé (10.99)

Regulations**10.90**

- 1 The Seychelles Bank is surrounded, generally, by a shallow rim with some deep passages through it. In order to reduce the risk of pollution and damage to the environment IMO-adopted Areas to be Avoided have been established. Vessels of more than 200 gt, whether bound for ports in the Seychelles or on passage, should avoid entering these restricted areas.
- 2 All other vessels should proceed with caution and are advised to avoid crossing the edge of the bank except by one of the routes described in this chapter.

Depths**10.91**

- 1 For depths and charting on Seychelles Bank see 10.3.

WEST AND SOUTH APPROACHES TO MAHÉ**General information**

Charts 721, 740, 742

Routes**10.92**

- 1 Those vessels in excess of 200 gt approaching the Seychelles Bank from W, en route for Mahé, are recommended (10.119) to pass S of Owen Bank (4°40'S, 54°00'E), on an ESE course (10.95), remaining outside the Area to be Avoided, to a position in the vicinity of 5°07'S, 55°12'E.
- 2 From this position, 28 miles SW of Mahé and 2 miles outside the boundary of the Area to be Avoided, the track in regular use by local vessels leads NE across the Seychelles Bank to a position SE of Pointe du Sud (4°48'S, 55°32'E), the S extremity of Mahé.
- 3 Alternatively, from the vicinity of 5°15'S, 55°26'E, a route established by the Department of Transport, Republic of Seychelles, leads NNE across the bank and E of Mahé, between the Areas to be Avoided, to a position SE of Pointe du Sud.
- 4 Both routes lead through an apparent break in the rim of shoals along the S edge of the Seychelles Bank but neither is wholly covered by modern surveys (see source data diagram on the chart).

Topography**10.93**

- 1 See 10.178 for description of Mahé.

Principal marks**10.94**

- 1 **Landmarks:**

Tower (4°45'S, 55°31'E) visible from seaward. The tower is that of a church surrounded by trees.

Piton de l'Eboulis (4°43'·1S, 55°30'·3E) which rises at the S end of a mountain range and is very prominent, having three summits, 503 to 518 m high, of which the centre and highest is broad, flat and bare with a distinct thumb-shaped rock on its S side.

- 2 Radio mast (red lights) (4°40'S, 55°28'E).

Morne Seychellois (4°39'S, 55°26'E), which is the highest mountain in the Seychelles group and has four peaks. During SE winds the summit is nearly always obscured by cloud.

Directions**West approach passing south of Owen Bank****10.95**

- 1 For a vessel in excess of 200 gt in a position W of Owen Bank (W end 4°40'S, 53°58'E) the track leads ESE, keeping in depths over 1000 m, outside the charted restricted area, and passing (with positions from Seagull shoal (4°42'S, 54°11'E)):
- SSW of Owen Bank (13 miles W), thence:
- 2 SSW of Seagull Shoal, at the SE end of Owen Bank, thence:
- SSW of a 9·1 m shoal (reported 1948) (9¼ miles ESE), thence:
- SSW of an 18·3 m rocky patch (reported 1905) (19¾ miles ESE), thence:
- 3 SSW of a 16·5 m patch (reported 1952) (23½ miles ESE), thence:
- SSW of a 14·6 m (reported 1936) (38 miles ESE), thence:
- SSW of two patches, 18 m and 18·3 m respectively (55 miles ESE), thence:
- To the vicinity of 5°07'S, 55°12'E, in the S approach to Mahé (10.96).

Approaches from south

(continued from 10.29 and 10.46)

10.96

- 1 From position 5°07'S, 55°12'E, observing the precautions mentioned at 10.3, the track leads NE, passing (with positions from Pointe du Sud (4°48'S, 55°32'E)):
- NW of a 17·4 m patch (22 miles SSW), thence:
- SE of Capucin Rock (1½ miles WSW), over which the sea breaks heavily, thence:
- SE of a rock 0·9 m high (close S), thence:
- 2 To a position about 4 miles SE of Pointe du Sud, which is high.
- 10.97**
- 1 Alternatively, from the vicinity of 5°15'S, 55°26'E, the route leads NNE. Vessels are required, as far as practicable,

to keep within 4 miles either side of the track and the precautions mentioned at 10.3 should be observed, passing (with positions from Pointe du Sud):

- 2 WNW of shoal areas with depths of less than 10 m (27½ miles S), thence:
ESE of a 17.4 m patch (22 miles SSW), thence:
WNW of a bank (20 miles SSE) with depths of less than 10 m, on which lies Gilberte Shoal, depth 11 m, the existence of which is doubtful, thence:
To a position about 4 miles SE of Pointe du Sud.

10.98

1 Useful marks:

Pointe Police, 1 mile W of Pointe du Sud, which has a rounded summit, 65 m high, covered with coconut palms and from which Pointe Police Light (white masonry tower, 2 m in height) is exhibited.

(Directions for passage W of Mahé continue at 10.181 and for passage E of Mahé at 10.196)

NORTHERN APPROACHES TO MAHÉ

General information

Charts 740, 742

Route

10.99

- 1 From the N edges of the Seychelles Bank, between Île aux Vaches (3°43'S, 55°12'E) and Île Denis (3°48'S, 55°40'E), a route established by the Department of Transport, Republic of Seychelles, leads S in waters covered by modern surveys, between the charted Areas to be Avoided to the approaches to the port of Victoria.

Topography

10.100

- 1 For a general description of Mahé, see 10.178.
Two isolated islands, Île Denis (10.112) and Île aux Vaches (10.109), lie about 50 miles N of Mahé, on the rim of the bank. Both are flat, consisting of sand and coral, and are fringed with coral reefs. Both are inhabited.
- 2 In the N approaches to Victoria a bank extends 8 miles NE from North Point (4°34'S, 55°26'E) with numerous dangers on it (see 10.106), the NE extremity being Mamelles, an islet. Between the bank and the coast in the vicinity of North Point there is a channel, about 1½ miles wide, with a least charted depth of 22 m.
- 3 Beyond Mamelles a channel with a least charted depth of 32 m lies between the islet and a further bank, 2 miles NE, with least charted depths of 10.2 m over it.

Current

10.101

- 1 In July, 1971 the yacht *Barbara* experienced a current setting NW at about 6 kn off North Point (4°34'S, 55°26'E).

Principal marks

10.102

1 Landmarks:

Radio mast (red lights) (4°40'S, 55°28'E).
Morne Seychellois (4°39'S, 55°26'E) (10.94).

Mont Le Niol, 1¼ miles WNW of Morne Seychellois, (10.120).

N extremity of Mont Glacis (4°34'S, 55°27'E) (10.120).

Summits of Silhouette (4°29'S, 55°14'E) (10.123).

Directions

North edge of Seychelles Bank to Mamelles

10.103

- 1 Vessels proceeding S, over the edge of the Seychelles Bank, should pass between the islands of Île aux Vaches (3°43'S, 55°12'E) (10.109) and Île Denis (3°48'S, 55°40'E) (10.112), in approximate position 3°40'S, 55°30'E. The track S from this position passes between the Areas to be Avoided and lies within areas covered by modern surveys, passing (with positions from Île Aride (4°13'S, 55°40'E)):
- 2 W of a bank (24½ miles N) with depths of less than 10 m over it on which Île Denis lies. A light (10.114) is exhibited from the island. A fishery raft exhibiting red flag (10.4) is reported to be moored in this area and should be given a wide berth. Thence:
- 3 W of a bank with depths less than 20 m over it on which lies Île Aride. The island is hilly and fringed by a reef on the S side where the sea breaks in heavy weather. Thence:
W of Booby Islet (3 miles S) (10.148), thence:
- 4 W of Roche Baleine (5¼ miles S), a rock lying at the N extremity of a bank with a least charted depth of 2.7 m over it; a drying rock lies close NE. Thence:
W of a rock awash (6½ miles S), which lies on the W extremity of the above mentioned bank, thence:
- 5 W of Cousine (8 miles S) an islet, thence:
W of Trompeuse Rocks (10½ miles SSW), which show above-water. These have often been mistaken for Blanchisseuse Rocks, 2¾ miles WSW, which are awash. Thence:
W of Blanchisseuse Rocks (13 miles SSW).
- 6 The track then leads to a position 4 miles NW of Mamelles (18 miles SSW). Mamelles is a small island, rocky and white, with two distinct summits. A light (white square stone hut, red roof, 6 m in height) is exhibited from the S and higher summit.

10.104

- 1 Continuing towards Victoria and/or the route S, to clear the Seychelles Bank, the track passes a bank (10.100) extending NE from Mahé. This area must be passed through with extreme caution since soundings give no warning of dangers, not all of which may be charted. No attempt should be made to pass between the dangers mentioned at 10.100 unless essential and then only with extreme caution.
The following alternative routes may be used.

Passage north-east of Mamelles

10.105

- 1 From a position about 4 miles NW of Mamelles (4°29'0S, 55°32'3E) the track leads initially SE, passing (with positions from Mamelles);
SW of a 15.5 m patch (3¼ miles NNE), thence:
SW of patches (2½ miles NE) with depths of 12.5 m and 12.4 m over them, and:
- 2 NE of Mamelles, from which a light (10.103) is exhibited.

Having passed Mamelles the track then leads SSW, passing:

ESE of Ennerdale Rocks (1¼ miles SW) (10.106), thence:

- 3 WNW of a patch (5¼ miles SSE), with a depth of 12.4 m over it, thence:

ESE of Brisare Rocks (4¼ miles SW), thence:

To a position 1 mile N of Sainte Anne island (7 miles SSW).

Passage north-east of North Point

10.106

- 1 From a position about 4 miles NW of Mamelles (4°29'0S, 55°32'3E) the track leads primarily SSW, passing (with positions from North East Point (4°35'S, 55°28'E)): WNW of Mamelles (7½ miles NNE) (10.103), thence: WNW of a dangerous wreck (RFA *Ennerdale*, 1970) (6¼ miles NNE), and Ennerdale Rocks, swept to a depth of 10.8 m, thence:

- 2 WNW of a group of rocks (4¼ miles NNE), swept to a depth of 9.6 m, thence: WNW of a shallow patch (4¼ miles NNE) swept to a depth of 15.8 m, thence:

WNW of a 15.6 m patch (3 miles N), thence:

WNW of a 19.8 m patch (3 miles N), thence:

To a position 1½ miles N of North Point.

10.107

- 1 The track then leads SE, passing: NE of North Point (2 miles NW), and: SW of the 19.8 m patch mentioned above, thence: SW of a 14.5 m patch (3 miles NNE), lying close SW of Brisare Rocks, thence:
 - 2 NE of the coastal bank (7 cables NE) fronting North East Point, the E extremity of N peninsula of Mahé, thence:
- To a position 1 mile N of Sainte Anne island (4°36'S, 55°30'E).

10.108

(continued from 10.122)

- 1 **Useful marks:**
Matoopa Light (4°38'S, 55°22'E) (10.181).
Aero light (4°36'3S, 55°30'2E) (10.227).
Aero light (4°35'S, 55°28'E) (10.144).
Îlot, 5 cables W of North Point (10.183).
(Directions for Victoria approaches continue at 10.226)

Northern islands

Charts 740, 724 plan of Île aux Vaches

Île aux Vaches

10.109

- 1 **Topography.** Île aux Vaches (3°43'S, 55°12'E), lies on the E side of an extensive flat consisting of sand and coral, covered with patches of dark weed and with depths less than 10 m over it. This is positioned on the extreme N edge of the Seychelles Bank and, beyond the flat, the bank is steep-to, the depth increasing rapidly beyond 1000 m within 4 miles of the shore. The sea breaks heavily on the N side.
- 2 The island is also flat and of similar composition, covered with casuarina trees and coconut palms. The coasts are bordered by thick scrub, except at the N end of the island where there is a sandy spit. The E and SE sides of the island are fringed with coral reefs that dry. The island is inhabited.

10.110

- 1 **Tidal levels.** At Île aux Vaches the mean spring range is about 1.0 m; mean neap range about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

10.111

- 1 **Directions.** A vessel navigating the waters around Île aux Vaches should avoid:

Bar Silhouette, 4 miles S, and:

The vicinity of a shoal (reported 1920), 4¾ miles WSW of the island.

- 2 **Anchorage** can be obtained, in depths from 6 to 11 m, at a distance of 5 cables to 1½ miles off the W side of the island. The berths indicated on the plan are not well sheltered from the seasonal winds but afford good holding.
- 3 **Landing** may be effected on the W side of the island where there is a settlement, on the NE point where there is a boat passage through the fringing reef, and on the S side where there is a break in the reef.

Communication. Airstrip. See 10.245 for information regarding air service.

Chart 724 plan of Île Denis

Île Denis

10.112

- 1 **Topography.** Île Denis (3°48'S, 55°40'E) lies on the S part of a bank with depths less than 10 m over it. The island is low and flat, covered with coconut palms and casuarina trees. A coral reef, which dries in patches, fringes the island except for the NW part and surf breaks heavily on the E and S shores during SE winds.

A stranded wreck, a fishing vessel, lies on the reef at the S end of the island.

10.113

- 1 **Tidal levels.** At Île Denis the mean spring range is about 0.9 m; mean neap range about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

10.114

- 1 **Directions.** Île Denis is within an IMO adopted Area to be Avoided, see 10.8. When navigating the waters around Île Denis extreme caution should be exercised within 3 miles N of the island as more coral heads than are charted are likely to exist on the bank mentioned above, see note on chart.

- 2 **Useful mark:**

Île Denis Light (white metal tower, 27 m in height) (3°48'0S 55°40'0E), exhibited from the N end of the island.

10.115

- 1 **Anchorage** can be obtained as indicated on the plan: In depths from 35 to 40 m, sand and coral, with Île Denis Light bearing 115°, distant 1.4 miles. In similar depths, sand and coral, with Île Denis Light bearing 245°, distant 1.2 miles.

- 2 **Landing** may be effected, according to season, near a boat-house close W of Île Denis Light or close S of the W extremity of the island.

Small craft can anchor, with local knowledge, 3 cables N of Île Denis Light, in a depth of 3 m.

10.116

- 1 **Facilities and communications.** There is a hospital and an airfield on the island.

Small craft

Chart 742

Landing place

10.117

- 1 There is a fairly good landing place, during moderate weather, in a small bay on the W side of Mamelles (4°29'0S, 55°32'3E) (10.103). The sea generally breaks over a group of rocks with a depth of 4.6 m on the S side of the approach to the bay.

SEYCHELLES BANK — PASSAGES AND ISLANDS WITHIN THE RESTRICTED AREAS

GENERAL INFORMATION

Charts 721, 740

Scope of section

10.118

- 1 In this section are described the passages traversing the restricted areas (10.8). Also described are the other islands in the Seychelles group, lying NW and NE of Mahé, and the routes connecting them.

- 2 They are arranged as follows:

Western approaches to Mahé (10.119).

Eastern approaches to Mahé (10.127).

Passages and islands NE of Mahé (10.136).

WESTERN APPROACHES TO MAHÉ

General information

Routes

10.119

- 1 Vessels approaching the Seychelles Bank from W, en route for Mahé, being of 200 gt or less, may transit the charted Area to be Avoided as described at 10.121. Those vessels in excess of 200 gt, should pass S of Owen Bank (4°40'S, 54°00'E) and follow the route described at 10.95 in accordance with IMO requirements (10.8).

Principal marks

10.120

- 1 **Landmarks:**

Piton de l'Eboulis (4°43'1S, 55°30'3E) (10.94).

Radio mast (red lights) (4°40'S, 55°28'E).

Morne Blanc (4°39'4S, 55°25'9E) which is steep, with remarkable cliffs around its upper part, and has a rounded summit.

Morne Seychellois (4°39'S, 55°26'E) (10.94).

- 2 Mont le Niol, 1¾ miles WNW of Morne Seychellois.

A prominent peak in the range, it is identified by a thumb-shaped peak on its summit.

Mont Glacis (4°34'S, 55°27'E) cone-shaped peak on the N extremity of Mahé.

Summits of Silhouette island (4°29'S, 55°14'E) (10.123).

Directions

Western approach to Mahé

(continued from 10.46)

10.121

- 1 From the vicinity of 4°33'S, 53°50'E, the track, which passes through the Area to be Avoided (see 10.119), crosses the rim of the Seychelles Bank, SW of Hermes Bank, and leads E, passing (with positions from Whitmore Knoll (4°29'S, 54°15'E)):

2 miles S of Hermes Bank (10 miles W), with a charted depth of 13.1 m over it, thence:

- 2 S of Reith Bank (2 miles W), with least charted depth of 16.5 m over it, thence:

N of a 15.5 m patch (5 miles S), thence:

S of a dangerous wreck (position approximate) (17½ miles ESE), thence:

S of a 19.5 m patch (19½ miles E), and:

- 3 Over Thorp Bank (19½ miles E), with least charted depth of 20.1 m, thence:

Clear of a wreck (position approximate) (35 miles E) with a clearance of 30 m, thence:

S of Silhouette island (4°29'S, 55°14'E) (10.123), thence:

- 4 N of a fishery raft, 4¾ miles SE of Silhouette, exhibiting a red flag, thence:

N of Requin Bank, 8 miles SSE of Silhouette, formed of coral, over which a second fishery raft is moored, thence:

To a position 1½ miles N of North Point (4°34'S, 55°26'E).

10.122

- 1 **Useful marks:**

Matoopa Light (4°38'S, 55°22'E) (10.181).

Îlot, 5 cables W of North Point (10.183).

Mamelles Light (4°29'S, 55°32'E) (10.103).

(Directions for N approaches to port of Victoria continue at 10.107)

Islands north-west of Mahé

Chart 742

Silhouette

10.123

- 1 **General information.** Silhouette island (4°29'S, 55°14'E) is mountainous and covered with coconut palms. The island has a high ridge along the N side of the island, 1 mile inland, which is precipitous on its S side. The highest point is Mont Dauban (752 m) which stands at the W end of the ridge with a second peak at the E end, 733 m high. Mont Corgat (515 m) and Mont Pot à Eau (623 m) are prominent peaks on the E side of the island, rising abruptly from the sea.

- 2 On the S side of the island there are long shelving faces of rock which descend from a considerable height to the sea.

On the N side of Pointe Ramasse Tout, the E extremity of the island, there is a small cove with a gap in the reef, La Passe, at the head of which there is a small pier serving the village of La Passe which lies NW of the cove.

- 3 **Directions.** The chart is sufficient guide for navigation of the waters around Silhouette, the precautions given at 10.3 being observed.

10.124

- 1 **Anchorage:**

Grande Barbe. Vessels can anchor in a bay at Grande Barbe, on the SW side of the island, as shown on the chart. Landing can be effected near rocks at the E end of the beach but the use of ship's boats is not recommended as surf usually breaks on a depression in the beach.

- 2 **Pointe Ramasse Tout.** With local knowledge, anchorage can be obtained N of Pointe Ramasse Tout, off a steep-to reef which dries about 2 m. Landing can be effected via the pier at La Passe (10.123).

Île du Nord

10.125

- 1 **General information.** Île du Nord (4°23'S, 55°15'E), seen from N, has a bare and desolate appearance, only a few scattered trees showing near the summit.

Directions. When navigating in the vicinity of Île du Nord the precautions mentioned at 10.3 should be observed and care taken to avoid:

A large unsurveyed area NW of the island, as shown on the chart, and:

- 2 A dangerous rock (reported 1958) (position doubtful), 7 miles WNW of the island.

Anchorage. Small vessels can anchor in a depth of 27 m, rather close inshore, off a settlement on the NE side of the island.

Landing is difficult in ships' boats but local craft are available.

Other names

10.126

- 1 Grand Barbe, Pointe (4°31'S, 55°13'E).
Mondon, Anse (4°28'S, 55°13'E).

EASTERN APPROACHES TO MAHÉ

General information

Charts 721, 740, 742

Routes

10.127

- 1 The approaches to Mahé from E and SE are encumbered by banks and shoals lying on the Seychelles Bank, between Le Constant Bank (6°20'S, 56°20'E) and Topaze Bank (4°40'S, 56°20'E). Only the coastal waters on the E side of Mahé and the extreme N part of this area, in which some small island lie, are covered by modern surveys (see source data diagram on the chart).

- 2 There are no recognised routes across this part of the Seychelles Bank which lies within the Area to be Avoided, navigation being restricted as described at 10.8.

Vessels approaching the Seychelles Bank from E, en route for Mahé, being in excess of 200 gt, should pass N of Bar de l'Est (3°46'S, 55°50'E) and Île Denis (3°48'S, 55°40'E) and follow the route described at 10.103 in accordance with IMO requirements (10.8). Vessels of 200 gt or less, may transit the charted Area to be Avoided as described at 10.130.

Natural conditions

10.128

- 1 Eddies are formed frequently between Sainte Anne (4°36'S, 55°30'E) and Île aux Récifs, 15 miles E, where the bottom is uneven.

Principal marks

10.129

- 1 **Landmarks:**

La Digue island peak (4°21'6S, 55°50'6E).
Mont Glacis (4°34'S, 55°27'E) (10.120) (457 m high)
cone-shaped peak on the N extremity of Mahé.
Morne Seychellois (4°39'S, 55°26'E) (10.94).
Radio mast (red lights) (4°40'S, 55°28'E).
Piton de l'Eboulis (4°43'1S, 55°30'3E) (10.94).

Directions

10.130

- 1 For a vessel of 200 gt or less, approaching from E, the track, which passes through the Area to be Avoided (see 10.127), crosses the rim of the Seychelles Bank in an area covered by modern surveys, in the vicinity of 4°15'S, 56°15'E and leads WSW, passing (with positions from La Digue island peak (4°21'6S, 55°50'6E)):

SSE of Marianne Island (4¾ miles E), thence:

- 2 NNW of Frankish Rock (8 miles SSE) a rocky patch with least depth of 14.6 m over it, thence:
NNW of Chimney Rocks (7 miles SSE) and Renommée Rocks (6½ miles S), both of which are easily seen, and:

At least 1 mile SSE of La Digue (10.175), due to the bank extending S and SE from the island, thence:

- 3 SSE of Shark Rock (5½ miles SW), thence:

NNW of an 18.4 m patch (14 miles SSW) 1¼ miles

WNW of Île aux Récifs (4°35'S, 55°46'E), thence:

SSE of Biter Rock (14 miles SW), thence:

NNW of a 12.4 m patch, 5 miles NE of Sainte Anne island (4°36'S, 50°30'E), thence:

To a position 1 mile N of Sainte Anne island.

10.131

- 1 **Clearing bearing.** Once visible, during the above passage, the line of bearing 250° of Mont Glacis (10.120), on the N extremity of Mahé, leads to the approaches to Victoria, passing clear of the above dangers.

10.132

- 1 **Useful marks:**

Aero light (4°35'S, 55°28'E) (10.144).

Aero light (4°36'3S, 55°30'2E) (10.227).

Mamelles Light (4°29'0S, 55°32'3E) (10.103).

(Directions for Victoria approaches continue at 10.226)

Islands east of Mahé

Chart 742

Île aux Récifs

10.133

- 1 **General information.** Île aux Récifs (4°35'S, 55°46'E), has a distinctive white rock, with the appearance of a building, on its summit. A number of charted dangers lie within 5 cables of the island which is uninhabited and a haven for numerous seabirds.

Anchorage has been obtained in a depth of 31 m, sand and shell, with the island bearing 155° distant 1¼ miles.

Frégate

10.134

- 1 **General information.** Frégate (4°35'S, 55°57'E), the E-most island of the Seychelles group, is planted with coconut palms. The shore is fringed with reefs, in places, over which the sea breaks.

Directions. Vessels navigating in the area S of these islands should do so with extreme caution (10.3) as this area is yet to be surveyed.

- 2 A number of charted dangers lie within 2 miles of Frégate and, when navigating in the vicinity, care should be taken to avoid (with positions from Frégate):

L'Îlot Frégate, (2 miles WSW), a small rocky islet.

Barracouta Rock, (1½ miles SW), over which the sea breaks.

Noddy Rock, (6 cables N), over which the sea breaks heavily.

A dangerous submerged rock (6 cables ESE).

10.135

- 1 **Anchorage.** With local knowledge, good anchorage can be obtained off the NE and SE sides of Frégate, the latter being suitable during the NW Monsoon.

Previously, a small vessel has found good holding ground in depths of 15 to 20 m between 2½ and 7 cables N of Pyramid Rock, which lies close off Pointe Sud, the E extremity of the island.

- 2 **Landing.** The coastal reef appears, from a short distance, to be unbroken and local knowledge and care are necessary to effect a landing.

Communication. Airstrip. See 10.245 for information regarding air service.

PASSAGES AND ISLANDS NORTH-EAST OF MAHÉ

General information

Charts 740, 742

Routes

10.136

- 1 There are no recommended routes across this part of the Seychelles Bank, which lies within the charted Area to be Avoided, and navigation is restricted to vessels described at 10.8.

However, for vessels of 200 gt or less, within this subsection, the following routes have been described:

- 2
 - Passage from Mahé to Praslin (10.142).
 - Passage W of Praslin (10.145).
 - Passage N of Praslin (10.147).
 - Passage S of Praslin (10.150).
 - Passage between Praslin and La Digue (10.154).
 - Passage E of La Digue (10.158).

Topography

10.137

- 1 The island of Praslin (4°20'S, 55°44'E) is the largest in the group NE of Mahé and is a Seychelles Government protected reservation for growing the Coco-de-Mer palm, which produces a double nut. As such, it forms part of the Curieuse Marine National Park which borders its NE coast.

A range of hills extends the entire length of the island, granitic in origin, the lower slopes of which are covered with trees. Adjacent islands are described later in the text.

- 2 The island of Curieuse has a granite ridge extending its whole length and is mostly covered with trees and scrub. The island is part of the government Coco-de-Mer reservation and also forms part of the Curieuse Marine National Park.

Depths

10.138

- 1 Praslin is surrounded by a shallow coastal bank which extends W from the island, encompassing the islets of Cousin (4°20'0S, 55°39'8E) and Cousine, 1¼ miles SW.

The N end of the channel between Praslin and Cousin is encumbered by dangerous rocky patches but the passage between the islets has a least charted depth of 12 m, although only 6½ cables wide. Farther SW, Trompeuse Rocks (10.103) lie 2¼ miles SW of Cousine, the channel between having a least charted depth of 14.7 m over it.

Surveys

10.139

- 1 The NE approaches to Mahé are encumbered with islands and dangers lying on the Seychelles Bank. The waters between Mahé and Praslin (4°19'S, 55°44'E), the largest island, and around Praslin are covered by modern surveys. Farther E, the E coast of La Digue and the area NE encompassing Marianne, Félicité and Les Sœurs remains unsurveyed to date. For further details see the source data diagram on the chart.

Caution

10.140

- 1 When navigating in the waters around Praslin and La Digue, within the Area to be Avoided, the precautions mentioned at 10.3 should be observed.

Principal marks

10.141

1 Landmarks:

- Radio mast (red lights) (4°40'S, 55°28'E).
- Morne Seychellois (4°39'S, 55°26'E) (10.94).
- Mont Glacis (4°34'S, 55°27'E) (10.120).
- La Digue island peak (4°21'6S, 55°50'6E).

Passage from Mahé to Praslin

General information

10.142

- 1 **Caution.** In the area between Brisare Rocks (4°32'0S, 55°29'4E) and Praslin, 18 miles NE, sounding gives no warning of dangers, not all of which may be charted. No attempt should be made to pass between the dangers mentioned below, unless essential, and extreme caution should be exercised.

Directions

10.143

- 1 From a position 1 mile N of Sainte Anne (4°36'S, 55°30'E) the track leads NE for about 17½ miles, through the restricted area (10.8), observing the precautions mentioned at 10.3 and passing (with positions from Mamelles (4°29'0S, 55°32'3E)):
 - 2 SE of Brisare Rocks (4½ miles SW), thence:
 - NW of a 12.4 m patch (5¼ miles SSE), thence:
 - SE of Ennerdale Rocks (1½ miles SW), thence:
 - SE of Mamelles island, from which a light (10.103) is exhibited. Thence:
 - SE of a 12.4 m patch (2¼ miles NE), thence:
 - NE of Biter Rock (6½ miles E), and:
 - Clear of a 15.1 m shoal (5 miles ENE), thence:
 - SE of Trompeuse Rocks (7½ miles NE) which show above water but have often been mistaken for Blanchisseuse Rocks, 2¾ miles WSW, which are awash, thence:
 - 4 Clear of a shoal (10 miles NE) with a least depth of 14.9 m over it, thence:
 - SE of Cousine (South Cousin) (10 miles NE), thence:
 - To a position in the approach to Grande Anse (4°20'S, 55°43'E) (10.161), on the SW side of Praslin.

10.144

1 Useful marks:

- Aero light exhibited occasionally from Victoria Lighthouse (4°37'0S 55°28'2E) (10.225).
- Aero light, 2¼ miles ENE of Victoria Lighthouse (10.227).
- Aero light (4°34'9S, 55°27'8E) (red and white metal framework tower, 3 m in height), 2 cables NW of North East Point.
- 2 Grande Anse leading lights (4°20'2S, 55°43'0E) (10.162).
- Church, 2½ cables NW of Grande Anse rear leading light.
- Church, about 1 mile WNW of Grande Anse rear leading light.
- (Directions for passage W of Praslin continue at 10.145, for passage S of Praslin at 10.150, and for Grande Anse at 10.162)

Passage west of Praslin

Charts 724 plan of Grande Anse, 742

10.145

- 1 From a position in the approach to Grande Anse, outside the reef, the inshore track leads generally NW for about 5 miles, thence NE for a farther 4 miles. It passes (with positions from Miller's Point (4°18'S, 55°41'E)):

In mid-channel between Cousin and Les Parisiennes, a group of rocks (1 mile S), thence:

- 2 In mid-channel between Roche Baleine (1¼ miles W) and rocks bordering Miller's Point. These include Roche Canale which dries 0.9 m and over which the sea breaks heavily. A current setting N at about ½ kn was experienced off Miller's Point, the NW extremity of Praslin, in July, 1971. Thence:

- 3 To a position NW of Miller's Point.

From the position in the approach to Grande Anse an additional route passes:

SW of Cousin (2¼ miles SSW), which is a wildlife special reserve and from which a rocky spit extends 2 cables WSW, and:

- 4 Either SW or NE of Cousine (3½ miles SW), thence: SW of a bank (2¼ miles SW) on which lies a rock, awash.

Thence the track turns NE, passing:

NW of a depth of 9.4 m (1¼ miles SW), thence:

- 5 NW of a pinnacle rock (1 mile WSW), with a depth of 4.5 m over it thence:

NW of Roche Baleine (Whale Rocks) (1¼ miles W), an above-water rock awash, thence:

To a position NW of Miller's Point.

10.146

- 1 **Useful mark:**

Roche Corigeau (4°18'9S, 55°41'3E).

(Directions continue at 10.148 or 10.149)

Passage north of Praslin

Charts 742, 724 plan of Baie Curieuse

General information

10.147

- 1 The coastal passage passing N of Praslin, from a position NW of Miller's Point (4°18'S, 55°41'E), a distance of about 9½ miles to a position NW of Ave Maria Rock (4°19'S, 55°49'E), leads initially ENE for about 2 miles and can then either continue E, passing N of the island of Curieuse, or pass between Curieuse and Praslin and through Baie Curieuse, to the position NW of Ave Maria Rock.

Directions - north of Curieuse

(continued from 10.146)

10.148

- 1 From a position NW of Miller's Point (4°18'S, 55°41'E) the track leads generally E, passing:

Either side of Booby Islet, 2¼ miles N of Miller's Point, which is rounded and tree-covered, thence: N of a steep-to reef which fringes the N coast of Curieuse, thence:

- 2 S of a 14 m shoal, 3½ miles N of Curieuse, thence: Round Pointe Rouge, the E extremity of Curieuse, thence:

NNE of a depth of 18.2 m, 8 cables ESE of Pointe Rouge, thence:

Across the N approach to Baie Curieuse (10.170).

- 3 The track then leads to a position NW of Ave Maria Rock (4°19'S, 55°49'E), in the N approach to the channel between the E end of Praslin and La Digue.

Useful marks:

Pointe Zanguilles Light (4°18'3S, 55°44'2E) (10.149).

Light exhibited from the NW coast of La Digue (4°20'7S, 55°49'6E) (10.175).

(Directions for passage between Praslin & La Digue are given in the reverse direction at 10.154.

Directions for passage E of La Digue are given in the reverse direction at 10.159)

Directions - south of Curieuse

(continued from 10.146)

10.149

- 1 From a position NW of Miller's Point (4°18'S, 55°41'E) the track leads generally ESE, through a channel with a navigable width of about 3 cables, in depths of at least 7 m over an uneven bottom, into Baie Curieuse, passing (with positions from Miller's Point):

S of Booby Islet (2¼ miles N) (10.148), and:

N of a 1.7 m shoal (5 cables NNE), thence:

- 2 N of a 6.5 m shoal (about 1 mile NE) in the entrance to Baie Chevalier (10.169), thence:

Between Pointe Chevalier (4°17'3S, 55°42'0E) and Pointe Caimant, 8½ cables NE, at the entrance to the channel between Praslin and Curieuse, keeping N of dangerous, partially submerged rocks, 4¼ cables E of Pointe Chevalier, thence:

In the middle of the fairway which is slightly on the SW side of the channel, thence:

N of Pointe Zanguilles (4°18'3S, 55°44'2E) from which a light (white round masonry tower) is exhibited.

The track then continues E, passing (with positions from Pointe Zanguilles Light):

- 3 N of dangerous rocks (7½ cables ENE), situated NW of Saint Pierre Islet, thence:

Through the E part of Baie Curieuse.

The track then leads to a position NW of Ave Maria Rock (4°19'S, 55°49'E), in the N approach to the channel between the E end of Praslin and La Digue.

- 4 **Useful marks:**

Church (4°17'9S, 55°42'8E).

Hotel (4°19'2S, 55°45'5E).

Light (4°20'7S, 55°49'6E) (10.175) exhibited from the NW coast of La Digue.

(Directions for passage between Praslin & La Digue are given in the reverse direction at 10.154. Directions for passage E of La Digue are given in the reverse direction at 10.159)

Passage south of Praslin

(continued from 10.144)

Charts 742, 724 plan of Baie Sainte Anne to La Digue

10.150

- 1 From a position in the approaches to Grande Anse (4°20'S, 55°43'E) the track leads generally SE, keeping in depths over 20 m and passing (with positions from Pointe Cabris (4°21'2S, 55°46'2E)):

Seaward of a reef which extends nearly 1 mile offshore, thence:

- 2 To a position SW of Pointe Cocos (1¼ miles WSW). From this position the bearing 055°-060° of the N extremity of La Digue (4°20'S, 55°50'E) leads between Praslin and La Digue, clear of the coastal bank and shoals, passing:

NW of a shoal (2¾ miles SSW) with a least depth of 4.1 m over it, thence:

- 3 NW of Caiman Rocks (2¾ miles S), a group of above-water rocks, thence:

NW of a shoal (2¼ miles S) with a least depth of 9·2 m over it, thence:

SE of an 8·3 m patch (4½ cables E), at the extremity of foul ground extending E from Roches Boquet (4 cables E), an above-water group of rocks, thence:

- 4 To a position E of Pointe Cabris, in the S approach to the channel between Praslin and La Digue.

(Directions for passage between Praslin and La Digue continue at 10.155)

10.151

- 1 Alternatively, from the position SW of Pointe Cocos (10.150) the track continues SE, passing SW of the 4·1 m shoal (2¾ miles SSW), to a position SE of Shark Rock (3½ miles S), an above-water rock.

- 2 **Clearing bearing:**

The line of bearing 068° of the S extremity of Marianne island (4°21'S, 55°55'E) open S of the S extremity of La Digue, passes about 3 cables S of Shark Rock.

10.152

- 1 **Useful mark:**

Pointe Cabris Light (4°21'·2S, 55°46'·2E) (10.173).

(Directions for passage E of La Digue continue at 10.159)

Passage between Praslin and La Digue

Charts 742, 724 plan of Baie Sainte Anne to La Digue

Caution

10.153

- 1 Great care should be exercised if navigating in the charted Area to be Avoided, between Praslin and La Digue, as the shoals and patches in the channel are steep-to. It is advisable to keep within depths of over 20 m while observing the precautions mentioned at 10.3.

Directions

10.154

- 1 From a position SE of Shark Rock (4°24'·6S, 50°46'·0E), the track leads N, passing (with positions from Pointe Cabris (4°21'·2S, 55°46'·2E)):

E of Caiman Rocks (2¾ miles S), thence:

E of a bank (2¼ miles S), with a least depth of 9·2 m over it, thence:

Clear of a 19·4 m patch (2¼ miles SE), thence:

- 2 E of a bank (1¼ miles ESE) with a least depth of 15 m over it, extending ESE from Pointe Cabris, thence:

E of an 8·3 m patch (4½ cables E), at the extremity of foul ground extending E from Roches Bouquet (4 cables E), an above-water group of rocks, thence:

To a position E of Pointe Cabris.

10.155

(continued from 10.150)

- 1 From this position the track then leads, either:
E of Round Island (Île Ronde) (1¼ miles NE), and:
W of Les Roches Canales (2¼ miles ENE), which are difficult to see when covered, avoiding a 5·6 m shoal, 5 cables E of Île Rond.

Or:

- 2 E of a shoal (2½ miles ENE) with a least depth of 3·5 m over it, on the E extremity of Les Roches Canales, and:
W of Pointe Cap Barbi, (3½ miles E), on the NE coast of La Digue.

Clearing bearing. The line of bearing 095° of the S extremity of Félicité island (4°20'S, 55°53'E) open N of the N extremity of La Digue passes N of Les Roches Canales.

10.156

- 1 Once clear of Les Roches Canales, the tracks continue N/NNW, passing:

WSW of a depth of 9 m, 5 cables NNW of Pointe Cap Barbi (4°20'·5S, 55°49'·7E), thence:

ENE of a depth of 8 m close NE of Pointe La Farine (4°20'·0S, 55°47'·5E).

The track then leads to a position NW of Ave Maria Rock, 15 m in height, 1¼ miles NE of Pointe La Farine.

- 2 **Caution.** If passage E of Ave Maria Rock is attempted, a 6·2 m patch, about 1 mile SSE of the rock, and a 9·7 m patch, 4½ cables SSE, should be avoided.

10.157

- 1 **Useful marks:**

Church tower (4°21'·4S, 55°49'·6E).

Pointe Cabris Light (4°21'·2S, 55°46'·2E) (10.173).

Church tower, 9 cables NW of Pointe Cabris.

(Directions for passage N of Praslin are given in the reverse direction at 10.148)

Passage east of La Digue

Chart 742

Caution

10.158

- 1 The waters E and N of La Digue and around the small islands to the NE are not covered by modern surveys and lie within the charted Area to be Avoided. Caution should be exercised, as described at 10.3, if navigating in this area.

Directions

(continued from 10.151)

10.159

- 1 From a position SE of Shark Rock (4°24'·6S, 55°46'·0E) the track first leads ENE to a position SSE of Pointe Jacques (4°23'·0S, 55°50'·3E), clear of the shoal extending SSE of the point with a least charted depth of 13·6 m over it.

From this position the track leads NE, passing:

SE of a dangerous rock (position approximate), 1·1 miles NE of Pointe Jacques, thence:

- 2 SE of a depth of 7·3 m close off Pointe Ma Flore (4°21'·9S, 55°51'·4E).

Thence, if proceeding farther N, the track leads generally NW, keeping in depths over 20 m and passing:

Well NE of La Digue island, and:

SW of Félicité island (4°20'S, 55°53'E), thence:

- 3 SW of Île Platte, Île aux Cocos and Île La Fouche, a group of islets between 2 and 4 cables NNW of Félicité, thence:

NE of a 15·9 m patch, about 1½ miles NNW of La Digue N extremity, and:

SW of Grande Sœur, 1 mile N of Félicité, a rocky islet, thence:

- 4 NE of Ave Maria Rock (4°19'S, 55°49'E), and:
SW of Petite Sœur, also rocky, 2¾ miles NE of Ave Maria Rock, thence:

Clear of the bank which extends 7 cables N of Petite Sœur, thence:

Northward, to the open sea, entering and remaining within the area of modern survey (see source data diagram on the chart).

10.160

- 1 Vessels wishing to remain within the area covered by modern surveys whilst crossing the charted Area to be Avoided, having passed S of Pointe Jacques (4°23'·0S,

55°50'3E) (10.159), should continue ENE, observing the cautions advised at 10.3 and pass:

- 2 SSE of Pointe Grand Glacis (4°21'S, 55°55'4E), the S extremity of Marianne island.

Thence continue on an ENE heading until the edge of Seychelles Bank is reached.

Grande Anse

Chart 724 plan of Grande Anse

General information

10.161

- 1 Grande Anse is a bay in the middle of the SW side of Praslin. At the head of the bay, the village of Grande Anse (4°19'5S, 55°43'0E) is a calling place for an inter-island ferry service (10.245).

Local knowledge is required for entry into Grande Anse.

Directions

(continued from 10.144)

10.162

- 1 **Leading marks:**

Front light (white square masonry tower) (4°20'3S, 55°43'0E), on a patch of reef.

Rear mark (beacon, red triangle top mark, 6 m in height), 4½ cables NNE of front light, on the shore.

- 2 From a position in the approaches to Grande Anse the alignment (028°) of these marks leads into the bay, in a least depth of 3-4 m, passing over the SE end of the reef which obstructs the greater part of the bay entrance. Most of the reef dries. However, when the South-east Trade Wind blows strongly the sea breaks heavily on it.

10.163

- 1 **Useful marks** (with positions from rear leading mark):

White beacon (4½ cables WSW).

Church (2½ cables NW).

White beacon (8½ cables W).

Church (about 1 mile WNW).

Roche Corbigeau (2¼ miles WNW).

Berths

10.164

- 1 **Anchorage** for small vessels drawing not more than 3 m can be obtained within the reef, although great care is required as there are numerous coral heads in the bay. Anchorage is suitable in calm weather only as swell up to 1.5 m may be experienced in the bay.

Alongside berth. There is a small concrete jetty, situated in front of the police station shown on the plan. The jetty, which nearly dries alongside, is used by ferries.

10.165

- 1 **Communications:**

Sea communications by ferry with Victoria (10.245),

Baie Sainte Anne (10.172) and La Digue (10.175).

Air service with Mahé from the airstrip near the W point of Praslin, as shown on the chart.

Anchorage, landing places and minor bays

Charts 724 plan of Grande Anse, 742

General information

10.166

- 1 There are a number of anchorages around Praslin but none on the S side that are safe between May and November, when the South-east Trade Wind is at its strongest. During this season shelter can be obtained in Baie Chevalier (10.169) and Baie Curieuse (10.170).

Cousin

10.167

- 1 In March, 1972, HM Yacht *Britannia* (5769 gt) anchored 6 cables E of Cousin (4°20'S, 55°40'E) in a depth of 16 m and reported heavy concentrations of seaweed in this vicinity.

In calm weather, landing can be effected on a beach on the N side of the island and also about ½ cable S of a settlement on the E side where a narrow channel leads through the fringing reef to a beach. Only shallow draught boats should be used.

Chart 742

Miller's Point

10.168

- 1 Anchorage was reported obtained 8 cables SSW of Miller's Point, about 2 cables N of Les Parisiennes (4°18'8S, 55°40'7E), in a depth of 15 m, fine sand.

Landing may be effected through a gap in the coastal reef which lies ½ cable offshore between the W entrance point (4°19'4S, 55°41'5E), of Grande Anse and Miller's Point.

Baie Chevalier

10.169

- 1 **Directions.** Baie Chevalier (4°17'S, 55°42'E) should be approached and entered from N, passing:

E of a 6.5 m shoal, 1 mile NE of Miller's Point, and:

E of Roche Grande Maman, a rock 1 m high, off the W entrance point.

- 2 **Anchorage.** The bay affords shelter from the South-east Trade Wind and a good anchorage can be obtained. There are depths of about 14 m in the entrance, shoaling gradually to a sandy beach at the head of the bay.

Landing is possible in a small basin close E of Miller's Point.

Charts 742, 724 plan of Baie Curieuse

Baie Curieuse

10.170

- 1 **Directions.** Baie Curieuse (4°18'S, 55°44'E) can be entered from NW or NE, depending on draught and ability to pass either side of Curieuse. See 10.149 for details of depth and for directions, entering from NW.

Entering the bay from the NE, the track passes (with positions from Pointe Rouge (4°16'7S, 55°44'7E)):

- 2 Clear of an 18.2 m shoal (8 cables ESE), depending on draught, thence:
- Clear of a 13.6 m (4½ cables SSE), depending on draught, thence:
- 3 SE of a detached shoal (5 cables S), with a least depth of 8.6 m over it, thence:
- SE of a depth of 8.6 m (9 cables SSW) at the outer end of a ridge extending from the SE point (1 mile SW) of Curieuse, and:
- 4 NW of dangerous rocks (about 1¼ miles S), thence: NW of Pointe Zanguilles (4°18'3S, 55°44'2E) (10.149), from which a light is exhibited.

The track then leads to an anchorage (2 miles SSW), as shown on the plan.

10.171

- 1 **Anchorage.** The anchorage, off Anse Petit Cour as indicated on the plan, is good and affords shelter from the South-east Trade Wind in a depth of 20 m, with Pointe Zanguilles Light bearing 085°, distant 3 cables.

A second anchorage position has been reported to exist, in a depth of 22 m, with the light bearing 102°, distant 5 cables.

- 2 **Caution.** Baie Curieuse is part of Curieuse Marine National Park.

Small craft. There is a boat passage through a reef W of Chauve Souris (4°18'6S, 55°44'8E), at the NW end of Anse Volbert.

Charts 724 plan of Baie Sainte. Anne to La Digue, 742

Baie Sainte Anne

10.172

- 1 **Caution.** Baie Sainte Anne (4°20'S, 55°46'E) is shallow and only suitable for small craft. It has not been fully examined and uncharted dangers may exist. An extensive area of reclaimed land lies NW of the jetty (10.174).

Local knowledge is required.

Landmark:

Prominent church (white tower) (4°20'5S, 55°45'6E).

10.173

- 1 **Directions.** The bay is approached and entered from SE through the approach channel, with a least depth of 9.4 m, and marked by buoys, passing (with positions from Pointe Cabris (4°21'2S, 55°46'2E):

SW of Round Island (1¼ miles NE), thence:

NE of Roches Boquet (3 cables E), thence:

Between the buoys (lateral) (¾ cables ENE), marking the entrance of the buoyed channel; shallow water lies close to each side of the channel, thence:

- 2 NE of Pointe Cabris, from which a light (white masonry tower) is exhibited, thence:

SW of a drying reef (7 cables NNE) which obstructs the NE side of the entrance to the bay, thence:

NW of the head of the jetty (5 cables NW), thence:

To an anchorage or berth.

10.174

- 1 **Anchorage** can be obtained within the bay but, owing to the presence of a submarine power cable, there is a prohibited anchorage area extending 200 m either side of the

charted cable. A recommended anchorage has been established at position 4°21'1S, 55°47'0E.

- 2 **Alongside berth.** A jetty, 5 cables NW of Pointe Cabris, with a small harbour at its head with a depth of 5 m in its approach, is used by the Victoria-La Digue ferry (10.245).

Facilities. Deratting and deratting exemption certificates for vessels under 500 gt.

Charts 724 plan of Baie Sainte Anne to La Digue, 742

La Passe

10.175

- 1 **Description.** A reef fringes the W coast of La Digue but a break in the reef affords access for small craft to a pier at the settlement of La Passe (4°20'8S, 55°49'7E).

Directions. The break in the reef is entered N of a depth of 1.9 m, close off the drying edge of the reef which is marked by a light (white square stone tower).

- 2 **Anchorage.** Anchoring off La Passe is prohibited within 200 m of a charted submarine power cable. Reasonable shelter can, however, be obtained during South-east Trade Winds off Pointe Cap Barbi in the recommended position (4°20'4S, 55°49'3E).

- 3 **Alongside berth.** A jetty, extending 23 m from the shore at the inner end of the break in the reef, and having a depth of about 2 m at its head, is used by the ferry service with Victoria (10.245) and Praslin.

Supplies. Fresh water and provisions in small quantities.

Communications. Frequent communication with Mahé by ferry.

Chart 742

Félicité

10.176

- 1 With local knowledge, smaller vessels can anchor in a depth of 17 m in a gap, 1½ cables wide, between Félicité (4°20'S, 55°53'E), and Île aux Cocos.

MAHÉ INCLUDING THE PORT OF VICTORIA

GENERAL INFORMATION

Chart 742

Scope of section

10.177

- 1 In this section are descriptions of the passages in the vicinity of Mahé, including the port of Victoria and its approaches.

The section is arranged as follows:

W side of Mahé (10.179).

E side of Mahé (10.194).

Victoria and approaches (10.199).

Topography

10.178

- 1 Mahé is traversed throughout by a range of hills and mountains which rise to their greatest elevation in the N part of the island and are separated by deep ravines with sheer cliffs. Many of the summits of the range are prominent and, on clear days, the island can be seen from about 50 miles.
- 2 The greater part of Mahé is densely wooded and the soil, where it can be seen, is of a reddish colour. Between Pointe du Sud (4° 48'S, 55°32'E) and Île du Suète, 7½ miles N, the E coast is fringed by a drying reef through which there are

number of boat channels. The coast NW of Île du Suète is described at 10.201.

WEST SIDE OF MAHÉ

General information

Chart 742

Routes

10.179

- 1 **Caution.** Although navigating in an area covered by modern surveys it is advisable to observe the precautions described at 10.3 during passages through the Area to be Avoided.

- 2 From a position about 4 miles SE of Pointe du Sud (4°48'S, 55°32'E), on the route described at 10.96, the coastal track W of Mahé passes through the charted Area to be Avoided but remains within an area of modern survey (see source data diagram on the chart for further details) and leads NW to a position W of Pointe Matoopa (4°38'S, 55°22'E), a distance of about 21 miles, from whence it turns NE for about a further 10 miles to a position N of North Point (4°35'S, 55°28'E), the N extremity of the island.

- 3 From this position the route either continues N, reversing the directions given at 10.106 and 10.103, or continues to approach the port of Victoria (10.107).

Principal marks

10.180

1 Landmarks:

- 1 Tower (4°45'S, 55°31'E) (10.94).
Piton de l'Eboulis (4°43'1S, 55°30'3E) (10.94).
Morne Seychellois (4°39'S, 55°26'E) (10.94).
Mount Toupie (4°45'2S, 55°28'2E), a promontory covered with coconut palms, with a similar hill, 124 m high, 1 cable N.
- 2 Radio mast (red lights) (4°40'S, 55°28'E).
Morne Blanc (4°39'4S, 55°25'9E) (10.120).
Mont le Niol, 1¾ miles WNW of Morne Seychellois. (10.120).
Mont Glacis (4°34'S, 55°27'E) (10.120).
Summits of Silhouette island (4°29'S, 55°14'E) (10.123).

Directions

(continued from 10.98)

Coastal passage west of Mahé

10.181

- 1 From a position about 4 miles SE of Pointe du Sud (4°48'S, 55°32'E), the track leads NW, W of Mahé, to a position W of Pointe Matoopa (4°38'S, 55°22'E), passing (with positions from Pointe Matoopa):
SW of Capucin Rock (13¾ miles SE) over which the sea breaks heavily, thence:
- 2 SW of Roches Mancienne (12½ miles SE), thence:
SW of Roche de l'Intendance (12¼ miles SE), the higher of two rocks, thence:
SW of Pointe Lazare (9¾ miles SE), a high headland marking the W entrance point of Baie Lazare, thence:
- 3 Either side of Stork Patch (6 miles SSE), over which the sea does not always break but in the vicinity of which the swell increases, thence:
Either side of a small 18.3 m patch (5 miles SSE), thence:
SW of Île Thérèse (3 miles SE), which is conical and covered with trees, thence:
- 4 NE of Pilot Patches (4 miles SSW), an area of coral known locally as Malgaché, over which the bottom can clearly be seen in fine weather. Thence:
SW of Île Conception (1½ miles S), covered with coconut palms, thence:
- 5 To a position W of Pointe Matoopa, from which a light (white concrete tower) is exhibited and near the extremity of which there is a large wooden cross. The point is the W extremity of Cap Matoopa, a bold headland covered with coconut palms. A fishery raft (red flag) (10.4) lies 6 miles W of the point.
- 6 **Caution.** In La Passe Ternay, 8 cables wide, between Île Conception and Cap Matoopa, the current is strong and, during SE winds, invariably sets N.

10.182

1 Useful marks:

- 1 Pointe Police Light, 1 mile W of Pointe du Sud, (10.98).
Île Chauve Souris, 6 miles NW of Pointe du Sud, which is 8 m high and distinctive, appearing white against the coast from seaward.
- 2 Île aux Vaches (4°41'S, 55°26'E), which is rocky and appears white from seaward. On the coast near the island there is a prominent hotel.

Les Trois Dames, 9 cables WNW of Île aux Vaches, a rock on which the sea breaks heavily.

Coastal passage north-west of Mahé

10.183

- 1 From a position W of Pointe Matoopa (4°38'S, 55°22'E) the track now leads NE, passing (with positions from Pointe Matoopa):
NW of a dangerous submerged rock (2 miles NE), thence:
Clear of Requin Bank (4¼ miles N) on which a fishery raft (red flag) (10.4) is moored, thence:
- 2 NW of a 5.6 m patch (6 miles NE), and:
NW of Îlot, a small islet 5 cables W of North Point (6½ miles NE). A boat channel exists between Îlot and the coast. Thence:
To a position 1½ miles N of North Point. See 10.101 regarding current off the point.
(Directions for N approaches to Victoria are given at 10.107 and for the N route across Seychelles Bank at 10.103)

Anchorage and landing places

Local knowledge

10.184

- 1 All the anchorages described below require local knowledge.

Police Bay

10.185

- 1 **Landing** is usually impracticable in Police Bay (4°48'S, 55°32'E) due to the swell. If attempted, care should be taken to avoid some rocks, 4 m high, close inshore in the middle of the bay.

Pointe Police to Pointe Lazare

10.186

- 1 **Anchorage.** Small vessels can obtain anchorage in the bays and coves between Pointe Police (4°48'S, 55°31'E) and Pointe Lazare, 3¾ miles NW, but caution is necessary as the reefs which fringe the coast in places are mostly steep-to.

Boileau Bay

10.187

- 1 **Anchorage.** Small vessels can obtain good anchorage in the smaller coves that form Boileau Bay between Île Chauve Souris (4°44'S, 55°28'E) (10.182) and Les Trois Dames, 4½ miles NW (10.182).
Anse à la Mouche and Anse Boileau, in the S end of the bay, provide the best anchorage, being well protected from the swell.
- 2 **Prohibited area.** There is a prohibited area 1½ miles N of Île Chauve Souris, marked by special buoys, the positions and boundaries of which are shown on the chart.
Landing. Although swell usually enters Boileau Bay, landing can usually be effected inside the reefs which fringe the shores in places and in which there are numerous openings.

Port Glaud

10.188

- 1 **Anchorage.** Small vessels can find anchorage in Port Glaud (4°40'S, 55°25'E) E of Île Thérèse (10.181).

Île Conception

10.189

- 1 **Landing.** The best place to effect a landing on Île Conception (4°40'S, 55°22'E) (10.181) is on the N side of the SE extremity, although this will be difficult.

Port Launay**10.190**

- 1 Port Launay (4°39'0S, 55°23'5E), on the SE coast of Cap Matoopa (10.181) is a Marine National Park. Anchorage is obtainable for small vessels but there is usually a swell.

Baie Ternay**10.191**

- 1 **Anchorage.** Small vessels might find anchorage in Baie Ternay, on the N side of Cap Matoopa. The bay is well sheltered but the head of the bay is filled by a steep-to reef which is not always marked by breaking seas. A Special Wildlife Reserve is established in Baie Ternay.

Baie Beau Vallon**10.192**

- 1 Winds from SE often blow down to the coast with considerable strength from the hills around Baie Beau Vallon which forms most of the NW coast of Mahé.
Anchorage can be obtained by small vessels off the village of Bel Ombre, at the head of the bay.

Other names**10.193**

- 1 Bazarca, Anse (4°48'S, 55°31'E).
 Corail, Anse (close NW of Anse Bazarca).
 Grande Anse, Mahé (4°41'S, 55°27'E).
 Intendance, Anse (4°47'S, 55°30'E).
 Major, Anse (4°37'S, 55°23'E).
 Polite, Anse (4°42'S, 55°27'E).
 Takamaka, Anse (4°46'S, 55°29'E).

EAST SIDE OF MAHÉ**General information**

Chart 742

Route**10.194**

- 1 From a position about 4 miles SE of Pointe du Sud (4°48'S, 55°32'E), on the route described at 10.96, the coastal track E of Mahé remains outside the Area to be Avoided while being within an area of modern survey (see source data diagram on the chart for further details) and leads NNW to a position N of Sainte Anne island (4°36'S, 55°30'E), a distance of about 20 miles.

Principal marks**10.195**

- 1 **Landmarks:**
 Mont Glacis (4°34'S, 55°27'E) (10.120).
 Seven radio masts (vicinity of 4°35'8S, 55°28'0E) (10.225).
 Saint Louis Hill radio mast and tower (4°37'0S, 55°26'4E) (10.225).
 2 Victoria Lighthouse (4°37'1S, 55°28'2E) (10.225).
 Morne Seychellois (4°39'S, 55°26'E) (10.94).

Piton de l'Eboulis (Castle Peak) (4°43'1S, 55°30'3E) (10.94).

Church tower (4°45'S, 55°31'E) (10.94).

Directions*(continued from 10.98)***10.196**

- 1 From a position about 4 miles SE of Pointe du Sud the track then leads NNW to a position NE of Sainte Anne island, in the approaches to Victoria, keeping within the area covered by modern surveys (see source data diagram on the chart) and, for vessels described at 10.8, outside the charted Areas to be Avoided. The recommended track passes (with positions from Pointe du Sud (4°48'S, 55°32'E)):
 2 ENE of Pointe Capucins (6 cables N), thence:
 ENE of Pointe au Sel (4¼ miles N) which is low, shelving and rocky and rises to Piton Jean Marie (Oliver Hill), appearing dark against the background, seen from the E, thence:
 ENE of a 13.6 m patch (7¼ miles NNE), thence:
 3 ENE of Île du Suète (4°40'5S, 55°32'0E), which is 61 m high, wooded with some large boulders on it and joined to the coast just NE of Pointe La Rue. A red obstruction light is exhibited close to the summit of Île du Suète and there are four similar lights 4 cables SE, near the edge of the coastal reef.
 4 Thence (with positions from Île du Suète):
 ENE of an 11.8 m patch (2¼ miles ENE), thence:
 ENE of a 15.2 m shoal (4 miles N) extending from the coastal bank, thence:
 WSW of a 12.4 m patch (7½ miles NNE).
 5 The track then leads W, passing N of an 11.8 m shoal, 3½ cables N of the NE point of Sainte Anne island, to a position 1 mile N of Sainte Anne island.

10.197

- 1 **Useful marks:**
 Mount Parnel, 2¾ miles NW of Pointe du Sud, which is bare and steep and separated from the hills between it and Pointe du Sud by a valley.
 2 Île Souris, 4 miles N of Pointe du Sud, on the coastal reef. The island is 14 m high and rocky with a few trees on it.
 Île aux Rats, 4 cables N of Île du Suète.
(Directions for Victoria approaches continue at 10.226)

Small craft**Boat channels and landing places****10.198**

- 1 **Local knowledge** is required for the boat channels described below.
Anse Marie-Louise. This cove lies between Pointe Capucins (4°48'S, 55°32'E) and Cape Lascar, 1½ miles NNW. A boat channel leads through the coastal reef to the shore at the head of the bay. About 1 mile W of the bay there is a church tower visible from the E over a limited arc.
 2 **Anse Royale Bay.** There is a passage through the coastal reef NE of the conspicuous tower (4°45'S, 55°31'E) described at 10.94. About 1 mile S, on the coast, there is a prominent white church with a spire.
Anse aux Pins. This cove lies between Pointe au Sel (4°44'S, 55°32'E) and Île du Suète, 3 miles N. Midway between the points there is a gap in the coastal reef, used by

local craft, over which the sea usually breaks. On the coast, about 2 miles N of Pointe au Sel, there is a white hotel.

VICTORIA AND APPROACHES

General information

Charts 722, 742

Position

10.199

- 1 The port and town of Victoria (4°37'S, 55°28'E) stands at the head of a bay on the NE coast of the island of Mahé.

Function

10.200

- 1 Victoria, with a population of 28 000 in 1999, is the State capital and seat of government for the Seychelles. It is a commercial and fishing port and is considered the most important tuna fishing base in the Indian Ocean. It is also the port of entry for the Seychelles.

Topography

10.201

- 1 **Coast.** From Île du Suète (4°40'5S, 55°32'0E) (10.196) to Victoria and thence to North East Point (4°35'0S, 55°27'8E) the coast is bordered by a coral reef, up to 1 mile wide, intersected by boat channels. The reef is covered with mud and sand and dries in places. Between North East Point and North Point, 2¼ miles NW, a narrow reef fringes the coast. Between Île du Suète and Victoria the coast is formed by reclaimed land at the SE end of which lies the Seychelles International Airport.

- 2 **Inland,** a deep valley extends NW from Montagne Planneau, 3 miles W of Île du Suète, towards Victoria. The town itself lies at the mouth of a valley which extends W towards Baie Beau Vallon (10.192). South of the valley, a ridge connects Morne Seychellois (4°39'S, 55°26'E) (10.94) to Trois Frères, 5 cables N, which rises to 767 m with three peaks, the centre peak of which is the highest. Northward, the slopes of Signal Hill (4°36'4S, 55°26'9E) form the N slopes of the valley.

10.202

- 1 **Offshore islands.** Victoria is sheltered from seaward by a number of islands lying on detached reefs on the coastal bank.

- 2 **Île au Cerf** (4°38'S, 55°30'E), lies with Île Longue, 4 cables NE, Île Ronde, 6 cables NNE, and Île Cachée, 1 cable SE, on a large coral reef covered with sand which dries in patches and on which there are numerous coral heads. The islands are covered in trees, mainly palms, except for the summit of Île au Cerf (107 m high), which is grassy on the NW side and thick scrub on the SE.

- 3 **Île Longue** has several buildings scattered along the N shore which house the local prison and a quarantine station. On the NW corner of the island is a jetty.

- 4 **Île Moyenne** (4°37'2S, 55°30'5E), lies on a similar reef, separated from the one above by a narrow, shallow channel in which there are numerous coral heads. The island is similarly covered in trees and, on the summit (61 m high) there is a prominent boulder.

- 5 **Île Sèche** (4°36'8S, 55°31'4E), the outermost island, situated about 4 miles offshore, is covered with large boulders among sparse vegetation. It is a nature

reserve and is frequented by numerous sea birds, in consequence of which it appears white. Landing on Île Sèche is difficult.

10.203

- 1 **Sainte Anne** (4°36'2S, 55°30'3E), the largest island, 294 m in height, is conical and covered with trees and bushes. The S end is low and sandy with scattered houses. There is also a prominent wind generation plant (63 m in height, red and white). On the W side of the island there is a white, sandy beach with a few scattered buildings and a tank farm. To the N, there are some huts at the head of Anse Cabot, a small cove on the W side of the N headland.

- 2 Sainte Anne island, in company with Île au Cerf, Sainte Anne Channel and the other adjacent islands now form the Sainte Anne Marine National Park, the boundary of which is charted and marked by buoys.

Port limits

10.204

- 3 Victoria port limits are bordered to seaward by a line joining:

North Point (4°33'6S, 55°26'4E),

4°33'6S, 55°32'0E and,

Île de Suète 4°40'4S, 55°32'0E.

Approach and entry

10.205

- 1 **Outer harbour** of Victoria, which lies between the islands of Sainte Anne and Île au Cerf, and the coast N of Victoria, is approached by one of the following three channels:

Cerf Passage, between the reef fringing Île au Cerf and the coastal reef, 5 cables SW. This channel, described at 10.232, is not easy of access and is unmarked.

- 2 Sainte Anne Channel, S of Sainte Anne. This channel, part of the Sainte Anne Marine National Park, is only suitable for small craft and is described at 10.236.

- 3 North entrance channel, entered about 6 cables W of the N point of Sainte Anne, is the main and safest channel and the only one that is marked.

All the channels are encumbered with shoals.

10.206

- 1 **Inner harbour.** This is situated between the coastal reef in front of Victoria and a detached reef lying about 5 cables offshore. It is approached through the outer harbour, entering through a marked channel, W of Victoria Lighthouse (4°37'1S, 55°28'2E) (10.225) which stands on the N extremity of the detached reef.

Traffic

10.207

- 1 In 2003, 849 vessels with a total dwt of 5 265 586 used the port.

Port Authority

10.208

- 1 Port Authority is the Seychelles Ministry of Tourism and Transport, Port and Marine Services Division and is represented by a Director General and Harbour Master:

Postal address: PO Box 47, Mahé.

Office: Port Office at the NW end of Mahé Quay (10.240), as indicated on the chart.

Limiting conditions

Controlling depths

10.209

- 1 **Inner harbour** is dredged to a depth of 11 m (1988) but there are patches with a least charted depth of 8.2 m over them about 4 cables within the entrance on the W side, off Bunker Pier.

Deepest and longest berths

10.210

- 1 **Mahé Quay** (10.240).

Density of water

10.211

- 1 Density of water in both inner and outer harbours is 1.025 g/cm³.

Tidal levels

10.212

- 1 At Victoria the mean spring range is about 1.1 m; mean neap range about 0.5 m. For further information see *Admiralty Tables Volume 3*.

Maximum size of vessel handled

10.213

- 1 **Outer harbour:**
Anchorage (10.219): there are no restrictions N of the entrance channel.
- Inner harbour:**
Maximum length 210 m.
Maximum draught 12 m at Mahé Quay, S end.
- 2 **Cerf Passage:**
Maximum draught 4.5 m (10.232).
- Sainte Anne Channel:**
Maximum draught 2.5 m (10.236).

Local weather

10.214

- 1 **Winds.** During the NW Monsoon the winds coming off the high land are very gusty and may blow very strongly off Mahé Quay.
Swell. During the NW Monsoon the swell sets into the outer harbour and vessels at anchor may be required to shift berth.

Arrival information

Port operations

10.215

- 1 **Outer harbour.** Movement at night is at the discretion of a vessel's Master, following consultation with the Harbour Master.
- Inner harbour.** Movements are only permitted during daylight hours.

Vessel traffic service

10.216

- 1 Vessel Traffic Service Scheme is in operation for the control of shipping, see *Admiralty List of Radio Signals Volume 6(3)*. Positions of reporting points are shown on the chart.
- 2 **Vessel traffic signals** are displayed at the signal station situated in a tower at the Port Office (10.208). The approach of inward-bound vessels is indicated by signals displayed at the tower.

Port radio

10.217

- 1 For details *Admiralty List of Radio Signals Volume 6(3)*.

Notice of ETA

10.218

- 1 A vessel's ETA is required to be reported 24 hours in advance, the report to include length, draught and whether a valid deratting or deratting exemption certificate is held. Longer notice is desirable if it is intended to enter the inner harbour as the limited space is further restricted by local craft which may have to be cleared.

Outer anchorages

10.219

- 1 Very large vessels anchor N of the N entrance channel (10.205). The Harbour Master should be contacted for instructions. Heavy swell may be experienced but the holding ground is reported to be good.
- 2 **Monsoon anchorage.** During the NW Monsoon, when conditions may be unsuitable for anchorage in the outer harbour (10.205) shelter can be obtained, with the Harbour Master's permission, at the E end of Sainte Anne Channel, in the lee of Sainte Anne, in depths from 11 to 18 m. See 10.236 for directions.
- 3 **Prohibited anchorages.** Anchoring is prohibited within the following restricted areas, as indicated on the chart:
Foul area off NE coast of Sainte Anne.
North entrance channel.
In both Sainte Anne Channel and Cerf Passage. See 10.237.

Pilots

10.220

- 1 **Pilotage** is compulsory for merchant vessels over 150 gt in both outer and inner harbours, but they are normally available in daylight hours only.
Requests for pilots should be sent with the message reporting the vessel's ETA (10.218).
- 2 **Pilot boarding point** is 6 cables W of the N point of Sainte Anne, as indicated on the chart. Pilots are seldom prevented from boarding by bad weather but a vessel awaiting a pilot may anchor as convenient in the outer harbour, provided the passage of other vessels is not impeded.

Pilot boat has a white hull and cabin with orange top.

Tugs

10.221

- 1 Use of a tug when berthing alongside is compulsory. A vessel is usually met on arrival in the inner harbour and ship's lines are used. Tugs equipped with RT are available.

Local knowledge

10.222

- 1 Local knowledge is required for transits of:
Cerf Passage (10.232).
Airport Channel (10.232).
Sainte Anne Channel (10.236).

Regulations concerning entry

10.223

- 1 **Pratique** can be obtained by radio from the Seychelles Department of Health 48 hours before arrival. See *Admiralty List of Radio Signals Volume 1(1)* for further details.
Quarantine regulations are placed on board on arrival. With regard to the introduction of birds and animals, see 1.44.
- 2 **Deratting certificates** (10.218) must be held for a vessel bound into the inner harbour. If not held the vessel will be required to anchor in the outer harbour for inspection and clearance before being allowed to proceed.

Berthing priority is given to cruise liners and tankers. Other vessels may have to shift berth depending on priority.

Harbour

General layout

10.224

- 1 **Outer harbour** (10.205), in which lie the main anchorages, extends NE from Victoria Lighthouse (4°37'1S, 55°28'2E) between the coastal reef, to the W, and a reef fringing Sainte Anne, to the E. For N limit see 10.204.

There is an oil terminal on the W side of Sainte Anne.

A channel about 1¼ cables wide, entered NW of Victoria Lighthouse, leads SW through the coastal reef and leads to the inner harbour.

- 2 **Inner harbour** (10.206) which is formed by a basin, about 3 cables wide, in the coastal reef in front of the town of Victoria. This part of the harbour opens out in all directions into narrow gullies and creeks in the reef where land has been reclaimed to form the New Port Area.

Alongside berths and port facilities are situated on the W side of the inner harbour, at Mahé Quay in the New Port Area and at Long Pier, N of the New Port Area. Anchorage can also be obtained within the inner harbour.

- 3 **Development** There are extensive dredging, surveying and reclamation works in Victoria inner harbour and approaches as shown on the chart.

Principal marks

10.225

- 1 **Landmarks:**

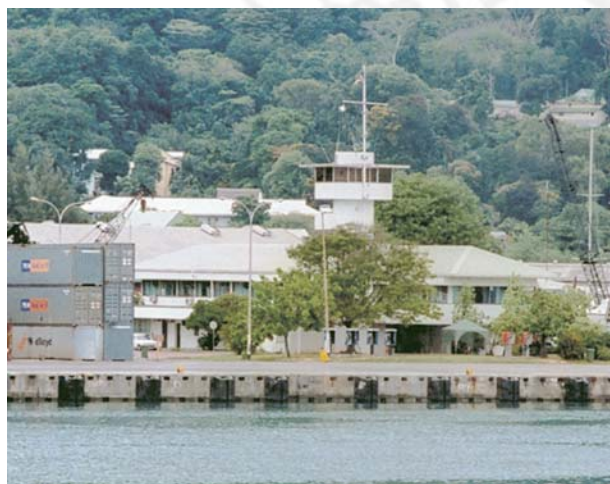
Cascade Church (4°40'S, 55°30'E), which is large, white and conspicuous.

Radio mast (red lights) (4°40'S, 55°28'E).

Morne Seychellois (4°39'S, 55°26'E) (10.94).

Cement silos (4°37'7S, 55°27'7E) in the New Port Area.

Signal tower, 1 cable NNE of cement silos.



Port Victoria Signal Station from NE (10.225)

(Original dated 2002)

- 2 Saint Louis Hill summit (4°37'0S, 55°26'4E) which is cone-shaped and distinctive. A radio mast (red lights) and a radio tower (red and white) stand close together on the hill.
- 3 Victoria Lighthouse (white round masonry tower, 11 m in height) (4°37'1S, 55°28'2E), but which is not easy to see at night when approaching from seaward.



Victoria Lighthouse 198° distant 2½ cables (10.225)

(Original dated 2001)

- 4 Wind generators (red and white) (4°36'7S, 55°29'9E) (10.203) on Sainte Anne.
Seven conspicuous radio masts (red and white, with red obstruction lights on top and at half-height on each mast) (vicinity of 4°35'8S, 55°28'0E) on the coastal reef.
N extremity of Mont Glacis (4°34'S, 55°27'E) (10.120).

Directions

(continued from 10.108, 10.132 or 10.197)

North entrance channel and outer harbour 10.226

- 1 From a position 1 mile N of Sainte Anne (4°36'S, 55°30'E), the track leads generally SW, into the approach to the N entrance channel to Victoria, between the W side of Sainte Anne and the Mahé coast.

Leading lights:

Front light (orange beacon) (4°37'8S, 55°28'4E), on a drying reef.

- 2 Rear light (similar structure), 9 cables SSW of front light, on the coast.

Caution. The four high intensity floodlights of a sports stadium lie between the above leading lights but are rarely used.

- 3 From N of Sainte Anne the alignment (210°) of these lights leads to the vicinity of the pilot boarding point (10.220) and thence through the N part of the fairway of the N entrance channel. The alignment crosses a 12.5 m patch (reported 1991) about 5 cables NW of the N point of Sainte Anne island. This part of the fairway is unmarked.

- 4 The track then passes:
NW of a spherical buoy (orange and white), about 1½ cables N of the N point of Sainte Anne, being a boundary marker for the Marine National Park (10.203), thence:

- 5 NW of a second, similar marker buoy, 2½ cables W of Anse Cabot, which also marks an extended part of the island's coastal bank. A 4 m patch lies ¾ cable E of the buoy. Thence:

NW of a mooring buoy, 3½ cables W of the island's W point, being the tanker berth for the oil terminal on Sainte Anne, thence:

- 6 Between a small bank ($4^{\circ}36'3S$, $55^{\circ}29'1E$) with a least depth of 4.8 m over it, marked on its SW side by a light-buoy (isolated danger), and a shoal, with a depth of 6.5 m over it, marked on its W side by a light-buoy (port hand) and a spherical marker buoy (orange and white). Thence:

- 7 To a position 2 cables SE of the bank with a depth of 4.8 m over it. The area 2 cables NW of the bank is used as an anchorage by local fishing boats.

10.227

- 1 **Useful marks:**

Numerous radio masts ($4^{\circ}35'9S$, $55^{\circ}27'9E$), on the coastal reef, some marked with red lights.

Stadium floodlights (four, occasionally lit) ($4^{\circ}38'1S$, $55^{\circ}28'1E$). This group of lights lies between the leading lights for the North entrance channel.

- 2 Aero light (white building, 4 m in height) ($4^{\circ}36'3S$, $55^{\circ}30'2E$), exhibited from the summit of Sainte Anne island (10.203).

Outer harbour to inner harbour**10.228**

- 1 **Leading marks:**

No 1 Beacon (starboard hand, triangular topmark, point up) ($4^{\circ}37'0S$, $55^{\circ}28'0E$), on the coastal reef,

Rear light-beacon (orange beacon) 6 cables WSW of front mark, on the N end of Inter Island. Quay It is reported (2003) that this beacon is difficult to distinguish by day.

- 2 From a position about 2 cables SSE of the light-buoy (isolated danger) (10.226), 1.1 miles NE of Victoria Lighthouse, the alignment (249°) of these marks leads to the seaward end of the inner harbour entrance channel.

10.229

- 1 An alternative approach leads as follows:

Continuing on the alignment (210°) as in 10.226, and passing:

NW of a 8.7 m patch, 1.2 miles ENE of Victoria Lighthouse, thence:

NW of a shoal, 1 mile ENE of Victoria Lighthouse, with a depth of 7 m over it and marked, on its W side, by a buoy (port hand), thence:

- 2 To a position with Victoria Lighthouse bearing 074° distant $8\frac{1}{4}$ cables.

Leading marks:

No 1 Beacon ($4^{\circ}37'0S$, $55^{\circ}28'0E$) (10.228),

Rear light-beacon (orange triangle, point down, on orange beacon), $6\frac{1}{4}$ cables W of front mark, on the coast.

- 3 From the position $8\frac{1}{4}$ cables ENE of Victoria Lighthouse, the alignment (264°) of these marks leads to the seaward end of the inner harbour entrance channel.

10.230

- 1 Both tracks pass (with positions given from Victoria Lighthouse ($4^{\circ}37'1S$, $55^{\circ}28'2E$)):

S of a 5.9 m shoal ($8\frac{1}{4}$ cables NE), marked by a light-buoy (starboard hand), thence:

S of a 6.1 m shoal ($5\frac{1}{4}$ cables NE), thence:

N of a 6.3 m shoal ($3\frac{3}{4}$ cables ENE)), marked by a buoy (port hand), thence:

- 2 N of a depth of 2 m ($1\frac{1}{2}$ cables ENE).

Thence the tracks lead SE into the inner harbour entrance channel passing between Victoria Lighthouse and No 1 Beacon (starboard hand) ($1\frac{3}{4}$ cables NW) (10.228).

- 3 **Caution.** When approaching the inner harbour within 2 hours of sunset, with the sun ahead, the leading marks are very difficult to see.

Inner harbour entrance channel**10.231**

- 1 From the seaward end of the inner harbour entrance channel the track leads about 5 cables SW through the channel which is marked by numbered beacons and light-beacons on both sides, as indicated on the chart.

Charts 722, 742

Cerf Passage and Airport Channel**10.232**

- 1 **Approach.** The charts indicate that the best approach to the entrance of Cerf Passage ($4^{\circ}38'8S$, $55^{\circ}30'6E$) and



Port Victoria Radio Masts from NE (10.225)

(Original dated 2002)

Airport Channel, about 8 cables SE, is from E between Roche Tortue (4°40'1S, 55°32'4E) and Grand Rocher, 2¼ miles NNW of Roche Tortue. The track passes (with positions from Roche Tortue):

- 2 N of Île aux Rats (4 cables W) which is 12 m high, thence:
N of Île Anonyme (1 mile W) which is covered in coconut palms, thence:
S of Île Cachée, close SE of Île au Cerf and into Cerf Passage, or:
- 3 If bound into Airport Channel, clear of a 3-6 m shoal in the middle of the entrance.

Clearing bearing. Île Sèche (4°36'8S, 55°31'4E) (10.202) bearing less than 332° and well open NE of Grand Rocher, about 1 mile SSE, passes NE of Rocher Tortue.

10.233

- 1 **Airport Channel.** The track through Airport Channel leads generally S through a narrow and tortuous passage, in a least depth of 5.2 m, between numerous shoals, the position of which can be seen on the chart. Local knowledge is required.

10.234

- 1 **Cerf Passage.** Numerous shoals, the position of which can be seen on the chart, encumber Cerf Passage. It should not be attempted unless a pilot is embarked and the position of the sun allows the shoals to be seen.

10.235

- 1 **Useful marks:**
Natural mark, (4°39'2S, 55°28'5E) consisting of a distinctive light-coloured streak on the cliff face of a hill. The top of the mark is 152 m high.
- 2 Red obstruction light, about 5½ cables W of the natural mark, exhibited occasionally.
White cross (4°37'6S, 55°26'9E)
Victoria Lighthouse (4°37'1S, 55°28'2E) but see 10.225 regarding visibility.

10.236

- 1 **Caution.** Draught is restricted to 2.5 m, an extensive reef at the W end of the channel making it unsafe for vessels of deeper draught.
- 2 **Anchorage.** The track to the anchorage (10.219) at the E end of Sainte Anne Channel (4°36'7S, 55°30'6E) passes either side of Île Sèche (10.202), about 7 cables E. Depending on draught, a 7.3 m shoal, 2¼ cables SW of the island, should be avoided. Overfalls are charted about 1 mile NNE of Île Sèche.
- 3 **Local knowledge** and the permission of the Harbour Master are required for passage through Sainte Anne Channel.

Useful marks:

- White cross (4°37'6S, 55°26'9E).
- 4 Victoria N entrance channel front leading light (4°37'8S, 55°28'4E) (10.226).
Victoria Lighthouse (4°37'1S, 55°28'2E) but see 10.225 regarding visibility.
Aero light (4°36'3S, 55°30'2E), on the summit of Sainte Anne island.

Berths

Chart 722

Anchorage and moorings

10.237

- 1 **Outer harbour.** Anchor berths for vessels of maximum length and draught, indicated below, are normally allocated by the Harbour Master and are established as follows (with positions from Victoria Lighthouse (4°37'1S, 55°28'2E)):

Vessels less than 100 m length, maximum draught 5.0 m at 090° distant 7¼ cables.

- 2 No 3 (030° distant 1.54 miles), length 220 m, draught 15 m.
No 4 (042° distant 1.4 miles), length 220 m, draught 15 m.
No 5 (048° distant 1 mile), length 140 m, draught 10 m.

Yacht berth (094° distant 3¼ cables).

- 3 Vessels of suitable size can also anchor in the area E and SE of Victoria Lighthouse, where the holding ground is reported to be very good.

During the South-east Trade Wind (10.6), which seldom blows hard, vessels may lie to a single anchor with a short scope of cable, although some swell may be experienced. See 10.214 for conditions during the NW Monsoon.

- 4 **Prohibited anchorage.** Areas are marked on the chart where anchoring is prohibited due to the existence of submarine water-pipes and power cables, as follows:

Between Brillant Point (4°39'2S, 55°28'8E) and Île au Cerf.

Between Île au Cerf and Sainte Anne.

10.238

- 1 **Oil Terminal berth.** A berth (disused) between mooring buoys (4°36'4S, 55°29'6E) lies off the W coast of Sainte Anne, with a pipeline between the berth and the tank farm on the island, see also 1.36. This can accommodate vessels of 175 m in length drawing not more than 12 m.

10.239

- 1 **Inner harbour.** The most convenient anchor berth is opposite a large warehouse on the head of Long Pier (4°37'3S, 55°27'7E), in depths from 16 to 18 m.

There are several mooring buoys in the harbour, as indicated on the chart.

Alongside berths

10.240

- 1 **Mahé Quay**, (4°37'6S, 55°27'8E), part of the New Port Area, is 370 m in length with a height of 2 m above chart datum with a maximum draught of 11.5 m.

There are two berths:

- No 1 (N end) for petroleum tankers and cement carriers. A mooring buoy lies 75 m NW of the quay and is used for mooring vessels which overhang the berth at this end.
- 2 No 2 (S end) for general cargo, petroleum tankers and passenger vessels.

The Seychelles Coast Guard have established their base, together with a small pier, at the SE end of New Port.

10.241

- 1 **Long Pier.** North of New Port Area, this affords four berths the largest of which is 110 m in length and can accommodate a vessel of maximum draught 5.5 m.

Port services

Repairs

10.242

- 1 Limited repairs can be effected, divers and underwater welding equipment are available.
Slipways are available for vessels of under 300 gt.

Other facilities

10.243

- 1 Hospital.
Deratting and issue of certificates (vessels under 500 tonnes) and deratting exemption certificates.

Garbage disposal through a licensed collector, for a fee. Garbage must be bagged on board before collection.

- 2 **Ro-Ro facilities** for quarter-ramp vessels at Mahé Quay. Containers handled at conventional quays using ship's gear. A container park has been built within the New Port Area.

Seychelles International Airport (12 km).

There are no facilities for the reception of oily waste.

Supplies

10.244

- 1 **Fresh water** at all alongside berths.
Fresh and frozen provisions. At least 48 hours notice should be given for requirements.
Marine diesel available at Mahé Quay, Bunker Pier (NE corner of Long Pier) and by lighter. Seven days' notice is advisable for supplies.
- 2 **Heavy fuel oil** available on N end of Mahé Quay only.
Shore electricity.

A ship supply service is operated from Victoria, using fast hire craft with a range of 60 miles.

Communications

10.245

- 1 **Air services** with Praslin (10.137), Île aux Vaches (10.109) and, occasionally, with Frégate (10.134) are operated from Seychelles International Airport, SE of Victoria.

Sea ferry service to Praslin (10.137) and La Digue (10.175) runs from Victoria. A local vessel maintains communication with the outlying islands of the Seychelles group.

Harbour regulations

10.246

- 1 **Garbage** must not be dumped overboard by vessels at anchor.

Immobilisation of main engines must not be undertaken without the permission of the Harbour Master.

Transmissions by radio or radar are not permitted when berthed alongside.

Low flash point oil products must not be discharged during the hours of darkness.

- 2 **Fire-wires** must be rigged while discharging petroleum products, enabling a vessel to be towed off the berth in an emergency.

Movements of vessels within the inner or outer harbours is not permitted without the permission of the Harbour Master.

- 3 **Ship's boats** may not be used in the inner or outer harbours.

Notice of departure must be given at the Port Office at least 12 hours in advance.

Sainte Anne Marine National Park, governed by local regulations, includes the islands described at 10.202 and

10.203 with the exception of Île Sèche and its surrounding reef.

- 4 **Thirteen spherical demarcation buoys**, painted with horizontal orange and white bands and marked "MARINE NATIONAL PARK" define the limits of the park, as shown on the chart.

Nature reserve, governed by local regulations, is established on Île Sèche and surrounding rocks.

Small craft

Charts 722, 742

Boat channels and landing places

10.247

- 1 **Île Anonyme** (4°40'S, 55°31'E) (10.232). A boat channel separates the reef on which this island lies from the coastal reef.

Cascade Bay (entrance, 4°39'4S, 55°30'6E). A boat channel leads through the coastal reef to the bay, which enables landing at the mouth of a stream, except at very low water.

- 2 **Anse Étoile.** A boat channel exists through the coastal reef to Anse Étoile, which indents the coast SW of Pointe Cèdre (4°35'5S, 55°27'6E).

- 3 **Outer harbour coastal reef.** There is a boat channel (4°35'9S, 55°27'7E) beneath an overhead structure, with a vertical clearance of 9 m, which extends W from a white building on the coastal reef to the shore of the outer harbour. The structure, supported on gantries, and the building are marked by white lights.

- 4 **Caution.** Boats should keep clear of the area under the radio masts, situated close E of the white building and described at 10.227.

Useful marks for the channel, in addition to the radio masts (10.227) and overhead structure above, are (with positions from Pointe Cèdre):

- 5 **Survey beacon** (mast) (6½ cables SE).
Roche Hodoul (2¼ cables E).
Rock, 5 m high (3 cables SSW).

Small craft harbour

10.248

- 1 **General information.** A creek between New Port Area and Long Pier forms a small craft harbour. A channel, marked by beacons, leads through the shallow NW part of the creek to a yacht club with a flag staff, situated at the head of the creek.

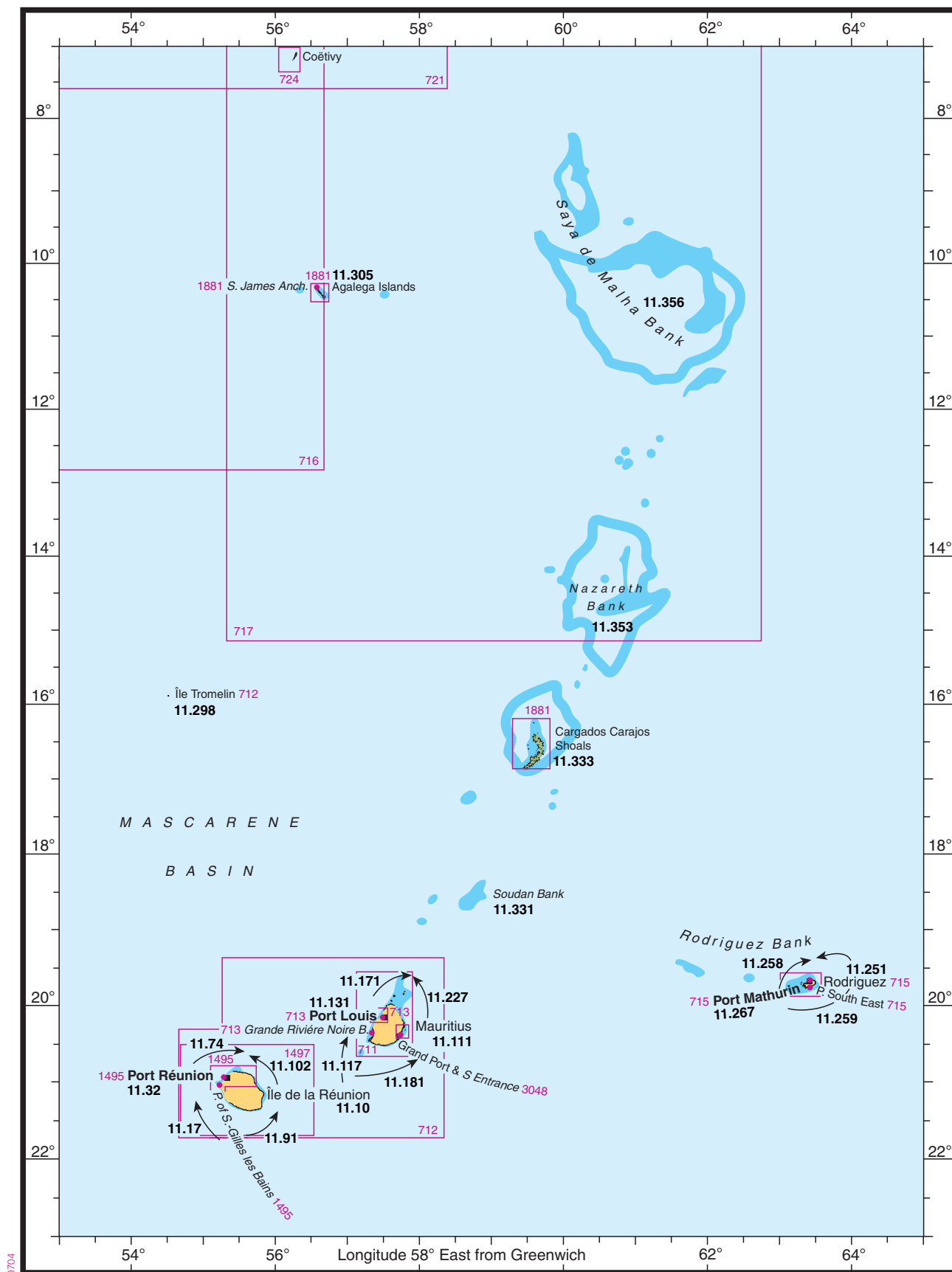
Prohibited anchorage exists in the entrance to the creek, as shown on the chart.

- 2 **Berths.** Port Authority craft berth on the S side of the entrance. There are berths for schooners on the N side. Moorings for yachts are laid in the creek.

Slip available on the N side of the entrance.

Development. It has been reported that a 200 berth marina is to be developed.

Chapter 11 - Island and banks east of Madagascar



CHAPTER 11

ISLANDS AND BANKS EAST OF MADAGASCAR

GENERAL INFORMATION

Chart 4702

Scope of the chapter**11.1**

- 1 This chapter covers the sea passages and routes in the vicinity of a number of islands and relatively shallow banks lying in the SW part of the Indian Ocean, E of Madagascar, as follows:

La Réunion (21°05'S, 55°30'E) (11.9).
 Mauritius (20°17'S, 57°35'E) (11.111).
 Rodriguez Island (19°43'S, 63°25'E) (11.250).
 Île Tromelin (15°53'S, 54°31'E) (11.298).
 Agalega Islands (10°26'S, 56°40'E) (11.305).
 Soudan Bank (18°35'S, 58°45'E) (11.331).
 Cargados Carajos Shoals (16°35'S, 59°40'E) (11.333).
 Nazareth Bank (14°30'S, 60°40'E) (11.353).
 Saya de Malha Bank (10°00'S, 61°00'E) (11.356).

11.2

- 1 Also described are the ports, harbours and anchorages associated with the passages and routes. Of these the more important are:

Port Réunion (Pointe des Galets) (20°55'S, 55°18'E) (11.32) on La Réunion.
 Port Louis (20°09'S, 57°29'E) (11.131) on Mauritius.
 Port Mathurin (19°41'S, 63°25'E) (11.267) on Rodriguez Island.

11.3

- 1 A number of ocean routes pass in the vicinity of these islands and banks. These routes, fully described in *Ocean Passages for the World*, are mentioned briefly at the appropriate place in the text. See also Routeing Chart 5126.

Topography**11.4**

- 1 La Reunion and Mauritius are mountainous; the former, in particular, may be seen at a great distance.
 Rodriguez Island is of moderate elevation and hilly.
 The smaller islands, including those of Cargados Carajos, are low but there are high trees on some which may be seen at a distance.

Offshore fishing**11.5**

- 1 There is considerable fishing activity in the area, as mentioned later in the text and described, more comprehensively, at 1.10.

Hazards**11.6**

- 1 Navigational marks. See 1.7.

Natural conditions**11.7**

- 1 **Winds.** The South-east Trade Wind (1.198) prevails throughout the area, except N of about latitude 15°S from December to March, when NW Monsoon winds are experienced.

See 1.198 for strong winds associated with depressions.

Thunderstorms. See 1.199 regarding the incidence of thunderstorms and associated squalls during the NW Monsoon.

- 2 **Cyclones** may be experienced anywhere in the waters described, from November to April or May. La Reunion and Mauritius are particularly vulnerable. See 1.209 for further information.

Swell is a regular feature. See 1.176 for further information.

Rollers (1.4) affect some of the places described, as mentioned later in the text.

- 3 **Current.** The islands and banks described lie wholly within the W-going South Equatorial Current (1.166) except for Saya de Malha Bank. See 11.358 for further information.

Tidal streams. See 1.172 for a general description.

Rescue**11.8**

- 1 See 1.49 to 1.54 for details of reporting systems designed to provide information for SAR operations.

LA RÉUNION

GENERAL INFORMATION

Charts 1495, 1497

Scope of section**11.9**

- 1 In this section are described the sea passages around Île de La Réunion (21°05'S, 55°30'E) and the ports, harbours and anchorages thereof. It is arranged as follows:

West coast (11.17).
 Port Réunion (11.32).
 North coast (11.74).
 South coast (11.87).
 East coast (11.102).

Topography**11.10**

- 1 La Réunion is of volcanic origin, with many old craters, and is very mountainous, rising to more than 3000 m. One volcano, Piton de la Fournaise (11.90), last erupted in 1902 and shows signs of continuing activity. There are some hot-springs on the island.

- 2 Most of the lower parts of the island are cultivated between remnants of original forest. A large space at the SE end, where lava has poured into the sea, presents the appearance of black waves devoid of vegetation except for a few lichens and casuarina trees in the crevices.

The island's rivers descend through gorges almost to the coast and are generally unnavigable since, depending on the season, they are either torrents or dried up, or nearly so.

- 3 The coast consists mainly of cliffs, in most areas the coast rising abruptly from the sea. In some places, however, there are banks of sand and gravel thrown up by the sea behind which are ponds. There are no natural harbours and only one port.

See 1.161 for information on earthquakes.

Shelter

11.11

- 1 The coasts of the island are generally inhospitable, the anchorages off them open and possibly dangerous due to irregular currents, as described later in the text, rough seas and generally poor holding ground.

Port Réunion (11.32), situated near the NW point of the island, is the only harbour which can be entered by sea-going vessels.

Offshore fishing

11.12

- 1 See 1.10.
Many fish aggregating devices have been established around the coasts of the island and are marked by a string of orange, red or yellow buoys fitted with a radar reflector. Mariners are advised to keep a good lookout for these buoys and keep at least 1 mile clear of them.
- 2 The fish aggregating devices are not charted but their latest positions are promulgated in *Admiralty Temporary and Preliminary Notices to Mariners*.

Natural conditions

11.13

- 1 **Cyclones** affect La Réunion between November and April, particularly from November to December, but there is normally sufficient warning of their approach for a vessel to stand out to sea.

Rollers (1.4) affect the island from April to October and are known, locally, as 'Raz de Marée'. See also 1.173 for resulting variations in sea level.

- 2 **Currents.** La Réunion lies within the generally W-going South Equatorial Current described at 1.166, but is also in an area somewhat affected by the great land mass of Madagascar, to the W. As a consequence, the constancy of the current in this vicinity is low. Sets between E and N may be more common at times, especially from April to June and from October to December.

- 3 **Tidal streams** are not perceptible anywhere.

Climatic table. See 1.239.

Regulations

11.14

- 1 **Quarantine** reports by radio are the same as those applicable to France. For details see *Admiralty List of Radio Signals Volume 1(1)*, see also 1.45.

Quarantine regulations are strictly enforced, particularly with regard to bubonic plague, cholera and small pox.

Single-hulled tankers carrying heavy petroleum products are prohibited, see 1.45.

- 2 **Anchorage.** Vessels of 25 m LOA or longer are only permitted to anchor in authorised anchorage areas or regulated anchorage areas. Prior to anchoring in regulated areas, or by vessels not requiring port services in La Réunion, authorisation to anchor must be obtained from COSRU (MRCC Réunion), see *Admiralty List of Radio Signals Volume 5*.

Ocean routes

11.15

- 1 Routes between ports on the South African continent and Mauritius, Sri Lanka, Bay of Bengal and the Malacca Strait pass N or S of La Réunion. Full details of these routes are given in *Ocean Passages for the World*. See also Routeing Chart 5126.

Hazards

11.16

- 1 **Approach.** By day, in clear weather, the mountain peaks of the island may be sighted at a distance of 100 miles or more. However, they are usually in cloud and lower features, such as the island's extremities, may be seen first.

At night, approaching from N without reliable radar, Pointe de Bel-Air Light (20°54'1S, 55°36'1E) (11.77) or Port Réunion Main Light (20°56'1S, 55°17'1E) (11.58) should be sighted before closing the coast.

- 2 Approaching from W or NW, in similar circumstances, Port Réunion Main Light should be sighted.

Missile Range. Approaching from the SW should be avoided if possible due to the existence of a sea-to-sea, air-to-sea missile range centred approximately 25 miles SW from the island.

- 3 The area is bounded by the following positions:
21°12'0S, 54°57'0E.
21°26'0S, 55°02'5E.
21°31'2S, 54°47'4E.
21°17'2S, 54°42'0E.
21°12'0S, 54°57'0E.

WEST COAST

General information

Charts 1497, 1495

Route

11.17

- 1 From a position SW of Pointe de l'Étang-Salé (21°16'4S, 55°19'9E) to a position NW of Pointe des Galets (20°55'4S, 55°17'3E) (11.34), about 22 miles N, the waters off the W coast of La Réunion are clear of charted dangers seaward of about 5 cables from the coast. A reef fringes the coast in places.

Topography

11.18

- 1 Between Pointe de l'Étang-Salé (21°16'4S, 55°19'9E), and the village of Saint-Gilles les Bains (21°03'S, 55°14'E) (11.27), a distance of about 15 miles, the coast is high and broken by ravines.

The shore of Baie de Saint-Paul, a large indentation between Cap la Houssaye, 2 miles NNE of Saint-Gilles les Bains, and Pointe de la Rivière des Galets, 4½ miles farther NNE, is low and generally arid.

- 2 At the N end of the coast is a low-lying, arid plain terminating in Pointe des Galets (20°55'4S, 55°17'3E) (11.34), around which Port Réunion has been constructed. The port is reported to be readily identified on a radar display.

Current

11.19

- 1 See 11.13. East and N sets are frequent off this coast.

Principal marks

11.20

- 1 **Landmarks** (with positions from Piton des Neiges (21°06'0S, 55°28'8E)):

Television tower (21°12'4S, 55°19'9E).
 Petit Bénard peak (5 miles SW).
 Le Grand Bénard peak (3½ miles WSW).
 Les Trois Salazes (2½ miles WSW), which presents three needle peaks.

- 2 Piton des Neiges, the highest peak of La Réunion, sometimes tipped with snow in winter.
 Le Cimendef (4½ miles NNW), a gigantic cone 2227 m in height.

Major light:

Port Réunion Main Light (20°56'1S, 55°17'1E) (11.58).

Directions

Caution

11.21

- 1 On passage offshore, W of La Réunion, care should be taken to avoid fish aggregating devices which have been established at distances up to 15 miles off the coast, see 11.12.

Coastal passage

11.22

- 1 From a position SW of Pointe de l'Étang-Salé (21°16'4S, 55°19'9E), the track leads generally NNW, seaward of the charted dangers, to a position W of Pointe des Aigrettes (21°02'2S, 55°14'0E), which can be identified from S or N by Piton Bienvenue, rising to 140 m, 1 mile inland, thence generally NNE to a position NE of Pointe des Galets (20°55'4S, 55°17'3E) (11.34), a distance of about 27 miles, passing (with positions from Pointe des Aigrettes):
- 2 WSW of Pointe du Portail (12¼ miles SSE), thence:
 WSW of Pointe de Bretagne (10½ miles SSE). An aerial dish, with an elevation of 254 m, stands 1¼ miles E of the point. Thence:
 WSW of Saint-Leu (8¾ miles SSE) (11.26), a fishing village with a small mole, thence:
 WSW of Ravine de la Fontaine (8½ miles SSE), which is spanned by a white metal bridge, thence:
- 3 WSW of Ravine de la Chaloupe (8¾ miles SSE), spanned by a low bridge with three arches, thence:
 WSW of La Petite Ravine (6½ miles SSE), spanned by a viaduct with four arches, thence:
 WSW of La Grande Ravine (6 miles SSE), spanned by two superimposed bridges with eight arches, thence:
- 4 WSW of Les Trois Chameaux (2½ miles S), which consist of some rocks situated off the S end of Cap des Chameaux, thence:
 WSW of Saint-Gilles les Bains (1 mile SSE), a small village and harbour, thence:
 To a position W of Pointe des Aigrettes.

11.23

- 1 The track then leads NNE, passing:
 WNW of Cap la Houssaye (1½ miles NE) (11.28), the S entrance point of Baie de Saint-Paul (11.29), thence:
 WNW of the approach to Port Ouest (7 miles NE), the W part of Port Réunion, thence:
 To a position NW of Pointe des Galets (11.34).

11.24

- 1 **Useful marks** (with positions from Pointe des Aigrettes):
 Leading lights (15 miles SSE) (11.25) close N of the village of l'Étang-Salé les Bains.
 Saint-Leu jetty head light (8¾ miles SSE) (11.26).
 Lights (1¼ miles S) (11.27) at Saint-Gilles les Bains.

- 2 Cap Boucan Canot (1 mile NE).
 Saint-Paul Light (3½ miles ENE) (11.29).
 Bridge (6½ miles NE) which spans Rivière des Galets.
 The river enters the sea through Ravine de la Rivière des Galets at the S end of which Le Cimendef (11.20) can be seen.

(Directions for passage N of La Réunion continue at 11.78.

Directions for Port Réunion are given at 11.59)

Anchorage, harbours and landing places

L'Étang-Salé les Bains

11.25

- 1 **Anchorage.** There is poor holding ground where anchorage can be obtained, temporarily, off the village of L'Étang-Salé les Bains (Étang-Salé) (21°15'S, 55°21'E) where there is a salt works. The anchorage lies about 1 mile offshore, as indicated on the chart, close N of the alignment (089¾°) of leading lights situated N of the village:
- 2 Front light (white vertical rectangle, red stripe, on white masonry tower, red top, 3 m in height) (21°15'8S, 55°20'0E).
 Rear light (similar structure, 6 m in height), 60 m E of the front light.

Saint-Leu

11.26

- 1 **Anchorage.** There is a position indicated on the chart, but with poor holding ground, where a temporary anchorage can be obtained off the small fishing port of Saint-Leu (21°10'S, 55°17'E).
- 2 **Useful mark:**
 Light (white tower, green lantern, 5 m in height) exhibited from the head of a mole which protects the port.
 Communication with the shore from the anchorage is difficult.

Chart 1495 plan of Saint-Gilles les Bains.

Saint-Gilles les Bains

11.27

- 1 **General information.** At the village of Saint-Gilles les Bains (21°03'S, 55°14'E) there is a small harbour formed by two breakwaters.
Anchorage. The holding ground is poor and anchoring is not recommended.
- 2 **Directions for entering harbour.** The white sector (135°-144°) of a light (white structure, red top, 8 m in height) exhibited from the head of the E sea wall leads to the harbour entrance. Thence the harbour is entered on the following leading line:
 Front light (white column, green top) (21°03'3S, 55°13'4E).
 Rear light (similar structure) (50 m from front light).
 The alignment (163°) of these lights, situated on the S side of the harbour at the root of the W sea wall, leads through the entrance, passing E of the W sea wall from the head of which a light (white structure, green top, 8 m in height) is exhibited.

Chart 1495

Cap la Houssaye

11.28

- 1 **Landing** is sometimes possible in Trou du Cuisinier, the E of three inlets which indent Cap la Houssaye (21°01'S, 55°14'E), which is high and steep.

Baie de Saint-Paul**11.29**

- 1 **General information.** Baie de Saint-Paul (20°59'S, 55°16'E) is the only good roadstead off La Réunion and is used by vessels waiting to enter Port Ouest of Port Réunion (11.32). Vessels anchoring for this purpose must advise the Harbour Master at Port Ouest. Anchorage here is safe in conditions of very heavy swell.

- 2 The town of Saint-Paul, in which there is a signal station, stands at the head of the bay, as does Saint-Paul Light (white pylon, black top, 15 m in height) (21°00'·5S, 55°16'·1E).

Local winds. In the fine season, from mid-April to mid-November, local winds are usually from SW, being caused by an eddy round the island. For the remainder of the year the wind is usually NE.

11.30

- 1 **Anchorage.** When anchoring in Baie de Saint-Paul care must be taken to avoid the following:

A wreck 5¼ cables NNW of Saint-Paul Light, marked on the W side by a buoy (S cardinal).

A marine farm, bounded by four buoys, 2½ cables W of Saint-Paul Light.

- 2 There is good anchorage, in fair weather, in a depth of 20 m, black sand, with Saint-Paul Light bearing 145° and Cap La Houssaye, 2¼ miles WSW of the light (11.28) bearing 240°. This anchorage is indicated on the chart.

During NE winds vessels should anchor farther offshore. Depths of 37 m in the area NNW of Saint-Paul are recommended. In 1965 a vessel anchored in a depth of 37 m with Saint-Paul Light bearing about 150° distant 4¾ cables. A berth in a similar depth, with the light bearing 160° distant 6 cables, has also been used.

- 3 Anchorage on very good holding ground can be obtained in a depth of 50 m NW of the line between the wreck mentioned above and a mooring buoy, 1 mile SW.

Vessels using Port Réunion may secure to the mooring buoy.

Landing in Baie de Saint-Paul, on a pebble beach around the bay, is always difficult. A tug may be available from Port Ouest, Port Réunion, for communication with the shore.

Other names

Charts 1495, 1497

11.31

- 1 Avirons, Pointe des (21°15'S, 55°19'E).
Châteaux, Pointe des (21°09'S, 55°16'E).
Trois Bassins, Pointe des (21°07'S, 55°15'E).

PORT RÉUNION**General information**

Chart 1495 plan of Port Reunion Port Ouest and plan of Port Reunion Port Est

Position**11.32**

- 1 Port Réunion (Pointe des Galets) is situated at the NW point of La Réunion and comprises Port Ouest (20°56'S, 55°17'E), close W of the town of Le Port, and Port Est, 2 miles E. The latter is situated on the shore of Baie de la Possession.

Function**11.33**

- 1 Port Réunion is a commercial port and port of entry with a population of 38 000 (1995). Port Ouest is also a fishing port and a naval base.

Topography**11.34**

- 1 The coast in the vicinity of the port is a low-lying headland, Pointe-des-Galets (20°55'·4S, 55°17'·3E), forming the NW corner of La Réunion, and is bordered by the Rivière des Galets on the S side and the Grande Ravine des Lataniers on the E. Inland, the land rises steeply to Le Cimendef (11.20).

Port Limits**11.35**

- 1 There are no designated port limits.

Approach and entry**11.36**

- 1 Port Ouest is approached from W, Port Est from N, both being entered on the alignment of leading lights between breakwaters.

Traffic**11.37**

- 1 In 2003, 738 vessels with a total dwt of 12 573 667 used the port.

Port Authority**11.38**

- 1 The Port Authority is:
Direction Departementale de l'Équipement de la Réunion,
Arrondissement Mixte,
Subdivision Exploitation du Port et du Littoral.

Representative:

Harbour Master at Port Ouest.

- 2 Postal Address:
BP2002, 97821, Le Port, La Réunion, République Française.

Port Authority Office. Situated on the E side of a turning area in Port Ouest (11.53), near the main entrance to the land area of the port.

- 3 **Harbour Master's Office.** Main office is on the E side of the entrance to the N basin of Port Ouest. There is also an office in Port Est, on the SW side of the turning basin (11.54).

Limiting conditions**Port Ouest****11.39**

- 1 **Controlling depths:**

Entrance channel: Depth of 10 m over a width of 70 m in 1983, after dredging to 11 m in 1974. Less water has since been reported in the channel. Shoaling is reported to be due to the movement of pebbles along the shore, under the action of the sea, and to volcanic sand.

Harbour: Depth of 10 m, maintained by dredging.

- 2 **Caution:** Lesser depths are reported in some berths and the latest information should be obtained from the Harbour Master.

- 3 **Largest vessel** (except tankers):

Maximum length: 175 m at 8 m draught, or 160 m at 8·5 m draught.

Maximum breadth: 24 m.

Maximum tonnage: 14 000 gt.

Maximum draught permitted is 8.5 m, but this may be increased to 9 m for departure.

4 Largest vessel (tankers):

Maximum length: 171 m at 7.5 m draught, or 160 m at 8 m draught.

Maximum breadth: 24 m.

Maximum draught permitted: 8.5 m.

Port Est

11.40

1 Controlling depths:

Entrance channel: Depth of 13.1 m (1996) over a width of 130 m.

Turning basin: Depth of 13.1 m (1996).

2 Largest vessel:

Maximum length: 215 m. Vessels in excess of 120 m are required to use a tug.

Maximum draught: 12 m.

Maximum breadth: 34 m.

Maximum tonnage: 45 000 gt.

Tidal levels

11.41

- 1** The mean spring range is about 0.4 m; mean neap range is about 0.2 m. For further information see *Admiralty Tide Tables Volume 3*.

Density of water

11.42

- 1** 1.025 g/cm³.

Waves

11.43

- 1** Between June and September the port, particularly the South Basin of Port Ouest, is subject to rollers (1.4) and a heavy swell may be experienced, accompanied by a strong undertow.

Berthing alongside, cargo operations and communications with the shore by vessels at anchor may be interrupted. Vessels in harbour may have to leave their berths.

Arrival information

Port operations

11.44

- 1** Normally, vessels can enter and leave:
Port Ouest, from 20 minutes before sunrise to 20 minutes before sunset.
Port Est, between 0430 and 2200 local time.
In certain circumstances, at the Harbour Master's discretion, vessels can sail from Port Ouest at night.
- 2** Conditions for entering and leaving harbour are best in the early morning or late evening, the weather being usually calm at these times. During the day, the wind strength makes movement occasionally difficult. However, it has been reported that the entrance leading lights for Port Ouest (11.60) and other marks may be difficult to see due to the sun's glare.
- 3** At all times, small vessels and leisure craft must give priority of passage to commercial and military vessels.
All cargo operations at Port Ouest are carried out using the vessel's equipment.

Port radio

11.45

- 1** The signal station is situated at the Harbour Master's office in Port Ouest, which is equipped with VHF, and a watch is kept from sunrise to sunset. Once within range, communication should be established with this office from

which all instructions will be given. If unable to establish contact a vessel should wait about 2 miles off the intended port. For further details see *Admiralty List of Radio Signals Volume 6(3)*.

Notice of ETA

11.46

- 1** ETA should be reported to the Harbour Master's office in an Offshore Advance Report 24 hours before arrival; for details see *Admiralty List of Radio Signals Volume 6(3)*. The agent is responsible for informing the Harbour Master and for informing the vessel of the berth allocated and all other relevant details.

Outer anchorages

11.47

- 1** **Authorised anchorages** see 11.14, between the following co-ordinates:

La Possession anchorage area:

20°51'5S, 55°23'1E to 20°52'7S, 55°23'5E,

then along 20 m depth contour to,

20°55'1S, 55°20'3E to 20°53'9S, 55°19'9E to,

20°51'5S, 55°23'1E.

- 2** **Baie de Saint Paul** anchorage area:

21°00'6S, 55°15'1E, along 20 m depth contour to

21°00'8S, 55°14'6E to,

21°00'6S, 55°14'3E to 21°00'6S, 55°12'0E, to,

20°58'6S, 55°12'0E to 20°58'6S, 55°12'6E, to,

20°59'7S, 55°14'5E to 21°00'6S, 55°15'1E.

- 3** **Regulated anchorages** see 11.14, between the following co-ordinates:

Baie de Saint Paul anchorage area:

20°59'7S, 55°14'5E to 20°59'7S, 55°15'1E to,

21°00'2S, 55°15'9S along 20 m depth contour to,

21°00'6S, 55°15'1E.

- 4** **Cap la Houssaye** anchorage area:

20°59'1S, 55°10'2E to 20°58'6S, 55°12'0E to,

21°00'6S, 55°12'0E to 20°00'6S, 55°13'7E, to,

21°01'9S, 55°12'0E to 21°00'5S, 55°12'0E to,

21°00'5S, 55°10'2E

11.48

- 1** **Port Ouest.** The usual anchorage for vessels awaiting entry to Port Ouest is in Baie de Saint-Paul (11.29), 4 miles S of the port entrance.

- 2** With permission from the Harbour Master, vessels may anchor, temporarily, in a depth of 40 m, black sand, 3 cables SW of the port entrance with the light on the head of the N breakwater (20°56'1S, 55°16'9E) (11.60) bearing 045° and a mark (23 m in height) 5 cables SSE of the head of the N breakwater, bearing 116°, as shown on the plan.

Another anchorage is located 7 cables SSW of the port entrance.

11.49

- 1** **Port Est.** Vessels awaiting entry to Port Est should anchor off the port, in Baie de la Possession (11.47), in depths of 30 m.

Pilots

11.50

- 1** **Pilotage** is compulsory for all vessels over 50 m in length and available 0430 to 2200. Arrangements are normally made in advance by a vessel's agent 48 hours before arrival. Exceptionally, a pilot may be requested by VHF contact with the Harbour Master.

Pilot boarding areas are on the respective entrance leading lines, between 1 and 2 miles from the port entrances. The pilot boat is equipped with VHF.

Tugs**11.51**

- 1 Tugs must be taken for all movements, as arranged by the Harbour Master, but ships' masters may request additional tugs if considered necessary.

On arrival, tugs join vessels inside the breakwaters, using ship's lines for entering harbour and tugs' lines for berthing alongside.

Quarantine**11.52**

- 1 If all on board are healthy no advance request for pratique is necessary. The Port Health Officer will board on the vessel's arrival at the berth where pratique will normally be granted.

Harbour**General layout****11.53**

- 1 **Port Ouest.** This is an artificial harbour consisting of two main basins, North Basin and South Basin, connected by a cutting.
- 2 The entrance channel leads E into an outer harbour and thence into a turning area which forms the N part of South Basin. Apart from a berth on the N side of the outer harbour the main berths in this basin are placed around an arm extending S from the turning area. A narrow channel on the SW corner of the turning area leads into a long, narrow basin used by fishing vessels and pleasure craft and in which there are some small slips.
- 3 The North Basin is entered via the cutting which leads N from the turning area. A jetty extends W from the E side of the North Basin, dividing the E side of the basin into two arms. The berths are placed around the basin and jetty.
- In the SW corner of the North Basin there is a further small basin used by Port Authority craft.

11.54

- 1 **Port Est.** This is an artificial harbour consisting of:
A turning basin entered direct from N, through the entrance channel.
A berthing basin which extends W from the turning basin.

Traffic signals**11.55**

- 1 **Port Ouest.** The following signals are displayed from a mast at the signal station:
Port Est. There are no traffic signals.

Day Signal	Night Signal	Meaning
		Entry prohibited.
		Departure prohibited.
		Entry and departure prohibited.

Traffic signals (11.55)

Swell and cyclone warnings**11.56**

- 1 The Port Authority issues swell and cyclone warnings to ships in harbour. See port regulations (11.73) for the action to be taken on receipt of these warnings.

If required, assistance can be obtained by calling the Harbour Master's office or by sounding several short blasts on the siren.

From June to September the S swell can cause a heavy undertow in Port Ouest.

Current**11.57**

- 1 Off Port Ouest the current sets either N or S across the entrance, usually N, at an average rate of 1 kn, but may reach 2 kn.

Off Port Est the current sets W at a maximum rate of 1 kn.

These currents are irregular and diminish in strength with the approach of a tropical depression.

Principal marks**11.58**

- 1 **Landmark:**
Conspicuous tanks, 4½ cables N of Port Ouest entrance.

Major light:

Port Réunion (Pointe des Galets) Main Light (grey cement silo, 27 m in height) (20°56'1S, 55°17'1E).

Directions for entering Port Ouest**Approach****11.59**

- 1 **Leading marks.** The alignment (117°) of Rivière des Galets ravine entrance, (20°58'S, 55°20'E) with Le Cimendef, 7¾ miles SE, (11.20) leads safely towards Port Ouest.

Entering Port Ouest**11.60**

- 1 **Leading lights:**
Front light (white square, black stripe, orange border, on pylon, 11 m in height) (20°56'3S, 55°17'3E).
Rear light (white vertical rectangular shape, black stripe, orange border, on pylon, 17 m in height), situated on a building 80 m from front light.
- 2 The alignment (102½°) of these lights leads along the axis of the entrance channel into the outer harbour, passing:
N of the S breakwater from the head of which a light (white metal column, green top, 11 m in height) is exhibited, thence:
- 3 S of the N breakwater from the head of which a light (white pylon, red top, 11 m in height) is exhibited, thence:

Through the buoyed entrance channel, as shown on the plan, into the turning area.

11.61

- 1 **Caution.** If the current is setting strongly across the leading line entry may be difficult, in which case the pilot will advise. Due to the speed required to maintain steerage (3 to 4 kn) under these conditions vessels must be prepared to use an anchor, although the holding is poor, and also to warp to berth as, once inside the entrance, there is only a short distance in which to stop and turn for berthing.

South Basin**11.62****1 Leading lights:**

Front light (white vertical rectangular shape, black stripe, on green pylons 10 m in height) (20°56'4S, 55°17'1E),

Rear light (similar structure, 12 m in height) 60 m S of front light.

- 2 From the turning area, the alignment (189°) of these leading lights, positioned on the S side of the South Basin, leads into the South Basin.

Fishing vessels' basin**11.63****1 Leading lights:**

Front light (white vertical rectangular shape, black stripe, on white column, 7 m in height) (20°56'3S, 55°17'0E);

Rear light (similar structure, 4 m in height) 35 m W of front light.

- 2 From the turning area, the alignment (265½°) of these leading lights, positioned on the W side of the basin, leads into the basin. The alignment passes S of a light (white mast, green top, 4 m in height) exhibited from the N side of the entrance to the basin.

North Basin**11.64****1 Leading lights:**

Front light (red vertical rectangular shape, white stripe, 23 m in height) (20°55'9S, 55°17'2E).

Rear light (similar structure) 60 m N of front light.

- 2 From the turning area, the alignment (009°) of these leading lights, positioned on the N side of the North Basin, leads through a cutting 30 m wide with four dolphins on its E side, into the North Basin.

Directions for entering Port Est**Approach****11.65****1 Leading lights:**

Front light (black vertical rectangular shape, white band, on black tower, white top, 9 m in height) (20°56'1S, 55°19'4E),

Rear light (similar structure, 8 m in height) 300 m SSE of front light.

- 2 From seaward, the alignment (162°) of these leading lights, positioned SSE of the turning basin, leads in the middle of the entrance channel, into the turning basin, passing between:

The E breakwater, from the head of which a light (white tower, red top, 10 m in height) is exhibited, and:

The W breakwater, from the head of which a light (white tower, green top, 10 m in height) is exhibited.

Berthing basin**11.66****1 Leading lights:**

Front light (red vertical rectangular shape, on white pylon, 20 m in height) (20°55'9S, 55°19'7E), 20 m in height.

Rear light (similar structure 13 m in height) 120 m E of front light.

- 2 From the turning basin the alignment (085°) astern of these leading lights, positioned on the E side of the turning basin, leads into the berthing basin.

Basins and berths**Port Ouest****11.67**

- 1 There are about 2200 m of berthing space at modern, well-constructed quays equipped with fenders (1987). For maximum size of vessels that can be accommodated, see 11.39.

South Basin. Three berths.

North Basin. Seven berths.

Fishing vessels basin. Six berths.

- 2 Outer harbour. One dolphin berth on the N side where vessels secure, bows-west, after turning about to starboard in the turning area.

This latter berth has to be cleared when tankers are entering or leaving South Basin and may require to be cleared for the entry of other vessels, depending on size.

- 3 All berths are numbered. With the exception of No's 1, 6 and 8, all are solid and fitted with fenders.

Berths 3, 4 and 5 are reserved for naval vessels.

Landing place. There are steps in the SE corner of the North Basin.

Port Est**11.68**

- 1 Quays on the N and S sides of the berthing basin afford four berths, all of which can accommodate vessels up to the limiting dimensions (11.40).

On the N quay, containers are worked with three gantry cranes, while one berth also handles petroleum products.

The S quay is reserved for general cargo, vehicles and bulk.

Port services**Repairs****11.69**

- 1 Minor only. There is a slip in the fishing vessel basin with cradles for four vessels, each not exceeding 800 tonnes and of maximum length 55 m and draught 4.5 m.

Other facilities**11.70**

- 1 Issue of deratting exemption certificates; clinic in Port Réunion; hospital in Saint-Denis (11.81); garbage reception; no facilities for reception of oily waste.

Supplies**11.71**

- 1 Fresh provisions available through ship chandlers.
Good fresh water at all berths.
Marine diesel and furnace fuel oil available at berths 8, 9 and S in the South Basin in Port Ouest. Only small quantities available at other berths in Port Ouest.

Communications**11.72**

- 1 Saint-Denis/Gillot International Airport (Roland Garros), 5 km E of Saint-Denis, with connections to Mauritius, Madagascar and South Africa.

Port regulations**11.73**

- 1 A copy of the port Standing Orders is placed on board on arrival.

The immobilization of main engines and tank cleaning may only be undertaken with the permission of the Harbour Master.

- 2 Because of the likely effects of swell and the possibility of a cyclone threatening the port all berthing hawsers must be in excellent condition and additional hawsers are required to be available at all times.

When swell occurs, vessels must be prepared to leave harbour.

- 3 When a cyclone warning is issued all cargo operations must cease.

When the Harbour Master considers the port is threatened by a cyclone, all tankers and vessels in the following berths are required to put to sea:

Berth H and South Basin at Port Ouest

All berths at Port Est.

- 4 Vessels in North Basin of Port Ouest proceed to sea at the Masters' discretion.

NORTH COAST**General information**

Charts 1495, 1497

Route**11.74**

- 1 From, a position NW of Pointe des Galets (20°55'4S, 55°17'3E) (11.34) to a position NW of Pointe de Bel-Air (20°54'S, 55°36'E), a distance of about 19 miles, the waters off the N coast of La Réunion are clear of charted dangers, seaward of about 3 cables offshore.

Topography**11.75**

- 1 Except for the low-lying coast between Pointe des Galets and the town of La Possession, 3 miles E, the coast is high with steep cliffs, broken by ravines and marked by waterfalls as far as Cap Bernard, 5½ miles NE. Between Cap Bernard and Pointe des Jardins, 1½ miles farther E, the line of cliffs turns S, inland, giving way to a low coastline, intersected by numerous rivers, on which stands the city of Saint-Denis (20°53'S, 55°27'E) (11.81), the built-up area extending from Pointe des Jardins 2¾ miles E, to Rivière du Chaudron. Saint-Denis Gillot International Airport extends parallel to the coast 3½ miles ESE of Pointe des Jardins.
- 2 Farther E, at Pointe Sainte-Marie, the low coastline gives way again to steep cliffs and ravines for about 2½ miles, to Pointe de Bel-Air, beyond which it becomes low-lying again.

Currents**11.76**

- 1 Close to the N coast the current tends to set W. In December, 1976, a current setting WSW at a rate of 4 kn was reported about 5 miles NE of Saint-Denis. For further information on currents, see 11.13.

Principal marks**11.77**

- 1 **Landmarks:**

Piton des Neiges (21°06'0S, 55°28'8E) and adjacent mountains (11.20).

Le Cimendef, 4½ miles NNW of Piton des Neiges (11.20).

Two radio towers (20°53'2S, 55°25'8E), with an elevation of 476 m.

- 2 Spire (20°53'9S, 55°27'0E) of a monastery in Saint-Denis.

Major lights:

Port Réunion Main Light (20°56'1S, 55°17'1E) (11.58).

Pointe de Bel-Air Light (white tower, red top, green cupola, 25 m in height) (20°54'1S, 55°36'1E).

Directions

(continued from 11.24)

11.78

- 1 **Caution.** Fish aggregating devices have been established at distances up to 6½ miles off the N coast. See 11.12.

From a position NW of Pointe des Galets (20°55'4S, 55°17'3E) (11.34) the track leads generally E, passing (with positions from Pointe des Jardins (20°52'3S, 55°27'0E)):

Across the approaches to Port Est (8 miles WSW) (11.65), thence:

- 2 N of Pointe de la Ravine à Malheur (6 miles WSW), a prominent headland, thence:

N of Pointe de Gouffre (3 miles W), thence:

N of Pointe des Jardins, which is low, thence:

N of a depth of 6.3 m (3 cables NE), thence:

N of Le Cousin (7 miles ESE), a dangerous rock with a depth of 1.7 m over it, thence:

- 3 NNE of La Marianne (8½ miles E), an above-water rock, thence:

To a position NNE of Pointe de Bel-Air (20°54'S, 55°36'E).

11.79

- 1 **Useful marks** (with positions from Pointe Des Jardins (20°52'3S, 55°27'0E)):

Storage tanks (conspicuous) (10 miles WSW).

Pylon, close N of storage tanks.

Lights exhibited at Port Ouest and Port Est (11.60 and 11.65).

Ravine de la Rivière Saint-Denis (6 cables SW), which is deep and crossed by a bridge near its mouth.

- 2 Control tower, Saint-Denis Gillot airport (3¾ miles ESE) 47 m in height.

Factory chimney 47 m in height (4¾ miles ESE) at Port Sainte-Marie.

Chimney (10¾ miles ESE), 7 cables WNW of Pointe Bois Rouge, 59 m in height.

Anchorage and landing places

Chart 1495

Ravine de la Grande Chaloupe**11.80**

- 1 Landing may be effected at Ravine de la Grande Chaloupe (21°53'8S, 55°22'5E).

Saint-Denis**11.81**

- 1 **General information.** Although Saint-Denis (20°53'S, 55°27'E), with a population of 121 999 in 2000, is the capital of La Réunion and a port of entry, the anchorage off the city is no longer in regular use although temporary anchorage can be obtained, as described below.

- 2 The roadstead is exposed to winds from WSW, through N, to ESE which occasionally cause a heavy swell. When rollers (11.13) occur off Saint-Denis shelter can usually be obtained in Baie de Saint-Paul (11.29).

Local magnetic anomaly. In 1938, local deflection of the magnetic compass was reported in the anchorage.

11.82

- 1 **Anchorage.** During the bad weather season, from November to April, the anchorage is in depths from 18 to 31 m, NW of Saint-Denis, in the area marked, but vessels must be ready to weigh at the first sign of bad weather.
- 2 Between April and November, during the fair-weather season, anchorage may be found closer inshore, as shown on the chart. During this season HMS *Euryalus* (4140 tonnes) anchored in a depth of 24 m, black sand and broken shell, good holding ground, 4 cables offshore, in a position from which the prominent Monastery spire (11.77) bears 178°. There is better shelter from swell W of Pointe des Jardins, in a depth of 13 m, but the holding ground is poor.
- 3 **Landing** is very difficult.
Facility. Hospital in Saint-Denis.

Sainte-Marie**11.83**

- 1 **Anchorage** W of Pointe Sainte-Marie (20°53'5S, 55°33'5E), off the town of Sainte-Marie, is not advised because of bad holding ground and the difficulty of communication with the shore.

Sainte-Suzanne**11.84**

- 1 **Anchorage** can be obtained temporarily in a depth of about 25 m, moderate holding ground, about 1¼ miles E of Pointe de Bel-Air (20°54'S, 55°36'E) off the town of Sainte-Suzanne.
Landing. A beach extends ESE from Pointe de Bel-Air.

Small craft**Port Sainte Marie****11.85**

- 1 Port Sainte Marie (20°53'6S, 55°32'2E) lies on the W side of a bay which forms the estuary of the Riviere Sainte Marie, lying between Pointe Sainte Marie (21°53'5S, 55°33'5E) and the Airport Saint Denis Gillot (2 miles W), and consists of is a small fishing harbour with facilities for recreational craft.
The entrance is marked by lights (white metal towers) exhibited from the ends of the E and W jetties.

Other names**11.86**

- 1 Chèvres, Pointe de la Ravine des (20°53'6S, 55°34'4E).
Haziers, Pointe des (20°53'8S, 55°35'7E).

SOUTH COAST**General information**

Chart 1497 (see 1.22)

Route**11.87**

- 1 From a position SW of Pointe de l'Étang-Salé (21°16'4S, 55°19'9E) to a position SE of Pointe de la Table (21°19'9S, 55°48'5E), about 27 miles E, few dangers are charted in the waters off the S coast of La Réunion and all are within 4 cables of the steep-to coast.

Topography**11.88**

- 1 The entire coast is high, sheer and broken by many ravines. There are some towns and numerous villages along the coast.
A large bridge with ten spans crosses Rivière Saint-Étienne, 4 miles E of Pointe de l'Étang-Salé, on the E side of the town of Saint-Louis.

Current**11.89**

- 1 Close to the S coast the current tends to set SW.

Principal marks**11.90**

- 1 **Landmarks** (with positions from Piton des Neiges (21°06'0S, 55°28'8E)):
 - Petit Bénard (5 miles SW).
 - Le Grand Bénard (3½ miles WSW).
 - Les Trois Salazes (2½ miles WSW) (11.20).
 - Piton des Neiges (11.20).
- 2 Piton de la Fournaise (21°14'5S, 55°42'5E), an active volcano which dominates the SE part of the island. Building (21°17'2S, 55°30'9E), with an elevation of 536 m, at Le Tampon.
Radio Tower (21°19'9S, 55°34'9E), with an elevation of 821 m.

Directions**11.91**

- 1 **Caution.** Fish aggregating devices have been established at distances up to 13 miles off the S coast. See 11.12.
From a position SW of Pointe de l'Étang-Salé the track leads ESE initially, passing (with positions from La Petite Île (21°22'6S, 55°34'0E)):
 - 2 SSW of Pointe de la Ravine Blanche (7 miles WNW), a small headland at the W side of the town of Saint-Pierre. From the vicinity of this headland a coastal reef borders the shoreline ESE for about 6 miles. Thence:
 - 3 SSW of the approach to Port de Saint-Pierre (5½ miles WNW), a small harbour on the E side of the town of Saint-Pierre (11.94). A church belfry can be seen from a considerable distance. Thence:
SSW of Pointe du Parc (5 miles WNW), a steep-to, rocky headland with numerous isolated rocks at its foot, thence:
 - 4 SSW of Piton de Grand Anse (1 mile W), a headland with a dominating hill above it.
- Caution.** The inshore waters between Piton de Grand Anse and Pointe de la Table, from the shoreline to a distance of about 8 cables seawards, have not been previously surveyed. Local knowledge is therefore advisable before entering these waters.

11.92

- 1 Thence, the track leads E, passing:
 - S of La Petite Île, thence:
 - S of Pointe de la Cayenne (2½ miles E), above which a clock tower is conspicuous in the town of Saint-Joseph, thence:
 - S of Pointe de Langevin (4½ miles E), thence:
- 2 S of Pointe Marcellin (6 miles E) which rises to a hill 145 m high.
S of Pointe de Grand Bois, (2¾ miles WNW) above which stands a chimney and a church tower, both prominent.

S of Pointe des Sables Blancs (Pointe Delcy) (11¼ miles E) above which is the large village of Saint-Philippe, thence:

- 3 To a position SE of Pointe de la Table (21°19'9S, 55°48'5E).

11.93

- 1 **Useful marks** (with positions from Petite Île (21°22'6S, 55°34'0E)):

Piton de Mont Vert (3½ miles NNW).

Two radio towers (7½ miles E).

Pointe de la Table Light (white square tower, 6 m in height) (21°19'7S, 55°48'1E).

(Directions continue at 11.107)

Saint-Pierre

Chart 1497

General information

11.94

- 1 **Position.** Saint-Pierre (21°20'S, 55°29'E), with a population of about 58 846 in 2000, is a small town with a harbour situated at the foot of mountains on the W bank of Rivière d'Abord.

Approach and entry. The harbour is approached from S on the alignment of leading lights and is entered W of a breakwater.

Limiting conditions

11.95

- 1 **Tidal levels.** At Saint-Pierre the mean spring range is about 0.5 m; the mean neap range is about 0.2 m. For further information see *Admiralty Tide Tables Volume 3*.

Maximum size of vessel handled. The harbour can only be entered by small craft, larger vessels anchoring off the port.

Arrival information

11.96

- 1 **Anchorage** can be obtained in depths from 37 to 42 m, sand, close W of the alignment of leading lights (11.98) in the position indicated on the chart, with a church bell tower in the NE part of the town bearing 025°.

Caution. A heavy swell, which may part the cable, sometimes occurs from May to September. A vessel must be ready to weigh at any time of the year. There is no other anchorage off the S coast of La Réunion.

Harbour

11.97

- 1 The port consists of an outer harbour, protected by a breakwater, off the mouth of Rivière d'Abord, and a basin with depths of 4 m excavated in the coastal reef on its W side.

Directions

11.98

- 1 **Leading lights:**

Front light (white round tower, green top, 6 m in height) (21°20'7S, 55°28'8E) exhibited from the head of the harbour.

Rear light (similar structure, 10 m in height) situated on the shore, 60 m NNE of the front light.
- 2 From seaward, the alignment (029¼°) of these lights, within the white sector (323°–060°) of the light exhibited from the head of the SE breakwater (21°20'9S, 55°28'7E), leads to the harbour entrance between the heads of the breakwaters, passing W of the anchorage and close E of a

shoal area with a depth of 3.1 m over it lying 1 cable W of the head of the SE breakwater.

3 Useful mark:

Light (square tower, red top, 4 m in height), exhibited from the head of Épi Jacob, the W breakwater.

Berths and services

11.99

- 1 **Outer harbour** affords berths for small craft.

Small repairs can be effected.

Supplies. Fresh provisions and water are available except from January to March.

Landing place

Saint-Joseph

11.100

- 1 Landing can be effected at the village of Saint-Joseph (21°23'S, 55°37'E) (11.92).

Other names

11.101

- 1 Blanche, Pointe de la Ravine (21°20'S, 55°27'E).
Long, Le Cap (Saint-Étienne, Pointe de la Rivière) (21°19'S, 55°25'E).
Méchant, Le Cap (21°22'5S, 55°42'6E).

EAST COAST

General information

Chart 1497

Route

11.102

- 1 From a position SE of Pointe de la Table (21°19'9S, 55°48'5E) the route lies N, about 11 miles, to a position E of Pointe des Cascades (21°11'S, 55°50'E), from whence it turns NW, about 25 miles farther, to a position NE of Pointe de Bel-Air (20°54'S, 55°36'E).

Topography

11.103

- 1 Between Pointe de la Table and Pointe des Cascades, 9 miles N, the coast is in the form of cliffs. The centre part is backed by Le Grand Brûlé, an extensive area of almost bare, black ground formed by a lava field flowing into the sea from Piton de la Fournaise, 8 miles NNW of Pointe de la Table.
- 2 From Pointe du Tremblet, 2¼ miles N of Pointe de la Table, a line of sheer cliffs, Rempart du Tremblet, runs inland and marks the S edge of the Le Grand Brûlé. The cliffs, 200 m in height, circle N, 2 miles W of Piton de la Fournaise, and rise to a height of 400 m along the N edge of Le Grand Brûlé before returning to the coast 4½ miles N of Pointe du Tremblet.
- 3 From Pointe des Cascades to Pointe de Bellevue, 2½ miles N, the coast is rugged, thence to Pointe de la Ravine Sèche, 8 miles farther NW, the coast is backed by high land intersected by ravines.

The remainder of the coast is low, except for some cliffs in the vicinity of Pointe de la Rivière du Mât, 4¾ miles NNW of Pointe de la Ravine Sèche, and backed by cultivated land.

Current

11.104

- 1 East and N sets are frequent off this coast. See 11.13.

Caution**11.105**

- 1 The waters bordering the E coast of La Réunion, between Pointe de la Table (21°19'·9S, 55°48'·5E) and Pointe Lacroix, 1 mile N of Pointe des Cascades (21°11'S, 55°50'E), from the shoreline to a distance of about 8 cables seawards, have not been surveyed. But, from Pointe Lacroix to Pointe de Bel-Air (20°54'S, 55°36'E), the waters are clear of danger a short distance from the coast. Local knowledge is therefore advisable before entering these waters.

Principal marks**11.106****1 Landmarks:**

- 1 Piton de la Fournaise (21°14'·5S, 55°42'·5E) (11.90).
Piton des Neiges (21°06'·0S, 55°28'·8E) and adjacent mountains (11.20).
Le Cimendef, 4½ miles NNW of Piton des Neiges (11.20).
- 2 Radio tower, elevation 196 m (6 cables W).
Three reservoirs (21°09'·5S, 55°45'·9E) with an elevation of 833 m.
Radio mast (20°55'·8S, 55°40'·0E).

Major light:

Pointe de Bel-Air Light (20°54'·1S, 55°36'·1E) (11.77).

Directions

(continued from 11.93)

11.107

- 1 From a position SE of Pointe de la Table (21°19'·9S, 55°48'·5E), the track leads generally N to a position E of Pointe des Cascades, 9 miles N, keeping well clear of the coast and passing clear of two buoys, moored 7·2 miles NE and 8·8 miles NNE respectively from Pointe de la Table, which mark fish aggregating devices (11.12).

- 2 Once clear of Pointe des Cascades, and a dangerous rock close SE, the track leads generally NW, passing (with positions from Pointe de Bellevue (21°08'·7S, 55°49'·6E)):
NE of Roche Marocain (4 cables NW), an above-water rock, thence:
NE of an above-water rock (1·3 miles NW), and;
Clear of a buoy (2·2 miles NNE), marking a fish aggregating device, thence:
- 3 NE of a bank (8·4 miles NW), with a least depth of 6·6 m over it, extending seawards off Saint Benoît, and:
Clear of a buoy (9½ miles NNW) marking a fish aggregating device, thence:
To a position NNE of Pointe de Bel-Air (20°54'S, 55°36'E).

11.108

- 1 **Useful marks** (with positions from Pointe des Cascades (21°11'S, 55°50'E)):

Pointe de la Table Light (9 miles S) (11.93).
Piton Bellevue (2 miles NNW).
Church (11 miles NW) in the town of Saint-Benoît.
Morne du Bras des Lianes (21°01'·2S, 55°35'·3E).
(Directions for passage N of La Réunion are given at 11.78)

Anchorage**11.109**

- 1 Anchorage off this coast is not recommended due to bad holding ground, unsurveyed areas and the difficulty of communication with the shore.

Other names**11.110**

- 1 Bonne Espérance, Pointe de (Pointe du Quai la Rose) (21°06'S, 55°48'E).
Boubier, Pointe du (21°01'·2S, 55°42'·3E).
Grand Brûlé, Pointe du (21°14'·0S, 55°48'·4E).

MAURITIUS**GENERAL INFORMATION**

Chart 711

Scope of section**11.111**

- 1 In this section are described the sea passages around the island of Mauritius (20°17'S, 57°35'E) and the ports, harbours and anchorages thereof. It is arranged as follows:
West coast (11.117).
Port Louis (11.131).
- 2 North-west coast (11.171).
South coast (11.181).
Grand Port and approaches (11.191).
North-east coast (11.227).
Offshore islands (11.236).

Topography**11.112**

- 1 Mauritius is of volcanic origin and mountainous, reaching elevations of over 800 m. The lower slopes are mostly cultivated with small areas of forest at higher levels. The coastal area is partially covered with tall hardwood trees. The numerous streams and rivers flow through deep ravines and, depending on the season, are little more than streams which become raging torrents after heavy rains and are therefore not navigable for more than a short distance.

- 2 The coastline is irregular, generally rising abruptly from the sea, and is mostly fringed with extensive, steep-to coral reefs but also affords a number of natural harbours.
Several small islands lie off the N end of the main island and these are described at 11.236.

Offshore fishing**11.113**

- 1 Fishing with deep longlines is carried on S of Mauritius. For further information see 1.10.

Rescue**11.114**

- 1 See 1.49 to 1.56 for details of reporting systems designed to provide information for SAR operations.
In waters around Mauritius these operations are co-ordinated by National Coast Guard which can be contacted through Mauritius coast radio station.
For further details see *Admiralty List of Radio Signals Volume 5*.

Natural conditions**11.115**

- 1 **Currents.** Mauritius lies within the South Equatorial Current, described at 1.166. In the vicinity of the island the constancy of the current is moderate to low, but generally higher towards the N than the S. It sets mainly W or SW at

a rate of about 1 kn which occasionally reaches 3 kn, but currents setting between E and N at similar rates may be more common for short periods, particularly S of the island and especially from April to June and October to December.

- 2 **Rollers** affect the island. (1.4).

Cyclones occur frequently in summer, from December to April.

Climatic table. See 1.240

Ocean route

11.116

- 1 A route between Selat Benggala and ports on the S coast of Africa passes N of Mauritius. Details of the route are given in *Ocean Passages for the World*. See also Routeing Chart 5126.

WEST COAST

General information

Charts 711, 713 plan of approaches to Port Louis

Route

11.117

- 1 From a position SW of Pointe Sud-Ouest (20°28'S, 57°18'E), the route leads NNE, about 20 miles, to a position NNW of Pointe aux Sables (20°10'2S, 57°25'4E), in the approaches to Port Louis (20°09'S, 57°29'E) (11.131). The waters off the W coast of Mauritius are deep and clear of charted dangers outside the coastal reefs which, at the S end of the coast, extend 2½ miles offshore.

Topography

11.118

- 1 The W part of Mauritius is mountainous with spurs reaching the coast near Pointe Sud-Ouest (20°28'S, 57°18'E), and S of Baie du Tamarin, 9 miles NNE.

The coast N of Baie du Tamarin is low with a shingle beach for about 1½ miles. Thence, a farther 4½ miles NNE to the S entrance point of Petite Rivière Bay, it consists of low, rugged cliffs broken by the shallow mouths of several rivers.

The topography in the vicinity of Port Louis is described at 11.133.

Tidal streams

11.119

- 1 See information on Chart 711. The streams setting NNE and ESE on a rising tide over a bank W of Pointe Sud-Ouest are said to start about 1 hour after moonrise. At spring tides they cause considerable turbulence.

Principal marks

11.120

- 1 **Landmarks:**

Le Morne Brabant (20°27'S, 57°19'E), an isolated flat-topped mountain rising from the small peninsula which ends in Pointe Sud-Ouest, 1¼ miles SW (11.118).

- 2 Piton de la Petite Rivière Noire (20°24'S, 57°24'E), a pointed peak which appears dark in clear weather and is the highest summit on Mauritius.

Radio masts (red lights), 7¼ miles NE of Piton de la Petite Rivière Noire.

Montagne du Rempart, 6½ miles N of Piton de la Petite Rivière Noire, which has three needle-pointed peaks.

Piton du Milieu (20°17'S, 57°35'E), a steep-sided cone near the centre of the island.

- 3 Corps de Garde, 8 miles WNW of Piton du Milieu, which presents a straight, vertical shoulder.

Le Pouce, 6½ miles NW of Piton du Milieu (11.156).

Pieter Both (11.156), 6¼ miles NNW of Piton du Milieu.

Signal Mountain (11.156), 9 miles NW of Piton du Milieu.

- 4 Piton de la Petite Rivière Noire, Montagne du Rempart, Piton du Milieu and Corps du Garde are good landmarks, their upper parts being generally bare basaltic columns. They are, however, often obscured by cloud or mist.

11.121

- 1 **Major light:**

Pointe aux Caves Light (white concrete tower, two red bands, 29 m in height) (20°11'3S 57°24'3E).

Directions

Coastal passage

11.122

- 1 **Caution.** While making a passage off the W coast care should be taken to avoid buoys (special) marking fish aggregating devices moored between 2 and 13 miles from the coast, the positions of which can be seen on the chart.

- 2 From a position SW of Pointe Sud-Ouest (20°28'S, 57°18'E) (11.118) the track leads about 23 miles NNE, to a position NNW of Pointe aux Sables, in the approaches to Port Louis, keeping seaward of the coastal reefs and passing (with positions from Pointe Sud-Ouest):

WNW of La Preneuse (7½ miles NNE), a point on which there is a large martello tower and a ruined battery, thence:

- 3 Across the approaches to Baie du Tamarin (9 miles NNE) (11.127), thence:

WNW of Pointe aux Caves Light (17½ miles NNE) (11.121), thence:

To a position NNW of Pointe aux Sables (20°10'2S, 57°25'4E).

- 4 From the position off Pointe aux Sables, a vessel bound into Port Louis should proceed NE into the port approaches from whence marks, lights or bearings (11.159) will lead to the vicinity of the pilot boarding place, 3 miles NE of Pointe aux Sables, or to anchorage (11.146), passing seaward of reefs fringing the coast between Pointe aux Sables and Barkly Island, 3 miles ENE. The latter is low and sandy and is visible as a white streak.

Useful marks

11.123

- 1 Tamarin Mountain (20°20'7S, 57°22'2E).

Marks in the vicinity of Port Louis. See 11.156.

(*Directions for coastal passage continue at 11.176.*)

(*Directions for Port Louis are given at 11.159*)

Anchorage and harbours

Chart 713 plan of Grande Rivière Noire Bay

Grande Rivière Noire Bay

11.124

- 1 **General information.** Grande Rivière Noire Bay (20°21'6S, 57°22'0E) is an opening in the coastal reef which lies between the mountain spurs mentioned at 11.118.

The bay affords fairly good anchorage but, during W winds, a very high swell sets in which is least felt towards the N side. Vessels should be prepared to leave the anchorage at short notice.

11.125

- 1 **Directions.** The bay should be entered from W, passing: N of a 9.1 m patch situated 7 cables WNW of L'Harmonie (20°22'S, 57°21'E), the S entrance point of the bay, thence: Midway between reefs which extend 5 to 6 cables from L'Harmonie and from La Preneuse, 1 mile N, the N entrance point of the bay. The reefs dry and are easily seen, while the sea breaks heavily over Hermione Spit which forms the outer end of the reef extending from L'Harmonie.

2 **Useful marks:**

Martello tower on La Preneuse (11.122).

Tamarin Mountain, 9 cables ENE of La Preneuse.

The bay is easily identified by these marks. A second martello tower, close SE of L'Harmonie, cannot be seen from seaward.

11.126

- 1 **Anchorage** can be obtained as convenient in depths from 10 to 27 m, sand, mud and coral. Recommended positions are shown on the plan.

Landing. This can be effected by boat at a small pier in front of the village of Rivière Noire, at the head of the bay.

Supplies. Small quantities of fresh provisions can be obtained in the village.

- 2 **Small craft.** A shallow bar, subject to constant change during freshets in the rainy season from January to March, lies in the mouth of Grande Rivière Noire which flows into the head of the bay.

Chart 711

Baie du Tamarin**11.127**

- 1 **Anchorage.** It is not recommended to anchor in Baie du Tamarin (20°19'S, 57°22'E) although depths are convenient. The bay is open westward and the holding ground is bad.

Small craft**Ambulante Passe****11.128**

- 1 Boats can use Ambulante Passe (20°26'S, 57°18'E), a narrow channel through the coastal reef, about 1½ miles N of Pointe Sud-Ouest (11.118).

Petite Rivière Noire Bay**11.129**

- 1 Relatively smooth water can be found for about 1½ miles within the narrow entrance to Petite Rivière Noire Bay, close S of Hermione Spit (20°21'S, 57°20'E) (11.125), thence the bay is shallow.

Other names**11.130**

- 1 Bénitiers, Île aux (20°25'S, 57°20'E).
Pêcheurs, Pointe (20°26'S, 57°19'E).
Petite Rivière, Pointe (20°12'S, 57°24'E).

PORT LOUIS**General information**

Chart 713

Position**11.131**

- 1 Port Louis (20°09'S, 57°29'E) is situated at the head of a group of bays on the NW coast of Mauritius.

Function**11.132**

- 1 The city of Port Louis, with a population of about 146 499 in 1997, is the only commercial port in Mauritius, a port of entry and a fishing port.

Topography**11.133**

- 1 The harbour and town are backed by steep hills, rising to mountains which form part of a range 2 miles SE of the port.

Port limits**11.134**

- 1 These are indicated by a line joining Pointe aux Sables (20°10'S, 57°25'E), and Petite Pointe aux Piments (20°03'S, 57°30'E), about 8½ miles NE.

Approach and entry**11.135**

- 1 The harbour is approached from NW and entered between Fort William (20°09'S, 57°28'E), and Fort George, about 5 cables NNE, on the alignment of leading lights. See views on page 264.

Traffic**11.136**

- 1 In 2003, 931 vessels with a total dwt of 22 363 047 used the port.

Port Authority**11.137**

- 1 The Mauritius Marine Authority, represented by a Director-General and a Port Captain.

Postal address:

P.O.Box 379, Port Administration Building,

Mer Rouge, Port Louis, Mauritius.

Telegraphic address: Mauriport

E-mail address: mmaeng@bow.internet.mu

Limiting conditions**Controlling depths****11.138**

- 1 **English Channel.** Dredged depth of 13.1 m (1999) in the channel leading to the container terminal.

Approach to main harbour: Least charted depth of 12.3 m in the white sector of the directional rear leading light (11.160), and a depth of 11.6 m close W.

- 2 **Trou Fanfaron** at the head of harbour has a charted depth of 5.8 m and lesser charted depths alongside.

Deepest and longest berth**11.139**

- 1 Container terminal (11.164).

Tidal levels**11.140**

- 1 At Port Louis the mean spring range is about 0.5 m; mean neap range about 0.1 m. For further information see relevant *Admiralty Tide Tables*.

Density of water**11.141**

- 1 The density of water is 1.025 g/cm³.

Maximum size of vessel handled**11.142**

- 1 Length 225 m, draught 11 m.
Maximum displacement limit 35 000 tonnes.



a

Container Terminal

a



a

Harbour Entrance

Port Louis from NW (11.135)

(Original dated 2000)

(Photograph – Crown Copyright)

Arrival information

Port operations

11.143

- 1 Vessels can enter and leave harbour at any time, except for those carrying flammable cargoes which are berthed in daylight only.
- 2 Vessels are normally turned in the harbour and berthed bows seaward. Vessels longer than 152 m cannot be turned in the harbour but, if manoeuvrable, will be taken in stern first; otherwise, such vessels berth in the quarantine anchorage (11.147).

Port radio

11.144

- 1 See *Admiralty List of Radio Signals Volume 6(3)* for details.
Radio watch is maintained in the signal station tower (11.156), at Fort William, and in the Harbour Office.

Notice of ETA

11.145

- 1 ETA, including pilotage request, should be sent to the Harbour Master 24 and 2 hours before arrival; for details see *Admiralty List of Radio Signals Volume 6(3)*.

Outer anchorage

11.146

- 1 Outer Roadstead, with Fort George bearing about 135° distant not less than 1 mile, affords anchorage in depths from 27 to 37 m, coarse sand, broken coral and shell. This is the

usual anchorage with the best holding ground, a suitable berth being indicated on the chart.

- 2 **Caution.** The following is the advice of a former experienced Harbour Master for vessels using this anchorage:

From the moment of anchoring, be ready to weigh and put to sea if necessary. Use chain for a buoy rope. If ordered to proceed to sea, do so at once, and never attempt to ride out a storm. When leaving, note the direction in which the wind shifts and steam in the opposite direction until clear of the land, when an E course will take a vessel into fair weather.

- 3 Never heave-to heading towards the land because, in bad weather, the current locally is often very strong and uncertain in direction. Neglect of this precaution, due to the belief that a sufficient offing has been made, has hazarded many vessels and led to the loss of some others.

11.147

- 1 **Quarantine Anchorage.** As shown on the chart, there is a dedicated quarantine anchorage with depths of 20 to 30 m, coarse sand and coral, centred 305°, distance 1 mile, from the Fort William signal station (20°09'1S, 57°28'7E).

11.148

- 1 **Prohibited anchorages.** These exist:
 - i) SW of the Quarantine Anchorage, off Grand River Bay, as indicated on the chart, due to the existence of submarine cables.
 - ii) immediately N of the Quarantine Anchorage, covering the approaches to the port. The limits are shown on the chart.

Pilots**11.149**

- 1 **Pilotage** is compulsory for merchant vessels over 100 gt and is available 24 hours; for contacting see 11.145. Pilots are limited in numbers which may cause delay.

- 2 **Pilot boarding place** is 1½ miles of the harbour entrance, close to alignment (127½°) of the leading lights (11.160) as indicated on the chart. Vessels should on no account pass the entrance channel light-buoys (11.153) inward bound without a pilot on board.

Pilot boat is a white launch equipped with VHF.

Tugs**11.150**

- 1 Tugs equipped with VHF, and for minor salvage work, are available.

Regulations concerning entry**11.151**

- 1 **Preparations for entry.** In addition to both anchors being ready for letting go, two hawsers and two wires are required to be ready aft before the pilot boards.

Quarantine**11.152**

- 1 **Entry.** See 1.46; however, vessels in quarantine are permitted to enter harbour to fuel in smooth water.

Berths. In addition to the quarantine anchorage (11.147) there is a quarantine berth between mooring buoys, 2½ cables N of Fort William, off the harbour entrance.

Harbour**General layout****11.153**

- 1 Within the entrance, marked by two light-buoys (lateral), the channel has a width of about 1 cable between the 10 m depth contours, leading SE between reefs and opening slightly as it enters the harbour area. The inner channel was dredged to a depth of 13 m as far as the SE end of the Bulk Sugar Terminal, this terminal and the bulk cargo terminal (Berth No 1) opposite, on the NE side of the channel, being included in the dredged area to form a deep basin.
- 2 Beyond these berths, as far as Berth B, 6 cables SE, the remainder of the basin, with the exception of berths 2, 3, 4 and 5 on the NE side, have been dredged to 12.5 m, the NW section of this area forming a turning basin. Berths 2, 3 and 4 were dredged to 12.2 m whilst berth 5, on the SE side of Mer Rouge, remains undredged; obstructions with a least depth of 4.7 m lie off berth 5. The main alongside berths and port facilities are situated on both sides of the entrance and on the NE side of the harbour.
- 3 From the SE end of the basin a creek, Trou Fanfaron, leads generally E to the head of the harbour. More berths and repair facilities, including a dry dock and slips, are situated in Trou Fanfaron.
- On the SW side of the dredged part of the harbour there are two mooring berths.
- 4 North of this harbour, land reclamation in the Mer Rouge area has resulted in the construction of a container terminal on the N side of Mer Rouge. This is approached from the pilot boarding area via English Channel (11.161) which is marked by light-beacons and dredged to a depth of 13.1 m and which includes a turning circle adjacent to the berth.
- 5 The latest dates to which the channels and berths were dredged are shown on the chart.

Cyclones**11.154**

- 1 **Warnings.** During the cyclone season (11.115) a weather forecast is broadcast daily from the port radio station (11.144) to all vessels in harbour.

When a cyclone is expected to pass within 300 miles of Mauritius special weather information is sent to all vessels in the port.

- 2 When a cyclone is expected to pass close to the island a warning message is issued and vessels are required to be made ready to proceed to sea. At least 24 hours notice can be expected to be given, while about 3 days is the normal period of notice.

When a cyclone warning is in force more frequent weather forecasts are issued.

11.155

- 1 **Precautions.** A vessel remaining in Port Louis harbour for more than 48 hours during the cyclone season should obtain special moorings from the Port Authority. See 11.168 regarding immobilization of engines.

When a cyclone is expected to pass within 300 miles, precautions should be taken as follows:

- 2 The crew should remain on board.
Main engines and deck machinery should be prepared and ready for immediate use.
Stern moorings should be examined to ensure that each part is taking an equal strain.
Any slack in chain cables should be taken up.
Every available ballast tank should be filled.
- 3 On the approach of a cyclone all vessels in harbour that are capable of proceeding to sea are required to do so.

Principal marks**11.156**

- 1 **Landmarks:**
Le Pouce (20°11'7S, 57°31'3E), a mountain which resembles an upright thumb.
Snail Rock, 8 cables WNW of Le Pouce.
Pieter Both, about 1½ miles ENE of Le Pouce, a mountain with a huge knob on the summit.
- 2 Signal Mountain (20°10'2S, 57°29'1E), which rises over the SW side of the port. A radio tower (red light, 19 m in height), stands close N of the summit.
Martello Tower (white granite with black stripe, 12 m in height) (20°09'9S, 57°27'9E).
Saint James' Cathedral (20°09'9S, 57°29'9E). It has been reported that St. James' Cathedral is no longer conspicuous due to harbour construction.
- 3 Citadel (20°09'7S, 57°30'2E) with a mast (red and white, 23 m in height).
Power station (20°09'6S, 57°28'2E) on the coast at Fort Victoria.
Molasses tanks (20°09'2S, 57°29'5E) near berth D.
Signal station tower (black and yellow chequers; white flagstaff on tripod) (20°09'1S, 57°28'7E).
- 4 Oil storage tanks, about ½ cable E of signal station tower.
Cement silos (20°08'8S, 57°29'2E), near Berth No 2.
Tank, ¼ cables NW of cement silos, near Berth No 1.
Water tower (white concrete tower, red and white stripes, 20 m in height), 1 mile NE of cement silos, at Dockers' Flats.

11.157

- 1 **Major lights:**
Pointe aux Caves Light (20°11'3S 57°24'3E) (11.121).

Port Louis Rear Entrance Leading Light (white diamond on Mauritius Commercial Bank building) (20°09'·5S, 57°29'·7E)

Other aid to navigation

11.158

Racon:

Port Louis Light-beacon No 4 (20°08'·3S, 57°28'·4E).

For further details see *Admiralty List of Radio Signals Volume 2*.

Directions for approach and entry

Approach

11.159

Leading marks and lights. From seaward, the following lead to the vicinity of the pilot boarding area:

The alignment (123°) of the Citadel with Pieter Both (11.156).

The line of bearing 120° of cement silos near Berth No 2.

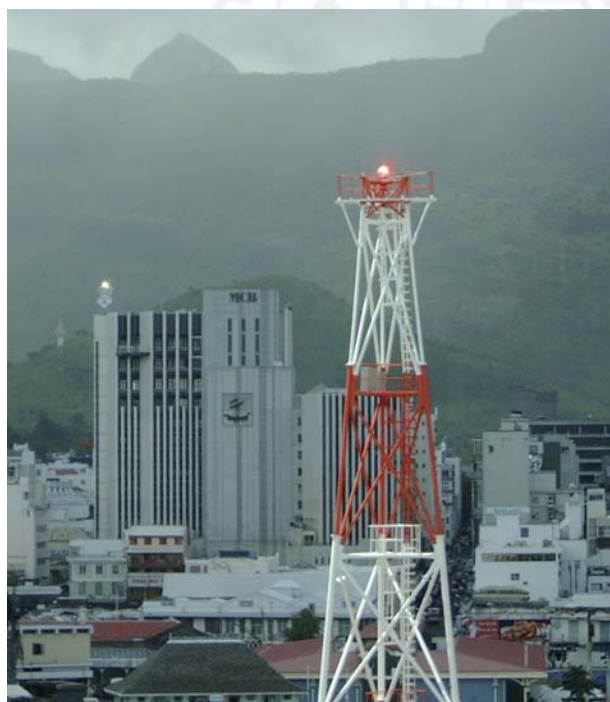
Directions for entering main harbour

11.160

Leading lights:

Front light (red and white metal structure) (20°09'·3S, 57°29'·5E) at berth A.

Rear light (white diamond on Mauritius Commercial Bank building) (11.157) 496 m SE of front light; this is a directional light.



Rear Light

Front Light

Leading Lights from Berth A (11.160)

(Original dated 2002)

From the vicinity of the pilot boarding station the alignment (127½°) of these lights, in the white sector (127¼°–127¾°) of the directional light, leads through a channel, the entrance of which is marked by light-buoys (lateral), passing:

SW of Fort George (20°08'·6S, 57°29'·0E) on which there are several square towers, and:

NE of Fort William, 5 cables SSW of Fort George, which stands on a low-lying point.

The track then leads directly to the turning basin and berths within the main harbour.

Caution. Buoys are liable to be washed away during a cyclone.

Directions for container terminal

11.161

From the vicinity of the pilot boarding station the track leads ESE for about 1 mile, passing through English Channel directly to the turning basin, off the terminal; the channel and terminal are marked by light-beacons.

Useful marks

11.162

Martello Tower Light (20°09'·9S, 57°27'·9E) (11.156).

Dockers' Flats Light (20°08'·1S, 57°29'·9E), on a water tower (11.156).

Basins and berths

Moorings

11.163

A berth between mooring buoys, 200 m apart, is situated at the SE end of the dredged section of the harbour, abreast of Berths D and E. A berth between two mooring buoys, 90 m apart, is situated close SE of the Bulk Sugar Terminal, abreast of Berth No 2. A further berth (11.152) between two mooring buoys, 240 m apart, lies close NW of the Bulk Sugar Terminal.

Alongside berths

11.164

In addition to the berths at the Container Terminal on the N side of Mer Rouge, and at the Bulk Sugar Terminal, on the SW side of the harbour entrance, there are a number of berths on the NE side of the harbour and in Trou Fanfaron, as shown on the plan of Port Louis. Most berths are fendered but the fendering is not resilient and vessels landing heavily may be damaged.

Dimensions of the larger berths are:

Berth	Length	Charted Depth	Purpose
Container Terminal	550 m	13·1 m	Container traffic
Bulk Sugar Terminal	335 m	13 m	Bulk sugar loading
No 1	123 m	13 m	Petroleum, ammonia, bulk cargo
Nos 2 and 3	366 m	12·2 m	General and containers
No 4	183 m	12·2 m	Container terminal
A and D	380 m	12·5 m	Petroleum, LPG, grain, molasses and passenger vessels
C	121 m	5·5 m	Cattle and inter-island trade
Trou Fanfaron	165 m	5·5 m	Fish quay

The positions and depths of berths with unspecified use are shown on the chart.

A bulk cement discharge facility is situated between berths 1 and 2 for cement carriers of up to 135 m LOA. Larger vessels, up to 183 m LOA, can be accommodated, subject to the adjacent berths being unoccupied.



Sugar Terminal

Harbour entrance from berth A (11.163)

(Original dated 2002)

Port services

Repairs

11.165

- 1 Most types of repairs can be undertaken.
Underwater repairs can be effected in a dry dock, situated on the N side of Trou Fanfaron, suitable for vessels of:
Length: 105 m.
Breadth: 17 m.
Draught: 5.2 m.

Other facilities

11.166

- 1 Deratting and deratting exemption certificates.
Garbage disposal by lighter.
Hospitals.
There are no facilities for reception of oily waste.

Supplies

11.167

- 1 Fresh water by lighter; provisions through ship chandlers.
Fuel and diesel oils are available at a number of berths and by lighter.

Harbour regulations

11.168

- 1 **Landing** is only permitted at Customs Quay, on the S side of the entrance to Trou Fanfaron.
Garbage may not be thrown into the harbour from any vessel, or from the shore. Every vessel entering the harbour is required to provide two covered containers for storing garbage until it can be disposed of.
Immobilization of engines during the cyclone season is only permitted by the Port Authority for short periods.

Small craft

Berths

11.169

- 1 Moorings for small craft are available in an inlet (20°08'3S, 57°29'8E) on the N side of the reclaimed area at the head of English Channel.

Repairs

11.170

- 1 Underwater repairs can be effected on two slips on the N side of Trou Fanfaron, the dimensions of both being:
Length of cradle: 24.4 m.
Draught at MHWS: 1.8 m forward, 2.4 m aft.

NORTH-WEST COAST

General information

Charts 711, 713 plan of approaches to Port Louis

Route

11.171

- 1 From a position NNW of Pointe aux Sables (20°10'2S, 57°25'4E), in the approaches to Port Louis, the route leads NNE about 14 miles to a position WNW of Malheureux Rock (19°57'8S, 57°35'5E).

Topography

11.172

- 1 Between Pointe Piments (20°05'S, 57°30'E), on the N side of the approaches to Port Louis, and Cap Malheureux, 8½ miles NE, the N-most point of the island, the coast is generally low and backed by a wide plain. A reef fringes the coast and, off Cap Malheureux, a bank extends seawards for about 1¼ miles with shallow rock and coral patches while numerous breaks occur in the coastal reef. The waters NW of Mauritius, outside the coastal reefs, are deep with no charted dangers lying more than 1½ miles offshore.

Regulations

11.173

- 1 **Quarantine.** A quarantine station is situated on Canonnières Point (19°59'8S, 57°32'6E), the waters within 1 cable of the station being included within the quarantine limit. Two yellow flags are displayed when the station is in use.

Tidal streams

11.174

- 1 The streams off the N end of Mauritius are described at 11.237. With the E-going stream a weaker stream sets S along the NW coast, the division of the streams occurring off Pointe Piments at LW. This then moves N until, by the time of HW, it takes place off Batterie des Grenadiers

(20°02'·6S, 57°31'·1E). During and after periods of W winds the rate of the E-going stream, which sets strongly towards Canonnières Point, is greatly increased.

- 2 Very little of the W-going stream is felt on the NW side of Mauritius, S of Canonnières Point. Close inshore, the stream turns about 2 hours before that offshore.

For additional information regarding the tidal stream between Canonnières Point and Pointe Malheureux see chart 711.

Principal marks

11.175

- 1 **Landmarks:**

Le Pouce (20°11'·7S, 57°31'·3E) (11.156).
Pieter Both, about 1½ miles ENE of Le Pouce.
Signal Mountain (20°10'·2S, 57°29'·1E) (11.156).
Hotel (19°59'·9S, 57°34'·5E), standing on the E side of Grande Baie.

- 2 **Major lights:**

Pointe aux Caves Light (20°11'·3S 57°24'·3E) (11.121).
Flat Island Light (19°52'·8S, 57°38'·6E) (11.239).

Directions

(continued from 11.123)

11.176

- 1 **Leading bearing.** From a position NNW of Pointe aux Sables (20°10'·2S, 57°25'·4E) the track leads NNE, passing (with positions from Canonnières Point (19°59'·8S, 57°32'·6E)):

WNW of Batterie des Mortiers (6 miles SSW), a headland between two small coves, thence:

- 2 WNW of Batterie des Grenadiers (3¼ miles SSW), a point where there is a distinctive gap between trees, thence:

WNW of Canonnières Point, on the extremity of which there is a disused lighthouse, thence:

- 3 WNW of Whale Rock (3½ cables NNW) a dangerous rock with a depth of 1·2 m over it. A buoy (red and white, conical) is moored 6 cables NNE of the rock. Thence:

Across the approach to the entrance to Grand Baie (1 mile E) (11.180) on the E side of which there is a conspicuous hotel, thence:

- 4 To a position WNW of Malheureux Rock (¾ miles NE), a coral head situated on the S side of Quoin Channel (11.241), about 1¼ miles NNW of Cap Malheureux (11.172).

Clearing bearing and line:

From a position about 2½ miles off the entrance to Port Louis, the line of bearing 205° of Pointe aux Caves Light, astern, clears NW of the coastal reefs along the NW coast of Mauritius.

- 5 The alignment (056°) of the W extremity of Gunner's Quoin (19°56'S, 57°37'E) with the summit of Serpent Island (19°49'S, 57°48'E) (11.242) clears NW of Whale Rock.

11.177

- 1 **Useful marks:**

Marks in the vicinity of Port Louis, described at 11.156 and 11.162.

(Directions for passages around and between the offshore islands N of Mauritius are given at 11.241 to 11.246)

Anchorage

Chart 713

Tombeau Bay

11.178

- 1 **Anchorage.** Tombeau Bay, which lies at the mouth of the River du Tombeau, 6½ cables S of Batterie des Mortiers (20°05'·3S, 57°30'·1E), is easily entered as the coastal reefs are plainly visible by day. The bay affords good anchorage in a depth of 9 m during all but W winds.

Small craft. River du Tombeau is almost dammed by a shifting sand bar.

Baie aux Tortues

11.179

- 1 **Caution.** Baie aux Tortues, (or Baie de l'Arsenal), which lies at the mouth of the River Citrons, 3 cables N of Batterie des Mortiers, is similar in most respects to Tombeau Bay, but is less than half the size and too confined to afford good anchorage at any time. Swells quickly set in and break very heavily over the reefs around the bay.

Small craft. The River Citrons is dammed ¾ miles upstream.

Small craft

Chart 711

Grand Baie

11.180

- 1 **General information.** Grand Baie (20°00'S, 57°34'E) is a shallow inlet, the head of which forms a small basin with a village of the same name on its E side.

- 2 **Directions.** The alignment (154°) of some black rocks close to Pointe Baignoire, the E entrance point of the basin, with Butte aux Papayes, ¾ miles SSE, leads through the reefs fronting the inlet in depths from 2·7 to 3·7 m passing WNW of two buoys (red and white conical), moored 1¾ miles and 4¼ cables NW of Pointe Baignoire. It is reported that the marks are not easily seen.

Facility. Yacht club on Pointe Baignoire.

SOUTH COAST

General information

Chart 711

Route

11.181

- 1 From a position SW of Pointe Sud-Ouest (20°28'S, 57°18'E) the route leads generally E, about 29 miles, to a position SSE of Pointe d'Esny (20°25'·4S, 57°43'·2E).

Topography

11.182

- 1 The W end of the coast, from Pointe Sud-Ouest to the estuary of Baie du Cap River, ¾ miles ESE, is backed by Piton de Fougé, the end of the mountain range which borders the W coast. Thence, for 8½ miles, to the town of Souillac (20°31'·1S, 57°31'·6E) there are tree-covered hills rising to the Savanne Mountains.

The shore between Pointe Sud-Ouest and Souillac is, for the most part, fringed with reef extending about a mile seaward in places.

- 2 Between Souillac and Îlot Brocus (20°28'·4S, 57°40'·4E) there are cliffs more than 30 m high, in places, broken by the mouths of streams and fringed with a steep-to coastal reef in places. From then on the coast is low, Pointe d'Esny (20°25'·4S, 57°43'·2E) being the E extremity of a low, wooded peninsula.

- 3 The waters S of Mauritius are deep outside the coastal reefs with no charted dangers lying more than 1½ miles offshore.

Tidal streams

11.183

- 1 For details of tidal streams see the information on the chart. Also see 11.119 regarding turbulence off Pointe Sud-Ouest.

Principal marks

11.184

- 1 **Landmarks:**

Le Morne Brabant (20°27'S, 57°19'E) (11.120).
 Piton de la Petite Rivière Noire (20°24'S, 57°24'E) (11.120).
 Radio masts (20°20'S, 57°31'E).
 Mont Bambou (20°19'0S, 57°44'8E).

Directions

11.185

- 1 From a position SW of Pointe Sud-Ouest the track leads generally E, seaward of the coastal reefs, a distance of about 29 miles to a position SE of Pointe d'Esny, passing (with positions from Souillac (20°31'1S, 57°31'6E)):
- SSW of Baie du Cap (10 miles W), a clear opening in the reef around which fragments of coral rock are heaped up by the sea to an elevation of about 5 m, thence:
- 2 SSW of a shoal (reported 1975) (9½ miles W), thence:
 SSW of a beacon (7¾ miles W) on the E side of the entrance to Bel Ombre (11.188), thence:
 S of a beacon (8 cables W) situated on the E side of the entrance to an unnavigable creek W of Souillac, thence:
 SSE of a conspicuous ravine (1 mile E), thence:
- 3 SSE of a 4-6 m shoal (reported 1949) (8¾ miles ESE) (position approximate), thence:
 SSE of a dangerous rock, 1¾ miles SSW of Pointe d'Esny, thence:
- To a position SSE of Pointe d'Esny (20°25'4S, 57°43'2E). A conspicuous wreck, about 12 m high, stands on the edge of the coastal reef, 1 mile SSE of Pointe d'Esny.

11.186

- 1 **Useful marks:**

Water tower (20°30'0S, 57°24'4E), close W of the village of Bel Ombre.
 Radio mast (obstruction lights) (20°24'0S, 57°35'6E).
 Aero light (20°25'8S, 57°40'2E) Mauritius International Airport.
 2 Mont des Créoles (20°23'0S, 57°40'5E).
 Mahébourg cathedral (20°24'5S, 57°42'0E).
 Lion Mountain (20°21'5S, 57°43'1E) (11.206).
 Disused lighthouse (20°23'6S, 57°46'2E), Île aux Fouquets.

*(Directions for passage across the approaches to Grand Port continue at 11.207.
 Directions for Southern Entrance are given at 11.211)*

Small craft

Passe Saint Jacques

11.187

- 1 Passe Saint Jacques, a narrow channel, leads through the coastal reef SW of Pointe Sud-Ouest.

Bel Ombre

11.188

- 1 Bel Ombre, 5½ miles ESE of Pointe Sud-Ouest, is a small opening in the coastal reef marked on the E side by a beacon. The opening gives access to Bras de Mer Saint Martin and Bras de Mer des Citronniers, two shallow creeks.

Bay Jacotet

11.189

- 1 Bay Jacotet, 8 miles ESE of Pointe Sud-Ouest, is a small opening in the coastal reef with bad holding ground.

Other names

11.190

- 1 Citronniers, Pointe (20°30'5S, 57°24'6E).
 Fourneau, Îlot (20°28'0S, 15°19'8E).
 Roches, Pointe aux (20°30'8S, 57°27'8E).
 Prairie, Pointe Corail de la 20°28'9S, 57°20'8E).
 Souffleur, Le (20°29'S, 57°39'E).
 Deux Cocos, Îlot des (20°26'8S, 57°42'2E).

GRAND PORT AND APPROACHES

General information

Charts 711, 3048

Position

11.191

- 1 Grand Port, an extensive natural harbour, indents the SE side of Mauritius between Pointe d'Esny (20°25'4S, 57°43'2E) and the coast W of Île des Roches (20°17'4S, 57°49'0E), about 9 miles NNE.

Function

11.192

- 1 The harbour affords extensive anchorage but only small craft can berth alongside.

Topography

11.193

- 1 Bambou Mountains rise over the NE coast with spurs extending to the shores of the harbour which is fringed with a coastal reef in places. The low-lying coast to the SW is occupied by the city of Mahébourg, which straddles the mouth of the Rivière la Chaux. To the N, several islands lie close to the coast which is low.
- 2 The shallow waters of the bay are further reduced by large coastal reefs which surround both entrance points and which are separated from a central off-shore reef by N and S channels which give access to the area of the bay between the reefs and the shore.

Approach and entry

11.194

- 1 Grand Port is approached direct from sea and can be entered through Southern Entrance, 2½ miles ENE of Pointe d'Esny, or Northern Entrance S of Île des Roches.

Limiting conditions

Depths and draught

11.195

- 1 Southern Entrance channel: depth 10 m or more over a least width of 1¾ cables at the inner end.
 Northern Entrance channel: depth 10 m or more over a least width of 2½ cables at the inner end.
- 2 Danish Entrance channel: 2½ miles S of Île de Roches, this channel is narrow with a bar across the entrance, at which point there is a depth of 4-9 m over a least width of 1¾ cables. This channel

should only be approached with extreme caution; see 11.197.

- 3 Channel between entrances: controlling depth 6.1 m over Jonchée Bar (20°21'9S, 57°45'3E). This channel is only navigable by vessels drawing not more than 5.8 m.

Abnormal water levels

11.196

- 1 Tides at Grand Port are much influenced by the wind. During strong SE winds the HW stand, at and near Mahébourg (20°24'S, 57°42'E), sometimes lasts for several hours.

Local weather

11.197

- 1 The harbour entrances are exposed to the full force of the South-east Trade Wind and consequent ocean swell. This makes Danish Entrance (11.195) unusable as the sea generally breaks right across it and, even in the calmest weathers, rollers sometimes come in without warning, breaking right up the channel.

For Southern Entrance conditions see 11.204.

Arrival information

Pilotage

11.198

- 1 There are no pilots for Grand Port.

Local knowledge

11.199

- 1 Navigation of the channel between the harbour entrances requires local knowledge.

Entry

11.200

- 1 No attempt should be made to enter Grand Port at night. The Southern Entrance is best approached before mid-day when the dangers can be seen from a high vantage point. The Northern Entrance is best approached in a good light when the edges of the reefs on both sides of the channel are easily seen. The harbour channel, between entrances, requires a good light in which to see the dangers.

Quarantine

11.201

- 1 See 1.46 regarding the granting of pratique.

Harbour

General layout

11.202

- 1 Grand Port is formed between the coastal reef and extensive detached reefs which lie up to 3 miles offshore and shelter the harbour.
- 2 Within the detached reefs there are numerous shoals and coral heads, so that the clear navigable space within the harbour is limited to widths of 5 cables or less. Between these dangers, the positions of which are best seen on the chart, a channel leads NE/SW through the harbour. Towards the NE end the shoals almost close the channel at The Narrows (20°20'4S, 57°46'8E).
- 3 There are a number of small jetties and piers on the shores of the harbour which can only be approached by boat on account of the reefs and banks which border them. The positions of these berths can be seen on the chart. Anchorages in the harbour are described at 11.216 to 11.223.

Mahébourg, the principal town of the district, stands at the SW end of Grand Port while the town of Grand Rivière Sud Est is situated at the N end.

Seaplane area

11.203

- 1 An area used for aircraft moorings (20°22'S, 57°44'E) is situated close SE of a jetty at Bois des Amourettes (11.220). Mariners are cautioned to maintain a good lookout for aircraft manoeuvring in the area.

Natural conditions

11.204

- 1 **Tidal streams.** See information on chart 711. In Southern Entrance the movement of water is nearly always outwards, caused apparently by the water forced over the reefs escaping through this channel. An in-going tidal stream may cause still water while an outgoing stream against the South-east Trade Wind, when blowing strongly, may attain a rate of ½ kn.
- 2 In Northern Entrance, both in-going and out-going streams are fairly regular but vary a good deal in rate, though never strong.

11.205

- 1 **Seas** are very high and break heavily in Southern Entrance during and, for a time, after strong SE winds, notwithstanding that the depths are considerable. However, after passing Île de la Passe, about 5 cables within the entrance, they subside into a heavy swell in the channel, although breaking heavily over the reefs.
- 2 During prolonged observations over a period of four months the seas, though often very rough off Southern Entrance, were seldom seen to break inside, and never to any height except over the reefs. The general character of the seas was such that, at any time during this period, almost the smallest vessel could have entered safely.

Principal marks

11.206

1 Landmarks:

- 1 Cathedral, Mahébourg (20°24'5S, 57°42'0E). Lighthouse, white (disused) (20°23'6S, 57°46'2E), on Île aux Fouquets. Red cliffs (20°22'8S, 57°41'8E), at La Terre Rouge. Mont Saint Martin (20°21'2S, 57°41'1E), a conspicuous saddle-shaped hill, 278 m high.
- 2 Chimney (20°21'5S, 57°42'0E). Red cliffs (20°22'5S, 57°42'5E), at Treize Cantons. Lion Mountain (20°21'5S, 57°43'1E), near the SW extremity of Bambou Mountains. The outline includes Lion's Head, ¾ cables SE, which resembles the Sphinx, facing inland. Prominent water tower, 7½ cables E of Lion Mountain.
- 3 Conspicuous bungalow (white with black roof), 1 mile ENE of Lion Mountain. Remarkable black rock on the summit of Pointe du Diable (20°20'0S, 57°46'3E), a bluff, 100 m high, forming the end of a spur from Bambou mountains.
- 4 Mont Bambou (20°19'0S, 57°44'6E) and, in this vicinity, The Thumb, 1½ cables E, which is a remarkable upright column of stone, 544 m high. Also Voltaire's Face, 1 cable N, a peak 575 m high so-called due to its likeness to Voltaire's profile when seen from E and N of Pointe du Diable.
- 5 Mont Villars, 4½ cables NE of Mont Bambou. A distinctive peak when viewed from E and N of Pointe du Diable. Prominent chimney (20°16'4S, 57°46'6E) in Beau Champ.

Directions

(continued from 11.186)

Charts 711, 3048

Passage across approaches

11.207

- 1 From a position SSE of Pointe d'Esny (20°25'4S, 57°43'2E), seaward of the rock, awash, 1¼ miles SSE of the point, the track leads generally NE passing (with positions from Pointe d'Esny):

SE of Laverdie Spit (2¾ miles E), which is almost continually marked by breakers, keeping in depths more than 20 m to avoid the rollers that can occur in more shallow waters, thence:

- 2 Across the approach to Southern Entrance (2½ miles ENE), thence:

Not less than 1 mile SE of Île aux Fouquets (3½ miles NE), thence:

- 3 Not less than 1 mile outside a reef extending nearly 4½ miles NE from Île aux Fouquets to Danish Entrance, the seaward edge of which is a narrow drying ridge over which the sea always breaks heavily, although sometimes appearing quite calm close to the reef. The track outside the reef passes seaward of a group of small islands and dangers consisting of Île aux Fous (4¼ miles NE), Île Marianne, 1½ cables farther N, Rocher des Oiseaux, 2 cables NE of Île aux Fous, and a 7.9 m shoal, 4 cables farther E. Thence:

- 4 Clear of a buoy (special) (9 miles ENE), marking a fish aggregating device, thence:

To a position E of Danish Entrance (20°19'8S, 57°49'0E).

11.208

- 1 **Useful marks:**

Mauritius International Airport aero light (20°25'8S, 57°40'2E).

Île de la Passe (20°23'8S, 57°45'6E), which is covered with ruined fortifications and on which there is a tower, 2¾ miles NE of Pointe d'Esny.

11.209

- 1 **Danish Entrance to Île des Roches.** From the position E of Danish Entrance the track now leads generally N, passing:

E of a bank (20°18'7S, 57°50'6E) extending seawards from the reef with depths of 16.5 m or less over it, thence:

Across the approach to Northern Entrance, thence:

To a position E of Île des Roches (20°17'4S, 57°49'0E) (11.214).

(Directions continue, for NE coast at 11.232.

Directions for Northern Entrance are given at 11.213)

Approach to Southern Entrance

11.210

- 1 **Soundings.** Off Southern Entrance the 200 m depth contour lies nearly 2 miles from the reefs fronting Grand Port. In poor visibility sounding is a good guide to their proximity.

Clearing bearings. Approaching Southern Entrance from S, a bearing of not more than 340° of Île aux Fouquets disused lighthouse passes ENE of Laverdie Spit (11.207), 1¼ miles S of the lighthouse.

- 2 Approaching from the NE, the bearing 234° of the disused lighthouse passes SE of the detached reef, fronting Grand Port, and clear of the 7.9 m shoal, mentioned at

11.207. Île aux Fouquets should be passed at a distance of at least 1 mile.

Entering Southern Entrance

11.211

- 1 **Leading marks.** From a position about 5 cables ENE of Laverdie Spit the alignment (313°) of the centre of Île de la Passe (20°23'8S, 57°45'6E) (11.208), with the summit of Lion Mountain (11.206), 3¼ miles NW, leads into Southern Entrance.

11.212

- 1 When Île aux Fouquets disused lighthouse bears 002° a vessel should keep in mid-channel, passing (with positions from Île de la Passe):

NE of Laverdie Point (1 mile SSW), this being the E extremity of a reef forming the W side of the channel, the edge of which is a narrow drying ridge where the sea always breaks heavily, thence:

- 2 ENE of a beacon (tripod with staff and triangular topmark) (6½ cables SW) (position approximate), thence:

WSW of Île de la Passe, thence:

Between Jacolet Point (5¾ cables WNW) and Annanas Bank (4 cables NNW), thence:

- 3 Between a depth of 9.8 m (7¼ cables NW) and a shoal (8 cables NNW), with a least depth of 4.6 m over it, thence:

Rounding a buoy to port (7¾ cables NW), thence:

N of a concrete beacon (white pyramid, 3 m in height, diamond topmark) (8¾ cables NW), thence:

- 4 S of a concrete beacon (red cylinder, 3 m in height, triangular topmark) (1¼ miles NW), near Piment Point, the W extremity of the central offshore reef at Fer à Cheval Spit, thence:

NNE of a concrete beacon (red cylinder, 3 m in height, ball topmark), 3¾ cables SW of Piment Point, thence:

- 5 To a position NNE of Olive Bank (20°23'2S, 57°44'2E), which extends N from the coastal reef, 4 cables WSW of Piment Point.

Approach to Northern Entrance

11.213

- 1 **Leading line.** The line of bearing, about 256°, of Mont Bambou (20°19'0S, 57°44'6E) leads to Northern Entrance passing over, or close to, an 18.3 m patch 1¼ miles E of Île des Roches.

Caution. The 100 m depth contour lies approximately 3 miles off Northern Entrance with a fairly regular decrease in depth up to the entrance but there is rapid shoaling at the edge of the reefs extending towards the channel.

Entering Northern Entrance

11.214

- 1 The line of bearing, 238°, of Lion Mountain (20°21'5S, 57°43'1E) (11.206) leads in through Northern Entrance, passing (with positions from Île des Roches (20°17'4S, 57°49'0E)):

5 cables SE of Île (Îlot) des Roches, which is rocky and marked by a beacon, thence:

- 2 1¼ cables NW of a shoal (7½ cables S), with a least depth of 5.5 m over it, thence:

Close SE of a shoal (7 cables SSW) with a least depth of 12.5 m over it, thence:

To a position 1 mile SSW of Île des Roches.

11.215

- 1 From this position, the line of bearing 028°, astern, of Île des Roches leads SSW in mid-channel, passing (with positions from Île Flamand (20°19'2S, 57°48'9E)):

Close WNW of a shoal (7 cables NW) extending W from the offshore reef with a least depth of 11.3 m over it, thence:

- 2 7½ cables WNW of Île Flamand, a sandy cay, awash at HW, which continually alters its form.

The track then leads to a position 5 cables NNE of Diamant Reef (1 mile WSW) which is easily seen, especially in the morning, and over which the sea breaks almost continually.

- 3 From this position the line of bearing 240° of the head of the bluff at Pointe du Diable (20°20'0S, 57°46'3E) now leads in mid-channel to a position 2 cables NW of Brisant Point (1½ miles WSW) which is usually easy to see, especially in the morning.

Berths and services**Baie Fer à Cheval****11.216**

- 1 **Anchorage** can be obtained in depths from 11 to 16 m, sand and coral, on Annanas Bank (20°23'4S, 57°45'4E) in the position shown on the chart, with the SW extremity of Île de la Passe (11.208) bearing about 161° and Île aux Fouquets disused lighthouse (11.206) bearing about 102°. This is the first place where a vessel can shelter within Southern Entrance.

- 2 **Landing** can be effected on the W point of Île de la Passe.

See 11.224 regarding a boat channel leading to Mahébourg and 11.218 for details of a landing place.

West end of Grand Port**11.217**

- 1 **Anchorage** can be obtained N of Petit Paté (20°23'2S, 57°43'3E) in depths from 13 to 16 m, mud, in the position shown on the chart, noting a 7 m shoal, 1¼ cables S of the berth. This is the most frequented anchorage in Grand Port and is indicated by the bearing 304° of Piton Marron, 2¼ miles NW of Petit Paté, open SW of Mont Saint Martin, 3 miles NW of Petit Paté. Its W limit is indicated by the bearing 000° of Lion's Head, 1½ miles N of Petit Paté.

- 2 Small vessels can anchor in a depth of 15 m, 2 cables SSW of a beacon marking Grand Paté, 3 cables W of Petit Paté, in the position shown on the chart.

Useful marks (with positions from Grand Paté beacon):

- Beacon (3¼ cables WSW) on Le Mât cassé.
- 3 Beacon (4½ cables W).
- Beacon (7¼ cables WNW) on Buff's Reef.
- Île Singe (7¼ cables NW).
- Île Chat (7 cables NW).

If the beacons at the W end of Grand Port are in place and can be seen, they are sufficient guide for anchorage.

Mahébourg**11.218**

- 1 **Landing.** This is best effected at Race Jetty (20°24'1S, 57°42'2E). With a power-driven vessel a small boat should be used as a tender as there is little water off the jetty.

Supplies. Fresh provisions are available.

Bois des Amourettes**11.219**

- 1 **Anchorage** can be obtained in a depth of about 20 m, 8½ cables SE of Lion's Head (20°21'8S, 57°43'4E), off

Bois des Amourettes, as shown on the chart. A vessel approaching this berth from Southern Entrance should pass between the W extremity of Fer à Cheval Spit (20°22'8S, 57°44'4E) and a shoal with a least depth of 3.7 m over it, 5 cables WNW.

- 2 **Useful mark:**

Water tower (20°21'6S, 57°43'9E).

11.220

- 1 **Jetty** at Bois des Amourettes (20°21'9S, 57°43'8E).

A dolphin, 1½ cables E of the jetty, marks the end of a submarine pipeline laid NNW to a small jetty near a tank farm.

Supplies. Fresh water is laid on to the jetty at Bois des Amourettes but it should be boiled before consumption.

Jonchée Bar**11.221**

- 1 **Anchorage** can be obtained in depths of about 18 m in a spacious bay in the detached reef 7 cables E of Jonchée Bar (20°21'7S, 57°45'7E), as shown on the chart, but this berth can only be reached with local knowledge.

Pointe du Diable**11.222**

- 1 **Anchorage** is available, as shown on the chart, in depths of about 20 m, mud, with Pointe du Diable (20°20'0S, 57°46'3E) (11.206) bearing about 261° distant 5 cables.

Tazar Point**11.223**

- 1 **Anchorage** for small vessels can be found in depths of about 8 m, 2½ cables NNW of Tazar Point (20°19'0S, 57°46'9E). When approaching this anchorage a beacon on Tazar Point should be rounded at a distance of about 1 cable. The anchor should be let go nearer the W side of the reef than the shore, as shown on the chart, so that with the prevailing SE wind, a vessel will ride in mid-channel where the sea is quite smooth.

- 2 It is reported that a vessel entering with a foul bottom and lying in this berth for a few days will leave perfectly clean.

Small craft**Jacolet Point****11.224**

- 1 A boat channel exists N of Jacolet Point (20°23'6S, 57°45'0E), formed by a small break in the coastal reef through which boats can generally pass, although the sea may be breaking heavily over the reef on either side of it. For vessels anchored on Annanas Bank, 4 cables ENE (11.216), this channel is a useful means of communication with Mahébourg for small boats which can pass inside the edge of the reef, keeping a good lookout for coral heads, easily seen in smooth water.

Grand River South East**11.225**

- 1 A boat channel leads N from the anchorage off Tazar Point (20°19'0S, 57°46'9E) (11.223) towards the mouth of Grand River South East, 1¼ miles NNW of Tazar Point, across which a ferry operates. The channel is marked by beacons, the positions of which can be seen on the chart.

Other names**11.226**

- 1 Aigrettes, Île aux (20°25'0S, 57°43'5E).
Bambou, Pointe (20°20'7S, 57°45'5E).
Flamand Point (20°19'5S, 57°48'3E).

Néréide Reef (20°23'0S, 57°43'0E).
 Oiseaux, Île aux (20°19'5S, 57°48'5E).
 Sirius Reef (20°23'2S, 57°43'2E).
 Vakois, Île (Vacoas, Îlot) (20°23'7S, 57°45'8E).

NORTH-EAST COAST

General information

Charts 711, 3048

Route

11.227

- 1 From a position E of Île des Roches (20°17'4S, 57°49'0E), the coastal route leads NNE for about 20 miles, keeping well clear of the coastal reef, to a position about 6 miles WNW of Pointe Osborne (20°00'4S, 57°40'6E).

Depths

11.228

- 1 The waters between Île des Roches (20°17'4S, 57°49'0E), which marks the N end of Grand Port, and Cap Malheureux (19°59'S, 57°36'E) are deep outside the coastal reefs which extend up to 2½ miles offshore. There are no charted dangers lying beyond this distance to seaward.

There are some openings in the reefs which enclose a number of bays but these are only suitable for boats.

Topography

11.229

- 1 The coast is mostly sandy beach backed by a wide coastal plain on which are several villages and plantations.

There are no harbours along this coast.

Tidal streams

11.230

- 1 See information on the chart.

Principal marks

11.231

- 1 **Landmarks:**
 - Lion Mountain (20°21'5S, 57°43'1E) (11.206).
 - Mont Bambou (20°19'0S, 57°44'6E) (11.206).
 - Mont Villars, 4½ cables from Mont Bambou (11.206).
 - Prominent chimney (20°16'4S, 57°46'6E), in Beau Champ.
 - Piton du Milieu (20°17'S, 57°35'E) (11.120).
- 2 Pieter Both, 6¼ miles NNW of Piton du Milieu.
 Conspicuous tower (20°04'S, 57°41'E), in the village of Poudre d'Or.
 Conspicuous building, 2¾ miles N of the conspicuous tower.

Major light:

Flat Island Light (19°52'8S, 57°38'6E) (11.239).

Directions

(continued from 11.209)

11.232

- 1 From a position E of Île des Roches (20°17'4S, 57°49'0E), the track leads NNE, passing:
 - Across the approach to the shallow waterway (20°14'2S, 57°48'0E), leading through the coastal reef to Trou d'Eau Douce, thence:
 - ENE of Pointe de Roche Noire (20°06'3S, 57°44'5E), where old black lava flows meet the sea, and:
- 2 Clear of a buoy (special) marking a fish aggregating device, moored about 3 miles ENE of Pointe de Roche Noire, thence:

ENE of Île d'Ambre, 4½ miles NNW of Pointe de Roche Noire, which is rugged with two peaks, thence:

- 3 To a position 6 miles ENE of Pointe Osborne (20°00'4S, 57°40'6E).

Clearing bearing: From a position about 5 miles off Île des Roches (20°17'4S, 57°49'0E) (11.214) the bearing 328° of Flat Island Light, distant about 27 miles, leads clear of the coastal reef along the NE coast of Mauritius.

11.233

- 1 **Useful marks:**

Prominent tower (20°15'S, 57°45'E), in Bel Air.
 Round Island (19°51'S, 57°47'E) (11.243).

(Directions for passage E of the offshore islands
 N of Mauritius continue at 11.244)

Small craft

Boat channels

11.234

- 1 Between Île des Roches (20°17'4S, 57°49'0E) and Cap Malheureux (19°59'S, 57°36'E) (11.172) the following villages are reported to be accessible from seaward, through the extensive coastal reef, by way of narrow and, usually, shallow boat channels.
- 2 Trou d'eau Douce (20°14'0S, 57°46'5E).
 Poste de Flacq (20°09'5S, 57°44'0E).
 Rivière du Rempart (20°06'S, 57°41'E).
 Poudre d'Or (20°03'5S, 57°40'5E).
 Cap Maleureux (19°59'S, 57°36'E).
- 3 The coastal reef is reported to be broken by several minor openings giving access to waters within the reef and these, although much encumbered by coral heads, are navigable by boat. However, it is considered dangerous to attempt this without local knowledge.

Other names

11.235

- 1 Boeufs, Pointe aux (20°12'S, 57°47'E).
 Citronniers, Passe des (20°03'2S, 57°43'0E).
 Flacq, Passe (20°09'8S, 57°45'5E).
 Goelettes, Passe des (20°03'5S, 57°43'2E).
 Lafayette, Pointe (20°07'5S, 57°45'0E).
 Latazar, Passe (20°00'8S, 57°41'8E).
 Pirogues, Passe des (20°04'6S, 57°43'4E).
 Sables, Pointe Butte aux (19°59'3S, 57°37'5E).

OFFSHORE ISLANDS

General information

Chart 711

Description

11.236

- 1 A number of islands lie on a steep-to bank which extends NNE from Mauritius. The waters surrounding these are moderately deep and have no charted dangers with depths less than 13 m over them more than 1¼ miles from the islands in the wide navigable channels between them.

Natural conditions

11.237

- 1 **Tidal streams.** See information on the chart.
 The E-going stream begins about 5½ hours before HW by the shore and lasts for 6 hours. The stream then sets W for 6 hours with no period of slack water.
- 2 As indicated on the chart, the streams are strong. During spring tides they attain rates from 4 to 5 kn although, at neap tides, the rate seldom exceeds 2 kn. The streams are

stronger at night than during the day. During and after W winds the rate of the stream setting E round the N end of Mauritius is greatly increased.

On the bank among the islands, during strong S winds, the E-going stream is deflected NE.

11.238

- 1 **Tide-rips.** These are dangerous and extend up to 3 miles from Gunner's Quoin (19°56'S, 57°37'E) with the E-going stream. Rips also form in the vicinity of Flat Island, 3½ miles NNE of Gunner's Quoin (11.241). See the chart for details.

Principal marks

11.239

- 1 **Landmarks:**

Le Pouce (20°11'7S, 57°31'3E) (11.156).
Pieter Both, 1½ miles ENE of Le Pouce (11.156).
Conspicuous building (20°01'0S, 57°40'4E).
Conspicuous hotel (19°59'9S, 57°34'5E).

- 2 **Major light:**

Flat Island Light (white concrete tower, red lantern, 16 m in height) (19°52'8S, 57°38'6E) situated on a high promontory at the SW end of Flat Island.

Directions

Approach

11.240

- 1 **Caution** should be exercised when approaching the bank off the N end of Mauritius from N as depths shoal rapidly off the dangers N and NW of Round Island (19°51S, 57°47'E). Elsewhere, sounding over the bank should give adequate warning of the proximity of dangers.
- 2 **Low-powered vessels** approaching from E during the E-going tidal stream should pass N of the islands to avoid the strong streams among them. Directions for passage N of the islands are given at 11.242.

Useful mark:

- 3 Round Island (19°51S, 57°47'E), the highest of the offshore group, is shaped like a rounded haystack and is barren except for a few palm trees. In cloudy weather, or when the horizon is obscured, it may be seen before Mauritius itself. Round Island and Serpent Island, 1½ miles NNE, are reported to be easily identified on a radar display.

Passage west of the islands

11.241

- 1 From a position about 4 miles WNW of Malheureux Rock (20°57'8S, 57°35'6E) (11.176) the track leads generally N, passing:
Across the approaches to Quoin Channel, which lies between Cap Malheureux (11.172) and Gunner's Quoin. This channel is encumbered by rocks and shoals on each side and is made more hazardous by the strong tidal streams (11.237) and tide rips (11.238). Thence:
- 2 About 4 miles WNW of Gunner's Quoin, a wedge-shaped, rocky island with a steep-to hill, 162 m high, on the W side, 1¼ miles NE of Malheureux Rock. The Quoin should not, in any event, be passed at a distance less than 1 mile in view of the strong tidal streams, thence:
- 3 About 4 miles WNW of a rock, awash, situated close W of Flat Island, (19°52'S, 57°39'E) off the N entrance point to Palisade Bay. The island is generally flat but rises to a hill at its SW extremity.

Caution. Care should be taken to avoid a buoy (special) marking a fish aggregating device, moored about 7½ miles NNW of Flat Island Light structure.

Passage north of the islands

11.242

- 1 The east-bound track, N of the islands, passes:
N of Pigeon House Rock, 3 cables N of Flat Island, which can be safely passed at a distance not less than 3 cables, but should be given a wide berth of at least 1 mile by a low-powered vessel (See caution at 11.241), thence:
- 2 N of Nab Reef, 7½ miles ENE of Pigeon House Rock, over which the tidal streams run with great strength and the sea breaks, thence:
N of Serpent Island, 7 cables ENE of Nab Reef, which has light-coloured cliffs.

Passage south of the islands

11.243

- 1 **Caution.** Quoin Channel (19°57'S, 57°37'E) (11.241) should not be used for passage S of the offshore islands as it is encumbered by rocks and shoals on each side and is made more hazardous by the strong tidal streams (11.237) and tide rips (11.238).
The E-bound track, S of the islands, should pass (with positions from Flat Island Light (19°52'8S, 57°38'6E)):
- 2 At least 1 mile N of Gunner's Quoin (3½ miles SSW) (11.241), thence:
N of the Blacksmiths, a group of rocks close E of the N point of Gunner's Quoin, one of which is 1 m high. In this vicinity the E-going stream runs with great strength. Thence:
- 3 S of Sandringham reef (1¾ miles SE), giving the reef a wide berth as the tidal streams run with greater strength over it, thence:
N of Mapu Patch (19°58'6S, 57°39'8E), an isolated coral patch with a least depth of 13 m over it, thence:
- 4 S of Rip Bank (2¼ miles SE), over which the sea breaks occasionally, thence:

Either:

SSW of Abbé Bank (7¼ miles ESE) over which the sea sometimes breaks.

- 5 Or:

N of La Caille Bank, 1¼ miles NNE of Abbé Bank, over which the sea breaks in heavy weather, and:
S of Round Island (8 miles E) (11.240), which is the highest of the group (322 m).

- 6 **Clearing line.** The alignment (251°) of Cap Malheureux (6½ miles SSW) with the disused lighthouse on Canoniers Point, 3½ miles WSW of Cap Malheureux passes close S of Abbé Bank.

Passage east of the islands

(continued from 11.233)

11.244

- 1 From a position about 6 miles ENE of Pointe Oscome (20°00'4S, 57°40'6E), the N-bound track, E of the islands, passes:
E of Abbé Bank (19°55'S, 57°46'E) (11.243), and:
E of La Caille Bank, 1¼ miles NNE (11.243), thence:
E of Round Island (11.240), thence:
 - 2 E of Serpent Island (11.242), keeping well clear of a rock, awash, close E of the island.
- Clearing bearing.** The bearing 009° of Serpent Island, 6½ miles NNE of Abbé Bank (11.243), open its own breadth

E of Round Island, 4 miles N of Abbé Bank, passes E of the banks.

Passages between the islands

11.245

- 1 The N-going track between the islands passes (with positions from Flat Island Light (19°52'8S, 57°38'6E)):
 - E of the Carpenters (4¼ miles SSW), a group of rocks, awash, close SSE of Gunner's Quoin, over which the E-going tide stream runs with great strength and on which the sea breaks heavily, thence:
- 2 E of the Blacksmiths (3½ miles SSW) (11.243), thence:
 - W of Abbé Bank (7½ miles ESE) (11.243), thence:
 - W of La Caille Bank (7½ miles ESE) (11.243), and:
 - E of Rip Bank (2¼ miles SE) (11.243).

11.246

- 1 Once clear of Rip Bank the track passes:
 - E of Gabriel Island (20°53'S, 57°40'E), thence:
 - W of Round Island (19°51'S, 57°47'E) (11.240), thence:
- 2 W of The Blinder, a reef situated about 2½ cables NW of Round Island, over which the tidal streams run with great strength and on which the sea breaks occasionally, thence:
 - W of Nab Reef, 1½ miles NNE of Round Island (11.242).
- 3 **Clearing bearing.** A line of bearing, not less than 235°, of Canonnières Point disused lighthouse (19°59'9S, 57°32'7E) well open S of Gunner's Quoin, 5 miles NE of Canonnières Point, passes SE of Rip Bank.

Berths and landing places

Flat Island

11.247

- 1 **Anchorage** can be obtained S of Flat and Gabriel Islands in the position shown on the chart, in a depth of 16 m, sand and coral, with Flat Island Light (11.239) bearing 312° distant 1¼ miles. The berth lies on the alignment (060°) of an islet, 2 m high, situated close off the S end of Gabriel Island (11.246), with the summit of Serpent Island (11.242), 8¾ miles NE. Care must be taken to avoid a drying rock about 2½ cables NE of the charted berth.
- 2 As the sea rises quickly during S winds and the holding ground is not good, vessels should leave the anchorage at the first sign of bad weather.

Mooring. There is a mooring buoy (black and white, conical) about 2½ cables NW of Flat Island Light, in Palisade Bay.

Round Island

11.248

- 1 **Landing** may sometimes be possible at two places on the W side of Round Island, which is otherwise inaccessible.

Small craft

Pigeon House Rock

11.249

- 1 A boat passage exists between Pigeon House Rock and Flat Island.

RODRIGUEZ ISLAND

GENERAL INFORMATION

Chart 715

Scope of section

11.250

- 1 In this section are described the sea passages around Rodriguez Island (19°43'S, 63°25'E), together with the associated harbours and anchorages.
 - Of the harbours only Mathurin Bay (19°40'S, 63°25'E) (11.267) is suitable for deep-draught vessels. Port Mathurin, at the head of Mathurin Bay, is the only port.
- 2 The section is arranged as follows:
 - Coastal passages (11.257).
 - Port Mathurin and approaches (11.267).

Topography

11.251

- 1 The island is roughly elliptical, of volcanic origin and rises to a height of 1300 m with the central peak of Mount Limon. From a central E/W ridge spurs, separated by deep ravines, extend to the N and S coasts, giving the island a rugged appearance.
- 2 The entire island is surrounded by a coral reef which, at the E end, is steep-to while, from S through W to NW, the reef is flat, extending up to 4½ miles from the coast. The reef, which encompasses a number of small basaltic islands, dries in patches at LW springs and is scattered with shallow pools and narrow, shallow passages only suitable for local canoes.

Radar characteristics of the coast

11.252

- 1 The following features are reported to be readily identified on a radar display (with positions from Booby Island (19°39'7S, 63°23'3E)):
 - Trous d'Argent (7 miles ESE).
 - North Bay (Baie du Nord) (2¾ miles SSW).
 - Pointe Venus (2¼ miles ESE).
 - Corne Point (3¾ miles E).
 - Booby Island.

Pilotage

11.253

- 1 There are no pilots but local boatmen are available to advise on navigation of the channels.

Natural conditions

11.254

- 1 **Current.** In the area surrounding Rodriguez Island the W-going South Equatorial Current (1.166) is of mainly moderate constancy and generally has a rate from ¾ to 1¼ kn. The current is less constant S of latitude 20°S, with an average rate of ½ to ¾ kn.

Tidal streams. These are not appreciable except in the channels and passages through the reef.

11.255

- 1 **Sea and swell.** Even in the calmest weather the sea breaks on the reef and, with the swell that usually rolls in, often breaks in depths of 18 m, more than 1 cable outside the reef itself. The breakers are heaviest at Quatre-Vingts Brisants, the SW corner of the reef, where the edge is broken into detached patches.

- 2 **Rollers.** These occasionally affect the island, coming from all quarters. Here, they generally last only a few hours but cause heavy breakers on all shoal places and make boat work hazardous. For further information see 1.4.

Cyclones. See 1.209. Warnings are issued by the Meteorological Office at Port Louis.

Climatic table. See 1.241.

Regulations

11.256

- 1 Clearance must be obtained from the Mauritius Marine Authority of Port Louis before calling at Rodriguez Island. Requests for clearance should include the vessel's dimensions and purpose of visit.

COASTAL PASSAGES

Approach

11.257

- 1 A bank of coral and sand with depths from 37 to 73 m over it extends up to 12 miles from the reef around Rodriguez Island. The edge of the bank falls steeply to ocean depths and soundings should therefore give warning of approach to the reef. An approach from S should be made with care, however, as the edge of the bank lies only 2 miles outside the reef in this direction.

Directions

Passage west of Rodriguez Island

11.258

- 1 From a position SW of the island, off Quatre-Vingts Brisants (19°49'S, 63°20'E), the SW corner of the reef, the track W of Rodriguez Island to the vicinity of Mathurin Bay, 11 miles NNE, leads outside the reef surrounding the island, passing (with positions from Marianne Island (19°44'0S, 63°19'6E)):
- 2 W of Cocoa Island (2 miles NW), a sandy cay covered with low scrub, thence:
W of Sandy Island (2½ miles NNW), which is similar to Cocoa Island, thence:
Round the NW point of the reef (5 miles NNW), thence:
- 3 N of a depth of 5.5 m (5¼ miles NNE) about 4 cables outside the edge of the reef, thence:
N of Western Patch (7 miles NE), a group of coral heads with a least depth of 5.5 m over it, thence:
- 4 To a position in the approaches to Mathurin Bay.
Deep-draught vessels should avoid depths of 26 m (reported 1978) and 33 m (reported 1991, position doubtful), 8 miles NE and 9½ miles NNE, respectively.
(*Directions for Western Pass continue at 11.285*)

Passage east of Rodriguez Island

11.259

- 1 From the position off Quatre-Vingts Brisants (19°49'S, 63°20'E), the SW corner of the reef, the track E of Rodriguez Island to the vicinity of Mathurin Bay, 10 miles N, leads outside the steep-to reef surrounding the S and E coasts of the island, passing (with positions from Pointe Coton (19°41'S, 63°30'E)):
- SE of Pointe l'Ancre (9¼ miles SSW), thence:
- 2 SE of the entrance to Grande Passe (5½ miles SSW) (11.262), thence:
E of Trous d'Argent (1½ miles S) (See 11.252, radar target), thence:
NE of Pointe Coton, thence:
N of Corne Point (2¾ miles WNW), thence:

- 3 N of Middle Ground (4½ miles WNW), a large coral shoal with many coral heads which extends W from the coastal reef forming the E entrance point to Mathurin Bay, thence:

To a position in the approaches to Mathurin Bay.

11.260

- 1 **Useful mark:**

Crab Island (19°46'0S, 63°21'6E), an islet off the S coast of Rodriguez Island with a central hill, 45 m high.

Some of the marks described at 11.284 may also be useful.

(*Directions continue for Western Pass to Mathurin Bay at 11.285*)

Anchorage

Reef

11.261

- 1 In light winds a vessel can anchor almost anywhere outside the reef in depths from 18 to 37 m.
The reef blocks the entrances to several coves which indent the S, W and N coasts of the island and, although some are relatively deep, they are useless as anchorages.
See 11.289 for anchorages in Mathurin Bay.

Port South East

Chart 715 plan of Port South East

General information

11.262

- 1 **Position.** Port South East (Sud Est) (19°45'S, 63°27'E) is a harbour formed by an inlet in the reef lying parallel to the S coast of Rodriguez Island.
Approach and entry. The harbour is approached from S through Grande Passe, which is entered 1½ miles offshore.

Limiting conditions

11.263

- 1 The passage is only ½ cable wide in places and tortuous, access being difficult, although moderately deep and clear of dangers.
Controlling depth. A depth of 7.3 m over a bar close off the entrance to Grande Passe.
2 **Largest vessel.** Vessels drawing not more than 6.1 m can anchor in the harbour.
Tidal streams are strong.
Local weather:
Sea breaks on the bar when rollers occur.
Wind is usually of some strength.

Arrival information

11.264

- 1 **Pilotage.** See 11.253.
Local knowledge is necessary for entry to Port South East which should not otherwise be attempted, except in an emergency.

Directions

11.265

- 1 There are no marks for the entrance to Grande Passe (19°46'0S, 63°27'7E) but it can be clearly seen from a high vantage point at a distance of 1 or 2 miles.
From the entrance the track through the channel leads:
N for about 5½ cables, thence:
2 NW for about 4½ cables, thence:
N for about 3 cables, thence:
WSW for about 3½ cables, thence:
To a position about 3½ cables E of Hermitage Island.

Anchorage**11.266**

- 1 Port South East is well sheltered from the sea, being protected by the reef. Anchorage can be obtained in a clear space with depths from 6 to 18 m, mud and sand, good holding ground. The berth lies E of a detached reef surrounding Hermitage Island which is situated in the middle of the harbour.

PORT MATHURIN AND APPROACHES**General information**

Chart 715 with plan of Mathurin Bay

Position**11.267**

- 1 Port Mathurin (19°41'S, 63°25'E) is situated in the middle of the N coast of Rodriguez Island, at the head of Mathurin Bay.

Function**11.268**

- 1 Port Mathurin is the only port and is the principal settlement and administration centre of the island.

Topography**11.269**

- 1 The town stands on a flat mudbank between the entrances to two narrow valleys and becomes almost an island at HW.

Port limits**11.270**

- 1 These are not defined.

Approach and entry**11.271**

- 1 The port is approached through Mathurin Bay, an indentation in the coastal reef, the entrance to which is Western Pass. This lies between Western Patch (11.258), a shoal area extending NNE from the reef forming the W entrance point, and Middle Ground (19°39'2S, 63°25'5E) (11.259) a bank extending W from the reef forming the E entrance point.
- 2 **Caution.** Previously, a narrow channel, Eastern Pass, was known to exist between Middle Ground and the E entrance point but no recent surveys have been carried out in this channel and it is now reported to be too dangerous for use by any vessel larger than small local boats in fair conditions and good light.
- The port is then entered through a dredged channel situated in the SE part of the bay.

Port Authority**11.272**

- 1 The Mauritius Marine Authority (11.256) is represented at Port Mathurin by the Island Commissioner.

Limiting conditions**Controlling depths****11.273**

- 1 Western Pass: 9.1 m over a patch.
Entrance channel: dredged to 9 m.

Tidal levels**11.274**

- 1 The mean spring range is about 1.3 m; mean neap range is about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

Arrival information**Notice of ETA****11.275**

- 1 A vessel's ETA should be reported in advance to the Island Commissioner (11.272).

Outer anchorage**11.276**

- 1 In 1978, a vessel drawing 7.9 m anchored in a depth of 28 m just outside Western Pass near the alignment of the channel leading lights (11.286), mud and sand, good holding ground.

Tugs**11.277**

- 1 Small tugs are available.

Local knowledge**11.278**

- 1 Local knowledge is required for Port Mathurin.

Regulations**11.279**

- 1 See 11.256.

Quarantine**11.280**

- 1 There is a Port Health Officer at Port Mathurin.

Harbour**General layout****11.281**

- 1 The harbour comprises:
Anchorage for deep-draught vessels in Mathurin Bay.
Quay at Port Mathurin.
Mooring for small craft.

Natural conditions**11.282**

- 1 Rollers cause a swell in Mathurin Bay.

Development**11.283**

- 1 The channel is 130 m wide and the turning basin diameter 260 m, both dredged to a depth of 9 m. They are marked by light-beacons.

Principal marks**11.284**

- 1 **Landmarks:** (with positions from Point Venus (19°40'3S, 63°25'6E)):
Le Piton (about 1½ miles S), a mountain which shows as a round cone and is quite unmistakable from Mathurin Bay, but loses its conical shape when viewed from E or W.

- 2 Booby Island (19°39'7S, 63°23'3E), 16 m (55 ft) in height and a good radar identification, from which a light, the position of which is approximate, is exhibited.
White statue of "Our Lady - Rene de Rodriguez" (2¾ cables SSW), about 5 m in height, stands in an elevated position.
- 3 Chimney (5¼ cables SW) on power station.
Group of radio masts (¾ cable S).
White stone block, prominent, at the observatory on Point Venus (19°40'3S, 63°25'6E), which is a cliffy headland.
- 4 A conspicuous earth station satellite dish is reported to stand 40 m ENE of the observatory, beyond the concrete buildings of the Mauritius Telecom communications station.
Wreck of a dredging hopper barge on the reef (13 cables WNW) is visible at all states of the tide.

Directions for Western Pass

(continued from 11.258 and 11.260)

Approaches

11.285

- 1 **Clearing bearing.** A line of bearing, more than 115°, of Pointe du Sel (19°40'5S, 63°29'5E) open N of Corne Point, 2 miles WNW, passes N of the coastal reef on the W side of Western Pass.

Pass

11.286

- 1 Western Pass is wide and generally free from dangers.
Port Mathurin Leading Lights:
Front light (white triangle, point up) (19°40'6S, 63°25'3E) on the foreshore at Port Mathurin. The white triangle is reported as being partly obscured by land reclamation, to seaward, and also, in part, by adjacent trees; the lead being clearly visible only when lit.
- 2 Rear light (triangle, point down) 420 m SSE of the front light. Situated on the slopes of Mount Charlot, the light structure is not easily identified.
The alignment (165½°) of these lights, which are exhibited occasionally, leads through Western Pass into Mathurin Bay, passing (with positions given from the front leading light):
- 3 ENE of Western Patch (1¼ miles NNW), which can always be seen in daylight, thence:
Over a 9.1 m patch (1½ miles NNW), thence:
WSW of a 5.5 m patch (about 1½ miles N), at the W end of Middle Ground (11.259). Middle Ground does not show generally and, except when rollers occur, the sea never breaks on it.

11.287

- 1 When Booby Island (2 miles WNW) bears 252° the bearing 150° of the observatory at Point Venus (11.284) leads to the anchorage (11.289).

Directions for entrance channel

11.288

- 1 **Leading beacons.** The alignment (234°) of leading beacons (blue, unlit) leads for about 5 cables through the dredged channel towards Port Mathurin, passing between light-beacons marking the NW and SE limits of the channel, to a position with Port Mathurin Leading Lights, described at 11.286, bearing 165½°. Thence the bearing 195° of the

power station chimney (11.284) leads for about 2 cables through the S part of the channel into the turning basin, marked on the N, E and W sides by light-beacons.

2 **Cautions.**

The alignment of leading beacons must be followed closely.

In the turning basin a strong current builds up during a falling tide.

Night navigation in the channel is not recommended.

Berths

Berths

11.289

- 1 **Anchorage.** Mathurin Bay affords excellent anchorage with good holding ground of sand and mud. Protection is given from seaward by Middle Ground and, as the wind for the greater part of the year is from SE, the island itself prevents swell raised by this wind from being felt to any great extent.
- 2 Uncharted abandoned submarine telegraph cables exist in the N and E parts of the bay and, to avoid these, a vessel should anchor in depths from 17 to 22 m W of a line drawn 010° from Point Venus and S of an E/W line 8 cables N of the point.
- 3 If anchoring in the SE part of the bay care should be taken to avoid an obstruction (position approximate) (1921), 7½ cables NNE of the front leading light, consisting of a coil of cable.
- 4 **Alongside.** A quay, 180 m in length, is available at Port Mathurin and is suitable for Ro-Ro vessels. The quay lies on a bearing of 242° and, from the E end, a covered jetty with a length of 25 m lies on a bearing of 330°. The depth alongside the quay is 8.5 m at low tide.

Port services

Facilities

11.290

- 1 Doctor.

Supplies

11.291

- 1 Fruit and vegetables are available during certain periods of the year.
Water is scarce in November and December when many of the streams on the island dry out.
Fuel oil is not available.

Communications

11.292

- 1 There is a ferry service with Port Louis (11.131).

Small craft

Berths and services

11.293

- 1 **Moorings** are laid off Port Mathurin.
Alongside berths:
Two small piers for boats at Port Mathurin.
Small pier at Point Venus, opposite the old cable station.
- 2 **Landing** can be effected at the pier at Point Venus.
Repair facility. Small slipway at the W end of the village.
Caution. When disembarking from small craft by wading ashore it is necessary to protect the feet against the stings of a venomous fish which conceals itself in the mud.

ÎLE TROMELIN AND AGALEGA ISLANDS

GENERAL INFORMATION

Chart 4702

Scope of section

11.294

- 1 In this section are described the waters surrounding the islands of Île Tromelin (15°53'S, 54°31'E) and Agalega Islands (10°26'S, 56°40'E) and the anchorages therein. There are no ports or harbours.

- 2 The islands lie about 250 miles apart, midway between the N end of Madagascar and the chain of oceanic banks which extends NNE from Mauritius (20°17'S, 57°35'E).

The section is arranged as follows:

Île Tromelin (11.298).

Agalega Islands (11.305).

Weather

11.295

- 1 **Winds.** From April to November the islands lie within the zone of South-east Trade Winds while, from December to March, the NW Monsoon prevails as far S as about latitude 15°S. See 1.197 for further information.

Cyclones may affect the islands; see 1.209 for further information.

Current

11.296

- 1 For most of the year the islands lie within the W-going South Equatorial Current described at 1.166.

Ocean routes

11.297

- 1 Routes from South Africa to the West coast ports of the Indian continent pass:

Well W of Île Tromelin, and:

Well E of Agalega Islands, giving them all a wide berth.

Details of the routes are given in *Ocean Passages for the World*. See also Routeing Chart 5126.

ÎLE TROMELIN

General information

Chart 712 plan of Île Tromelin

Description

11.298

- 1 The waters around Île Tromelin (15°53'S, 54°31'E) are deep and clear of charted dangers outside a bank with depths of 18 m or less over it which extends about 7 cables SE and 1 mile WNW from the island.

Topography

11.299

- 1 Île Tromelin is low, consisting of a sand bank with some bushes, palm trees and windmills fringed by a reef.

At the NW end of the island there is a meteorological station which may be contacted by VHF and is served by an adjacent airstrip.

Flow

11.300

- 1 A heavy race is formed off the NW extremity of the island by the meeting of the W-going current (11.296) and the stream on a falling tide. The sea breaks so heavily as to be dangerous for boats at a distance of 2 or 3 cables offshore.

Directions

11.301

- 1 The plan affords sufficient guide for navigation of the waters around Île Tromelin. A 10·4 m shoal, 7 cables NW of the island, on the bank should be avoided.

Banc La Feuillée, an isolated bank with a depth 24·5 m, lies 2¾ miles S of the island light.

Useful mark:

Light (white pylon on building, 10 m in height) (15°53'·3S, 54°31'·2E) at the meteorological station.

Anchorage and services

Anchorage

11.302

- 1 There is anchorage on the bank in a depth of about 15 m, 7 cables WNW of the meteorological station, as shown on the plan, but the holding ground of sand and coral is not good.

Landing place

11.303

- 1 A beach on the NE side of the island near the meteorological station affords a landing place, except with winds from the NW through N to SE. It should only be attempted at or near HW.

Communications

11.304

- 1 An airstrip, shown on plan, is available.

AGALEGA ISLANDS

General information

Chart 1881 plan of Agalega Islands and St James anchorage

Description

11.305

- 1 The waters around the Agalega Islands (10°26'S, 56°40'E) appear to be deep, with no dangers charted in the immediate vicinity of the islands.

Topography

11.306

- 1 Agalega Islands, population of about 350, consists of South Island, about 5 m high, and North Island, about 8 m high, 1 mile NW, separated by La Passe. Both islands are well wooded with high trees and coconut plantations.

A ridge of sand with a reported depth over it of 0·4 m obstructs La Passe and connects the islands which are fringed with a steep-to reef, broken by boat passages.

- 2 There are three settlements:

Port Sainte Rita is situated on the NE side of South Island and has a meteorological station. There is a pier, constructed of coral blocks, but this was reported damaged by sea action in 1978.

- 3 **La Fourche**, previously Port Saint Jaques, lies on the W end of North Island, overlooking Saint James Anchorage. There is a pier, with a crane, from which copra is shipped.

Vingt Cinq is situated centrally on North Island.

Pilotage

11.307

- 1 The coxwain of a surf boat at Sainte Rita may be able to act as a pilot for vessels calling at Agalega Islands.

Tidal levels**11.308**

- 1 The mean spring range is about 0.8 m; mean neap range is about 0.4 m. For further information see the relevant *Admiralty Tide Tables*.

Natural conditions**11.309**

- 1 **Current.** The South Equatorial Current sets mostly W or SW with low or moderate constancy at an average rate of about 1 kn. Early in the year, however, it may be replaced for a time by a current setting N at a similar rate.
- 2 **Tidal streams.** On both sides of the island these are irregular but, in general, they set SE on a rising tide and NW on a falling tide. The SE-going stream, however, is frequently not strong enough to overcome the current and the resultant flow sets continuously NW at rates from 1 to 3 kn.
- 3 At an anchorage (11.312) off the E side of South Island, used by HMS *Frolic* in 1857, the streams attained a rate of 1 to 3 kn. On a falling tide the rate was greater at the start of the stream.
In August, 1892, a strong NE set was experienced off Sainte Rita.
- 4 The streams are more regular at Saint James Anchorage (11.314), usually setting NW and slightly offshore, but setting SE for about 2 hours during a rising tide. This latter stream is often weak and was not felt by HMS *Loch Killisport* in 1955.
Tide-rips. These form off Tappe-à-Terre, the N end of North Island, as shown on the plan of Saint James Anchorage.

Directions*Chart 4702***Approach****11.310**

- 1 Approaching from N, North Island can be readily identified on a radar display while the high trees on the islands can be seen from a considerable distance. From SE or NW the two islands appear as one.
- 2 Deep-draught vessels approaching from W should avoid a bank with a depth of 27 m, about 15 miles W of North Island. It is reported that the islands can just be seen from the vicinity of this bank.
Deep-draught vessels approaching from E should avoid a 23 m bank, about 46 miles E of South Island.

*Chart 1881 plans of Agalega Islands and St. James Anchorage***Islands****11.311**

- 1 The plan is sufficient guide for navigation in the vicinity of Agalega Islands.
Caution. No navigational lights are exhibited from the islands (see 11.314). At night, they should not be closely approached without reliable radar in view of the tidal streams described at 11.309.
- 2 **Useful marks:**
Sandhills, 12 m high (not charted), bearing 144° distant 2½ miles from a pier at Sainte Rita, on the SE coast of South Island.
Sandhills, 15 m high (not charted), bearing 135° distant 5½ cables from Tappe-à-Terre, the N point of North Island.

Anchorage and landing places**South Island****11.312**

- 1 **Local knowledge** is required to obtain an anchorage in depths from 33 to 37 m, sand and gravel, off Sainte Rita, in the position shown on the plan of Agalega Islands. Vessels can be guided to this anchorage by a local boatman, if requested. During strong SE winds a heavy swell sets in and preparations should be made to weigh.
 - 2 Temporary anchorage has been obtained in depths of 58 m, 2½ cables NNE of the pier at Sainte Rita (11.306), but this anchorage is not recommended from May to September. The charted light at the pier was reported destroyed (1988).
Care should be exercised when anchoring off Sainte Rita as the tidal streams cause eddies which may set a vessel on to the reef. See 11.309 for further information.
 - 3 Elsewhere, HMS *Frolic* (1857) reported anchoring on a ledge off the E side of South Island in a depth of 18 m, coral and large rocks, about 2 cables from the coastal reef. The steepness of the reef makes it difficult to find anchorage elsewhere off the E coast of South Island.
Anchorage can, however, be obtained off the W coast, in Little Mapou Bay, in depths from 31 to 37 m, 3 or 4 cables from the coastal reef.
- 11.313**
- 1 **Landing.** A channel, difficult at LW and dangerous for ships' boats, leads through the coastal reef to a landing at Sainte Rita. Local surf-boats are available, but see 11.312 regarding conditions.

North Island**11.314**

- 1 Saint James Anchorage, off the NW shore of North Island, affords anchorage sheltered from the South-east Trade Wind, in depths from 9 to 18 m, about 4 cables SW of Tappe-à-Terre and 1¼ cables off the coastal reef, in the position shown in the plan of the anchorage. The alignment (098°) of leading beacons (white masonry pillars, about 2 m in height), ¾ cables SSW of Tappe-à-Terre, leads to the anchorage. In 1988 this alignment was reported to be 094°.
- 2 **Caution.** The leading beacons, situated in a clearing, are obscured except from W and cannot be distinguished until within about 1 mile. Care should be taken not to confuse them with a shrine, surmounted by a white cross, which stands in a similar clearing about midway between the beacons and the pier. See 11.309 for the tidal streams in the anchorage.
- 3 Anchorage can also be obtained S of Saint James Anchorage, in a depth of 13 m, sand and coral, good holding ground, in a position 193° distant 6¾ cables from a jetty which lies 5 cables SSW of Tappe-à-Terre.
With local knowledge, anchorage can be found off the W side of North Island in Francis Bay, S of NorthWest Point.
Landing. Ships' boats are able to land on the NW side of North Island.

Services**Facilities****11.315**

- 1 Port Sainte Rita:
Small hospital, police station, head-quarters of Agalega Corporation, a Mauritius Government body.
La Fourche:
Boat-shed, store and crane. Air strip.

Communications

11.316

- 1 Sea communications with Mauritius about four times a year. Vessels usually call at Port Sainte Rita, except from June to September when surf prevents landing and La Fourche is used.

Small craft

Berths

11.317

- 1 **South Island.** At Sainte Rita there is a jetty about 30 m in length, lying NNE/SSW and drying for about half its length with a depth of 0.9 m at the head. Constructed of soft coral rock, the jetty suffered sea damage in 1978 and could not be used.

- 2 **North Island.** A jetty, 5 cables SSW of Tappe-à-Terre, of concrete and wood construction, about 60 m in length. Can be used by shallow draught craft, care being taken at HW when berthing is difficult due to swell.

Other names

11.318

- 1 The positions of the following features are given from Port Sainte Rita:
 Capucin, Cap (3¾ miles NW).
 Corail, Cap (Coral Point) (2 miles SE).
 Digue, Cap La (Pointe la Digue) (2¾ miles S).
 Parasol, Roche (8½ miles NW).
 Taillevent, Cap (Taillevent Point) (2¾ miles SSE).
 Takamaka Point (1 mile ESE).

BANKS AND SHOALS ON MASCARENE PLATEAU

GENERAL INFORMATION

Chart 4702

Scope of section

11.319

- 1 In this section are described the sea passages in the vicinity of, and across, a number of oceanic banks and shoals which lie between Mauritius and the Seychelles Group on the Mascarene Plateau (1.156). From a position 18°45'S, 58°40'E they extend about 650 miles N. Also described are anchorages available in the vicinity of the small islands of Cargados Carajos and on Saya de Malha Bank.
- 2 It is arranged as follows:
 Soudan Bank (11.331).
 Cargados Carajos Shoals (11.333).
 Nazareth Bank (11.353).
 Saya de Malha Bank (11.356).

Fishing

11.320

- 1 The following types of fishing are carried out on the banks:
 Handlining.
 Deep longlining.
 Trapping.
 Trawling, on Saya de Malha Bank.
- 2 Purse seining may also be carried on.
 See 1.10 for more detailed information.
Caution. It is reported that several well-known species of fish found on Saya de Malha Bank are very poisonous, although edible elsewhere.

Oil and gas offshore operations

11.321

- 1 For information see 1.11.

Weather

11.322

- 1 **Winds.** The South-east Trade Wind (1.198) blows throughout the area described, except from December to March when the NW Monsoon (1.199) prevails as far S as about latitude 15°S.
Cyclones. These may be experienced in this area. See 1.209 for further information.

Current

11.323

- 1 See the chart for information. The banks lie within the limits of the W-going South Equatorial Current, described at 1.166, except Saya de Malha Bank for which information is given at 11.358.
- 2 Between Cargados Carajos and Nazareth Bank, and over and around this bank, the current is predominantly W-going and may be strong at times. However, eddies also produce currents setting in the opposite direction.
 A sustained W-going current has been known to set through the wide passage between Nazareth Bank and Saya de Malha Bank at rates of as much as 2 kn.

Ocean routes

11.324

- 1 A number of routes, described in *Ocean Passages for the World*, pass through the waters described in this section. See also Routeing Chart 5126.

11.325

- 1 **South coast of Africa to Sri Lanka, Bay of Bengal and Malacca Strait area, passing:**
 Over the NW end of Nazareth Bank (11.353) and between that bank and Saya de Malha Bank (11.356) where there are some reported patches with a least depth of 14 m over them, the positions of which can be seen on the chart.

11.326

- 1 **Sri Lanka and Bay of Bengal to South coast of Africa, passing, depending on season:**
 Between Saya de Malha Bank (11.356) and Nazareth Bank (11.353) where there are some reported patches with a least depth of 14 m over them, the positions of which can be seen on the chart, and thence over the NW end of the latter bank, or:
 Well SE of Cargados Carajos Shoals (11.333), avoiding reported shoals with a least depth of 11 m over them, as shown on the chart.

11.327

- 1 **From Malacca Strait to South African Coast, passing:**
 SE of Soudan Bank (11.331).

11.328

- 1 **From Port Louis (20°09'S, 57°29'E) to W coast of Indian continent, passing:**
 W of all the banks and reported dangers charted in the vicinity, or, alternatively:

W of, or over, Nazareth Bank (11.353), and:

- 2 E of Saya de Malha Bank (11.356).

Between the two banks there are some reported patches with a least depth of 14 m over them, the positions of which can be seen on the chart.

11.329

- 1 **From the W coast of the Indian continent to Port Louis**, passing:

E of Saya de Malha Bank (11.356) and of Nazareth Bank (11.353), thence:

- 2 SE of Cargados Carajos Shoals (11.333) avoiding reported shoals with a least depth of 11 m over them, shown on the chart, thence:

NW of Soudan Bank (11.331) avoiding a reported 15 m shoal (11.332).

11.330

- 1 **Between Port Louis and Sri Lanka or Malacca Strait**, passing SE of Soudan Bank (11.331).

SOUDAN BANK

General information

Charts 4702, 712

Description

11.331

- 1 Soudan Bank (18°35'S, 58°45'E), formed of coral and rock, is moderately deep with no known or reported dangers having less than 13 m over them, either on the bank or in its approaches.

Directions

11.332

- 1 Deep-draught vessels navigating Soudan Bank and its approaches should avoid:
A depth of 15 m (reported 1970) (18°36'S, 58°12'E), and:
A depth of 13 m (reported 1964) (18°42'S, 58°42'E).

CARGADOS CARAJOS SHOALS

General information

Chart 1881

Description

11.333

- 1 Cargados Carajos Shoals, known locally as Saint Brandon, are an extensive group of reefs, small islands and shoals, the main reef of which extends from Pointe Requin (16°50'S, 59°30'E) in a curve, concave W, about 26 miles NNE to Puits à Eau (16°25'S, 59°37'E).

The waters S and E of the main reef appear to be deep with no dangers charted at a distance greater than 5 cables from the reef.

- 2 The waters W and N of the main reef are encumbered with dangers lying at a distance of as much as 8 miles from the reef.

Albatross Island lies in the N approach to the group, about 10 miles N of the main reef.

Caution. Recent surveys show that many of the islands lie up to 5 cables farther N and W while the main reef extends up to 2 miles farther E than is presently indicated.

Topography

11.334

- 1 The main reef, much of which shows above water, is crescent shaped, concave W. The convex E side has not been

closely examined as it is impossible to approach from seaward. The bay formed on the W side of the reef is encumbered with islets, rocks and shoals and many coral heads are reported to lie in the middle of the bay between Avocaré Island (16°36'S, 59°39'E) and Frigate Island, 7 miles W.

- 2 The islets and above-water rocks lying on the reef and off the W side are low and many are liable to be covered in heavy weather. The islands and islets lying farther from the reef are from 2 to 3 m high, the larger being covered with low shrubs and creepers, having the appearance of grass.

A meteorological station is situated on Île Raphaël (16°27'S, 59°37'E) where there is also a fishing station, as on Avocaré, about 11 miles SSE, and on Île Cocos, about 15 miles farther SSW (11.337).

Natural conditions

11.335

- 1 **Tidal streams.** See information on the chart.

At an anchorage off Coco Island (Île du Sud) (16°49'·1S, 59°30'·5E) (11.338) the stream sets N on a rising tide at a rate of ½ kn. The S-going stream is barely perceptible.

- 2 Off Frigate Island (16°36'S, 59°31'E) the streams are very slight, the S-going stream alone being distinguishable.

At an anchorage off Île Raphaël (16°27'S, 59°37'E) (11.344) the streams in both directions are felt somewhat strongly, but chiefly the N-going stream.

Climatic table

11.336

- 1 See 1.243

Principal marks

11.337

- 1 **Landmarks:**

Conspicuous clump of trees, about 21 m high (16°45'S, 59°35'E) (position approximate). The clump consists of a single palm in a gap between two groups of palms, standing on Île Cocos, a long, low island on which there is a house and other structures.

- 2 Red-roofed tin sheds on Pearl Island (Perle) (16°32'·8S, 59°30'·5W).

Directions

Charts 1881, 4702

Approaches

11.338

- 1 Cargados Carajos should not be approached at night except in good visibility or with reliable radar. Those islands on which there are trees may be seen from a distance.

Southern approach. A vessel approaching from S should make for Pointe Requin (16°50'S, 59°29'E), the SW extremity of the main reef. Approximately 2 miles ENE of this point a light is exhibited from Coco Island (Île du Sud) (16°49'·1S, 59°30'·5E) which is otherwise featureless.

- 2 In the approach a vessel should avoid (with positions from Coco Island Light):

An 11 m shoal (reported 1970) (about 40 miles SSE), and:

A 15 m shoal (reported 1970) (about 32 miles SE).

11.339

- 1 **Western approach.** For vessels approaching from W the outermost charted danger on the W side of the group is Pearl (Perle) Island (16°32'·8S, 59°30'·5E) (11.337). As there are no trees on Coco Island it will not be seen for a considerable time after sighting one of the islets between it and Avocaré, 15 miles NNE.

11.340

- 1 **Eastern approach.** The E side of the group is dangerous to approach under any circumstances. It is reported to be steep-to and a tremendous sea is always breaking over it.

11.341

- 1 **Northern approach.** Vessels approaching from N are advised to make Albatross Island (16°15'S, 59°35'E), which is covered with grass and scrub. Near the NW end of the island there are some houses and a brick building. A light is exhibited from the island but, from N, this may be obscured by trees.

Passage west of the group**11.342**

- 1 From the S approach, the N-bound track W of the group passes (with positions from Coco Island Light (16°49'1S, 59°30'5E)):
- W of Pointe Requin (2 miles WSW), the SW extremity of the main reef which may be rounded at a distance of 1 mile, thence:
- 2 W of Baleine Rocks (8 miles N) over which the swell usually breaks but which, in fine weather, with a calm sea, can be seen by discoloration of the water, thence:
- W of Frigate Island (13 miles N), thence:
- 3 W of Pearl Island (16 miles N) (11.337), thence:
- W of Pearl Rock, 2¼ miles NNE of Pearl Island, a group of rocks on the N end of a small reef, thence:
- W of Siren (Sirène) Island (21 miles NNE), thence:
- W of Puits à Eau (16°25'S, 59°37'E), the N-most extremity of the reef, thence:
- 4 W of Paté Nord-Ouest (about 16°25'S, 59°33'E), a dangerous shoal, thence:
- To a position clear of Albatross Island (16°15'S, 59°35'E) (11.341).

Passage east of the group**11.343**

- 1 Coming from S, a vessel on passage E of Cargados Carajos Shoals should give the group a wide berth, passing:
- E of Mapare (Île Paul) (16°36'S, 59°42'E), on which trees are reported, visible from a distance, thence:
- E of a dangerous rock (position doubtful), 5¾ miles N of Mapare, thence:
- 2 E of a 2.1 m shoal (16°25'S, 59°39'E), thence:
- E of North Island, 1 mile N of the 2.1 m shoal, thence:
- E of a breaker, Le Mur, 3 miles NNE of the 2.1 m shoal.

Useful marks**11.344**

- 1 Verronge (16°41'S, 59°37'E), a small sandy atoll. Îles Tec Tec, 2½ miles E of Verronge, a chain of sandy islets on the main reef.
- Avocaré Island, 4¾ miles NNE of Verronge, on which trees are reportedly visible from a distance.
- 2 Île Raphaël (16°27'S, 59°37'E), a group of three islets on which there are several buildings, including a meteorological station, and trees, connected by low sandbanks and visible from a distance.
- Light occasionally exhibited from Île Raphaël.
- Conspicuous wreck (16°32'9S, 59°30'2E) on reef on SW shore of Pearl Island.

Anchorage and services**Anchorage****11.345**

- 1 **South part of group.** Good anchorage can be obtained NNW of Coco Island (16°49'1S, 59°30'5E) (11.338). Vessels can anchor in a bay in the main reef from 2 to 4½ miles NE of the island and about 1 mile from the reef on which there is a chain of low islets lying between Coco Island and Île Cocos, 4 miles NE (11.337). Anchorage should be taken up in depths not less than 20 m, suitable positions being shown on the chart.

See 11.335 regarding tidal streams.

11.346

- 1 **Middle part of group.** Good anchorage can be obtained midway between Pearl Island (16°32'8S, 59°30'5E) (11.337) and shoal water, 4¾ miles E. Depths are about 18 m.

11.347

- 1 **North part of the group.** There is anchorage in depths of about 18 m in the positions shown on the chart:
- 7 cables ENE of Siren Island (16°28'S, 59°35'E), and:
- 3 cables W of Île Raphaël, 2 miles NE of Siren Island (11.344).

Landing places**11.348**

- 1 **Frigate Island** (16°36'S, 59°31'E) (11.342) can be landed on but the island is infested with rats.

Île Raphaël has a landing place near a flagstaff on the S side of the fishing station. A boat channel leads NE through a reef, between rocks which are awash, ½ cable S.

Services**11.349**

- 1 **Facility.** Hospital on Île Raphaël.
- Communications.** The establishments on Cargados Carajos are owned by a private company in Mauritius and are visited periodically by a vessel from that island.
- There is a helicopter pad in the NW part of the Île Raphaël group.

Small craft**Anchorage****11.350**

- 1 **Middle of the group.** Good anchorage can be obtained: W of Verronge (16°41'S, 59°37'E) (11.344), between the island and numerous shoals, 7 cables W, in a depth of about 11 m, as indicated on the chart.
- NW of Avocaré, 4¾ miles NNE of Verronge (11.344), but the approach is reported to be very difficult and local knowledge is required. There is a small fishing village on Avocaré.

11.351

- 1 **East side of the group.** Grande Passe (16°28'4S, 59°40'2E), a considerable inlet in the NE side of the main reef, affords good anchorage, a safe berth being found by a vessel of 350 tonnes in 1963. The inlet is entered N of Île Tortue which lies on the S side of the entrance but is not shown on the chart.

Boat passage**11.352**

- 1 **Mapare** (16°36'S, 59°42'E) (11.343) can be reached by canoe over the main reef.

NAZARETH BANK

General information

Charts 4702, 717

Description of waterway

11.353

- 1 Nazareth Bank (centred 14°30'S, 60°40'E) is moderately deep with no known or reported dangers less than 16 m lying on the bank. Except to the N, the approaches appear to be deep.

Topography

11.354

- 1 The known limits of the bank are shown on the chart, and are reported to be clearly indicated by a change in colour of the sea. The bank may, however, extend farther N where a number of reported patches are charted.

Directions

11.355

- 1 Deep-draught vessels traversing Nazareth Bank or navigating in the approaches should avoid:
 - An 18 m depth (14°19'S, 60°53'E).
 - A 16 m patch (reported 1956) (14°02'S, 60°51'E).
 - A 14 m patch (reported 1948) (12°25'S, 61°22'E). This is the shoalest of the patches charted N of Nazareth Bank.

SAYA DE MALHA BANK

General information

Charts 4702, 717

Description

11.356

- 1 In general, Saya de Malha Bank (centred 10°00'S, 61°00'E) is moderately deep, although there are depths, or reported depths, less than 10 m in places.
The approaches to the bank appear to be deep but see 11.355 for patches with a least depth of 14 m reported to lie S, between it and Nazareth Bank (11.353).

Topography

11.357

- 1 The marine topography of Saya de Malha Bank, as shown on the chart, depends mainly on old and incomplete surveys. The bank is, however, known to have distinct N and S parts. The bottom on both appears to be generally coral in depths less than 60 m and fine sand in greater depths.
- 2 The N and S parts of the bank are separated by a deep channel some 15 to 20 miles wide and, off the SE side of the S part there is a further, smaller, detached bank. The least depths lie near the E and N edges of the bank.

Natural conditions

11.358

- 1 **Current.** For much of the year, Saya de Malha Bank lies within the W-going South Equatorial Current described at 1.166. In this area the current is mainly of moderate constancy with an average rate of 1 to 1¼ kn, but in the early part of the year an E-going current of up to 1½ kn may become dominant at times.

11.359

- 1 **Rips and overfalls.** In the deep water NW of the N part of the bank, in position 7°45'S, 59°40'E, heavy rips and an overfall have been observed, probably caused by the meeting of the currents from the opposite sides of the bank.

Directions

11.360

- 1 **Caution.** There may be undiscovered shoals on Saya de Malha Bank. Great caution is therefore required and a good lookout should be kept when passing over it. Care should also be exercised when navigating in the vicinity of the bank. The following dangers or depths should, in particular, be avoided:
 - 2 Poydenot Shoal (9°45'S, 61°25'E).
A depth of 9 m (9°12'S, 60°21'E).
A depth of 7 m (reported 1816) (10°50'S, 61°50'E), in the SE quarter of the bank where it has been confidently reported, many years ago, that there are coral patches on which a vessel might touch.
 - 3 A depth of 7 m (reported) (8°43'S, 60°18'E) on the steep-to E side of the N part of the bank.

11.361

- 1 It is advisable for deep-draught vessels to keep in depths over 35 m, avoiding altogether:
The NE side of the S part of the bank;
The whole of the N part of the bank, and;
A depth of 23 m (reported 1924) (9°25'S, 60°55'E), charted between the two parts of the bank. This vicinity has not been examined and lesser depths may exist.

Anchorage

South part of the bank

11.362

- 1 In 1881, HM Survey ship *Fawn* (1045 tonnes) anchored in a depth of 26 m in position 9°53'S, 60°51'E, riding easily with about 190 m (7 shackles) of cable, although there was occasionally a choppy sea.

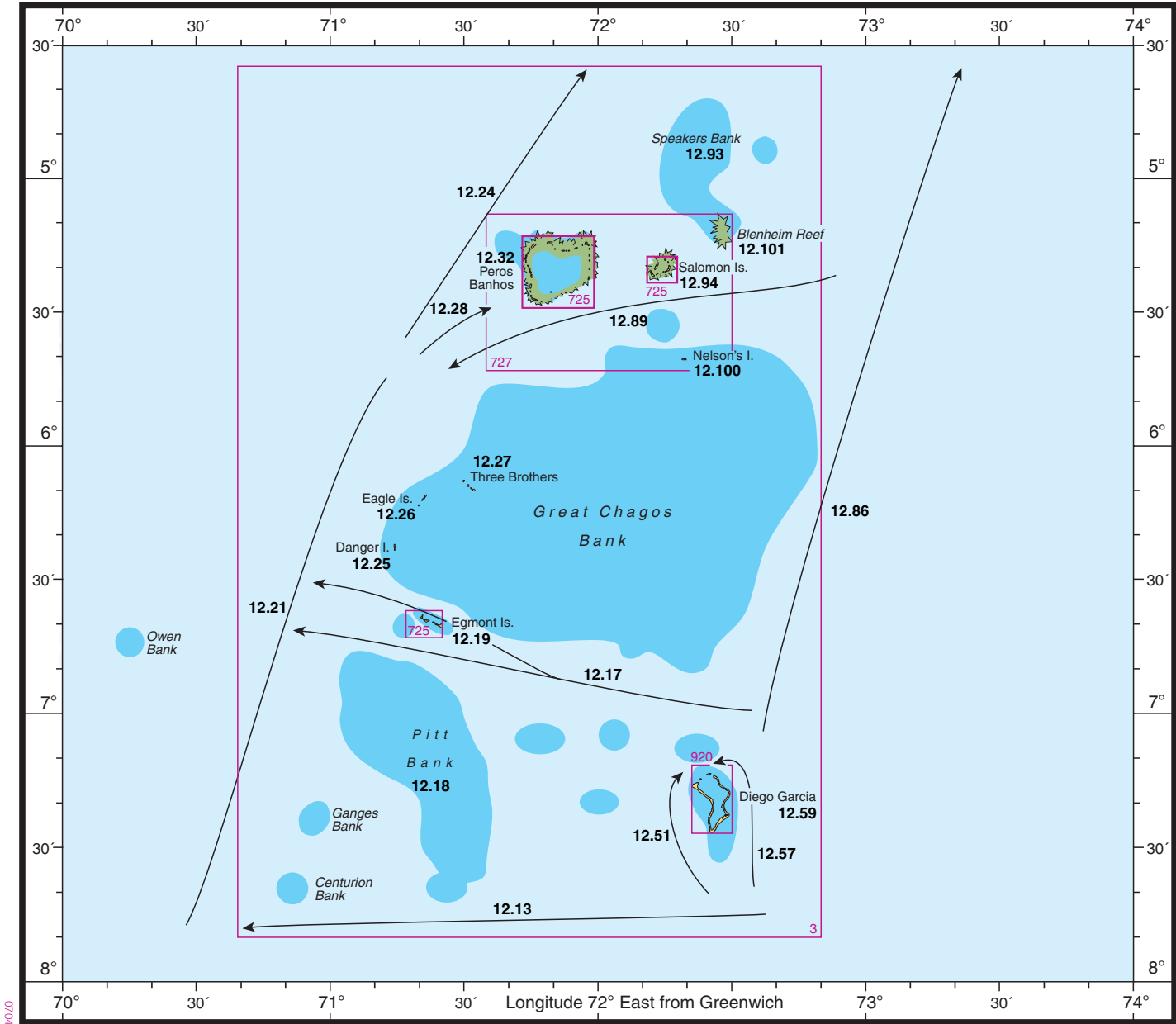
North part of the bank

11.363

- 1 Anchorage was found by the same vessel in a depth of 20 m in position 8°25'S, 60°10'E.



Chapter 12 - Chagos Archipelago



CHAPTER 12

CHAGOS ARCHIPELAGO

GENERAL INFORMATION

Chart 3

Contents of chapter

12.1

- 1 This chapter covers the sea area shown on the reference chart and contains a description of:

Passages in the vicinity of Chagos Archipelago, an extensive group of islands, banks and coral reefs lying between the parallels of 4°44'S and 7°41'S, and the meridians of 70°47'E and 72°44'E.

- 2 The harbours and anchorages in the archipelago, of which the most important is the lagoon of Diego Garcia (7°20'S, 72°27'E) (12.59).

Topography

12.2

- 1 The most remarkable feature of Chagos Archipelago is the general atoll character of the islands, banks and reefs. In this respect, Great Chagos Bank, the central part of the archipelago, is typical. A narrow, shallow coral ridge, steep-to on the seaward sides, rims the bank; on the W and N sides there are a few islands described later in the text. Within the ridge the depths are considerable, in places, but there are numerous isolated coral heads the positions and depths over which can best be seen on the chart.

- 2 In some places on Great Chagos Bank there is soft clay which affords good holding, but see 12.4 regarding passage across the bank.

Radar characteristics

12.3

- 1 All islands within the archipelago are low in elevation and radar detection and recognition is generally poor, with the following exceptions:

Danger Island (6°23'S, 71°14'E), has been detected by radar at a range of nearly 10 miles on a SE bearing.

Eagle Islands (6°12'S, 71°19'E), have been detected by radar at a range of 17 miles on a SSE bearing.

- 2 Diego Garcia (7°20'S, 72°27'E) (12.52), shows well on a radar display, but vessels in the lagoon are reported to show more clearly at a distance.

Île du Coin (5°27'S, 71°46'E), has given radar responses when bearing NNE, up to a range of 12½ miles.

- 3 Île Poule (1¼ miles N of Île du Coin) has been detected by radar at a range of 20 miles on an E bearing.

Depths

12.4

- 1 **Caution.** Before entering the area surrounding the archipelago the mariner's attention is drawn to the notes on the chart with reference to the accuracy of the charted depths.

- 2 It is possible to cross the deeper parts of the banks when there is little swell but, considering the uncertain depths of partially examined areas, the changing topography of coral reefs, and the unexpected manner in which the sea sometimes breaks, it is best to avoid them, especially as the islands can be reached without crossing a bank.

- 3 If it becomes necessary to cross a bank the passage should be made by day, whenever possible, with a good lookout kept from a high vantage point and the sun astern.

Fishing

12.5

- 1 Fishing with traps, handlines, longlines and purse seine nets is carried on in the waters described; see 1.10 and 1.134 for further information.

Hazards

12.6

- 1 Navigational marks. See 1.7.

Weather

12.7

- 1 **Winds.** From April to November the South-east Trade Wind (1.198) prevails; for the rest of the year the archipelago is influenced by the NW Monsoon (1.199).

A cyclone occurred in 1891, when great damage was caused.

Thunderstorms. See 1.199 for the incidence of thunderstorms and associated squalls during the NW Monsoon.

- 2 **Sea and swell.** Swell is a regular feature of the area; see 1.176 for details.

When the currents and tidal streams described below are opposed there is a confused swell which breaks on the shoaler parts of the banks in heavy rollers, the waves rising to a height of about 5m.

Flow

12.8

- 1 **Current.** From January to April the archipelago lies within the Equatorial Counter-current (1.164) which is mostly moderate in constancy, setting mainly E or NE at about 1kn, and sometimes attaining a rate of 1½ kn.

- 2 From May to December the boundary between the E-going SW Monsoon current (1.165) and W-going South Equatorial Current (1.166) lies within or close to the archipelago. As a consequence, although the currents are very variable, E sets tend to be more frequent in the N of the area and W sets in the S, depending on the position of the boundary; rates average ½ to 1½ kn. As an example of the variability of the current, an E set with a rate of 3 kn was experienced about 10 miles S of Diego Garcia in September, 1989.

- 3 At times, particularly in May, June, September and October, a clockwise circulation of the current can be discerned in the waters of the archipelago, with a predominantly S-going current to E of about longitude 72° E.

12.9

- 1 **Tidal streams.** See 1.172; on the banks and near the islands of the archipelago the tidal streams are regular. In some parts of the archipelago the current and tidal stream set obliquely or directly towards each other, with consequent variation in the rate and direction of flow.

Rescue

12.10

- 1 See 1.52 for details of a reporting system designed to provide information for SAR operations.

SOUTH AND WEST PARTS OF CHAGOS ARCHIPELAGO

GENERAL INFORMATION

Chart 3

Scope of the section

12.11

- 1 In this section are described the sea passages, S, W and NW of Great Chagos Bank, which pass:
Several lesser banks SW of Great Chagos Bank, of which the outermost is Centurion Bank ($7^{\circ}39'S$, $70^{\circ}50'E$).
Egmont Islands ($6^{\circ}40'S$, $71^{\circ}22'E$).
- 2 Some small islands on the W side of Great Chagos Bank.
Peros Banhos ($5^{\circ}20'S$, $71^{\circ}52'E$), the largest group of islands in the archipelago.
Also described are a number of anchorages on the banks and off the islands.
- 3 The section is arranged as follows:
Passage S of Great Chagos Bank, including Egmont Islands (12.13).
Passage W of Great Chagos Bank (12.21).
West approaches to Peros Banhos, NW of Great Chagos Bank (12.28).

Ocean routes

12.12

- 1 The ocean route between SW Australia and Gulf of Aden/Red Sea ports passes SW of the group. Details are given in *Ocean Passages for the World*; see also Routeing Chart 5126.

PASSAGE SOUTH OF
GREAT CHAGOS BANK INCLUDING
EGMONT ISLANDS

General information

Description of waterway

12.13

- 1 The waterway describes a route which leads south of Great Chagos Bank where there are several banks, the positions of which, and depths over them, can be seen on the chart.
Farther S and W, the waters appear to be deep and clear of charted dangers.

Charts 3, 725 plan of Egmont Islands

Topography

12.14

- 1 South of Great Chagos Bank, several lesser banks lie to the SW and S which are steep-to and separated by wide, deep water channels. Egmont Islands ($6^{\circ}40'S$, $71^{\circ}22'E$), lie on the S and W sides of a steep-to atoll reef, 7 miles SW of the main bank while, to the E, Diego Garcia ($7^{\circ}20'S$, $72^{\circ}27'E$) (12.52) lies 31 miles S. These form the only above-water part of Chagos Archipelago, S of Great Chagos Bank.

Tidal streams

12.15

- 1 Over Centurion Bank ($7^{\circ}39'S$, $70^{\circ}50'E$), in July, 1905, these were observed to set W and NW during a falling tide at a rate of about $\frac{1}{4}$ kn.
At an anchorage off the N side of Egmont Islands atoll (12.19) the tidal stream sets NW at a maximum rate of $\frac{1}{2}$ kn

during a falling tide; with a rising tide the stream is not appreciable.

Directions

Chart 3, 725 plan of Egmont Islands

12.16

- 1 On passage, S of Great Chagos Bank, from a position well S of Diego Garcia ($7^{\circ}20'S$, $72^{\circ}27'E$) (12.52), the route leads W, passing:
S of Wight Bank, coral (reported 1886) ($7^{\circ}25'S$, $71^{\circ}31'E$) (existence doubtful); caution should be exercised if navigating in the vicinity of the charted position. Thence:
- 2 S of Pitt Bank ($7^{\circ}05'S$, $71^{\circ}20'E$). An uncharted buoy (radar reflector) is moored on the NW point. Thence:
S of Centurion Bank ($7^{\circ}39'S$, $70^{\circ}50'E$), on the W side of which a buoy is moored. Heavy rollers have been seen to break over the NE edge of the bank.

12.17

- 1 If it is not possible to pass well S of this area, the precautions at 12.4 should be followed with the track passing clear of the above banks. From a position N of Diego Garcia ($7^{\circ}20'S$, $72^{\circ}27'E$), an alternative route leads WNW, passing:
S of Cauvin Bank ($6^{\circ}49'S$, $72^{\circ}21'E$), situated off the SE point of Great Chagos Bank, thence:
S of Great Chagos Bank, thence:
- 2 Either N or S of Egmont Islands ($6^{\circ}40'S$, $71^{\circ}22'E$) (12.19), and the atoll reef over which the sea breaks.
The chart indicates these islands may be passed on either side, but it is advisable:
If proceeding SW of the islands, to pass well SW of a 3.5m shoal (reported 1932) (2 miles SW) (position doubtful), and:
- 3 N of Pitt Bank, 10 miles S of Egmont Islands. Or: If passing NE of the islands, to keep in mid-channel between the atoll reef and Grand Chagos Bank.
Thence S of Danger Island ($6^{\circ}23'S$, $71^{\circ}14'E$), and a small drying reef, 3 miles S, situated on the SW extremity of Great Chagos Bank, thence:
- 4 S of an area of discoloured water, 6 miles SW of Danger Island (reported 1940) (position doubtful), thence:

To a position W of Chagos Archipelago.

(Directions for passage W of

Great Chagos Bank are given at 12.23.

Directions for passages SE and E of

Great Chagos Bank are given at 12.54)

Anchorages

Charts 3, 725 plan of Egmont Islands

Pitt Bank

12.18

- 1 This bank is scattered with numerous coral heads, the least charted depth being 7 m, and should be approached with extreme caution in view of the lack of recent surveys, as uncharted dangers may exist.
- 2 Previously, a vessel (900 tonnes) reported anchoring in a depth of 15m in position $7^{\circ}20'2S$, $71^{\circ}28'0E$. The weather was very fine but swells rose suddenly and crossed the bank in all directions; no breakers were seen but it was considered there would probably be many in heavy weather.

Egmont Islands

12.19

- 1 There are three main islands in this group; Île Sudest, at the SE end of the atoll, Île Lubine (2 miles WNW) in the middle, and Île Sipaille (6°39'S, 71°19'E) at the NW end. Île Tattamucca and Île Carre Pate are joined to the NW extremity of Île Sudest, and Île des Rats is the N extension of Île Sipaille. The islands are thickly covered with coconut palms and bushes.
- 2 On two occasions in 1905, during the South-east Trade Wind, HM Surveying Ship *Sealark* (900 tonnes) anchored off the N side of Egmont Islands atoll in a depth of 11m, in the position shown on the chart, with the N extremity of Île Sudest (6°40'S, 71°23'E) bearing 131° and the E extremity of Île Lubine (2 miles WNW) bearing 183°. This position is just outside a broad but shallow gap in the atoll reef which forms the only entrance to the lagoon.

Small craft

Anchorage

12.20

- 1 Shelter from the South-east Trade Wind can be obtained in the lagoon of Egmont Islands atoll, off the N coast of Île Sudest. Care must be taken to avoid coral heads which encumber the lagoon; these are difficult to see in overcast conditions but may be identified by the sea breaking over them.

PASSAGE WEST OF GREAT CHAGOS BANK

General information

Charts 3, 727

Description of waterway

12.21

- 1 The route between South Africa and the Bay of Bengal passes to the NW of the archipelago.
The approaches to the W side of Great Chagos Bank, on or close within which there are some small islands, appear to be deep and clear of dangers except for a small area of discoloured water (6°27'S, 71°09'E) (12.23).
- 2 Two deep channels lead on to Great Chagos Bank through gaps in the coral ridge which forms the W side of the bank. One lies 8½ miles SE of Danger Island (6°23'S, 71°14'E), the second close SW of Three Brothers islands (21 miles NE of Danger Island); the latter channel has a least width of 1½ miles.

Topography

12.22

- 1 The islands are covered or nearly covered with trees, mainly coconut palms. The profiles of the island beaches change with changes in the winds described at 12.7.

Directions

12.23

- 1 From a position W of Centurion Bank (7°39'S, 70°50'E) the route W of Great Chagos Bank, leads generally NNE, passing (with positions from Danger Island (6°23'S, 71°14'E)):
WNW of Ganges Bank (61 miles SSW) on which a buoy (radar reflector) is moored. There may be less water than charted over this bank. Thence:

- 2 WNW of Pitt Bank (30 miles SSW), thence:
WNW of Egmont Islands (6°40'S, 71°22'E) (12.14), thence:
WNW of an area of discoloured water (reported 1940) (6 miles SW) (position doubtful), lying off a reef, over parts of which the sea generally breaks, that extends 3 miles SSE from Danger Island. This area should be given a wide berth. Thence:
- 3 WNW of Danger Island around the coast of which the sea breaks heavily, thence:
WNW of a reef, over which the sea breaks, that lies between N and S Eagle Islands (9½ and 12 miles NNE), extending 5 cables SW, thence:
- 4 WNW of the deep water channel (12.21), the N edge of which is marked by Three Brothers Islands. Surf and reefs fringe this group, which comprises South Brother, Middle Brother and North Brother, and a rocky islet situated on the SE side of a channel between the first two islands. Thence:
- 5 To a position WNW of the NW point of Great Chagos Bank (38 miles NNE).
(*Directions for Peros Banhos continue at 12.30*)

12.24

- 1 To continue NNE, the track passes:
WNW of Peros Banhos atoll (5°20'S, 71°52'E) (12.29), thence:
WNW of Benares Shoal, (about 3 miles off the NW side of Peros Banhos atoll); the sea seldom breaks over this shoal which should be given a wide berth, thence:
- 2 WNW of Speakers Bank (4°54'S, 72°20'E) (12.93), thence:
To a position N of Chagos Archipelago.

Anchorage and landing place

Danger Island

12.25

- 1 **Anchorage**, which is good, may be obtained E of Danger Island (6°23'S, 71°14'E), in a depth of 31m. The access channel (12.21), with a width of about 1¼ miles, lies 8½ miles SE of Danger Island and has a charted depth of 73 m on the NW side, which is steep-to, while the SE side is shallower and sloping. See 12.4 for navigation over Great Chagos Bank.

Eagle Islands

12.26

- 1 **Anchorage** may be obtained between the two Eagle Islands in depths from 7 to 16m, sand and coral, but care must be taken to avoid the reef mentioned at 12.23.

Three Brothers islands

12.27

- 1 **Landing** is difficult (12.23) but boats can, however, approach from N and land on the E coast of Middle Brother which is sheltered by the reef.

WESTERN APPROACHES TO PEROS BANHOS, NW OF GREAT CHAGOS BANK

General information

Charts 3, 727, 725 plan of Peros Banhos

Description of waterway

12.28

- 1 The waters NW of Great Chagos Bank appear to be deep and are clear of charted dangers, except for Peros Banhos, an extensive, steep-to atoll-shaped group of islands, and Benares Shoal, 3 miles WNW (12.24).

Topography

12.29

- 1 All the islands of Peros Banhos are low, the greatest elevation being about 3m; however, except for Coin du Mire (5°26'S, 71°53'E) (12.31), they are covered with coconut palms which may be seen at a distance. The highest trees are over 30m high on Île du Coin and Île Diamant, at the SW and NW points of the atoll, respectively; those on Grande Île Bois Mangue, in the middle of the N side, are also tall.
- 2 The seaward sides of the islands are formed mainly of coral boulders; the inner sides are sandy with bare spits extending from each end. The land is subject to great change, being washed away in one wind and piled up in another.

Directions

(continued from 12.23)

12.30

- 1 From a position off the NW point of Great Chagos Bank the atoll of Peros Banhos lies NE distant about 27 miles, surrounded by open water which is deep and clear of charted dangers, other than Benares Shoal (5°15'S, 71°40'E), with a least charted depth of 4.6 m over it, NW of the atoll.

12.31

- 1 **Useful marks:**
House (red roof) (5°26'9S, 71°45'5E) on Île du Coin. Coin du Mire, 6 miles ENE of Île du Coin, a flat-topped rocky islet with grassy patches.
Gap between Île Diamant (5°15'S, 71°46'E) and Île de la Passe, at W end of Moresby Islands, 2¼ miles E, which is noticeable from N and NW.
Salomon Islands, 13 miles E of Peros Banhos, (12.90).
(Directions for Peros Banhos lagoon are given at 12.36)

Peros Banhos lagoon

Chart 725, plan of Peros Banhos

General information

12.32

- 1 **Description.** The lagoon of Peros Banhos atoll affords anchorage in a number of places; however, none is completely sheltered as the entrances to the lagoon are wide and its waters open.

Topography. The lagoon is encumbered by numerous coral heads, mostly in the SW part; their positions can best be seen on the plan.

- 2 **Approach and entry.** The atoll is best approached from S and the lagoon entered over a bar between Île Fouquet (5°28'S, 71°49'E) and Île Vache Marine, 2¼ miles NNE. This entrance affords easiest access to anchorage and other entrances are rarely used; however, if an approach is made from NW during the NW Monsoon the lagoon may be entered either by Moresby Channel, W of Île de la Passe (5°14'S, 71°49'E), or through Passe de l'Île Poule, 8½ miles SSW.

Limiting conditions

12.33

- 1 **Controlling depths:**
Main entrance: 11.0m.
Passe de l'Île Poule: 14.6m.
Moresby Channel: 11.0m.
The channels appear to be free from dangers.
Largest vessels. See 12.36 and 12.37.

Natural conditions

12.34

Tidal streams:

	<i>Interval from HW Local Durban</i>	<i>Position</i>	<i>Remarks</i>
2	-0430 (-0630)	E of Île Vache Marine	Stream sets NNW at a maximum spring rate of about ½ kn
3	+0130 (-0030)		Stream sets SSE at a maximum spring rate of about ½ kn
4	-0300 (-0500)	Passe de l'Île Poule	Stream sets W at a maximum spring rate of about ¾ kn
5	+0300 (+0100)		Stream sets E at a maximum spring rate of about ¾ kn

- 6 The streams are generally felt throughout the lagoon, although at an anchorage off Île Fouquet (12.39) they are barely appreciable. At anchorage off Île du Coin (12.40) the stream sets NW during a rising tide, attaining a maximum rate of ½ kn, but is scarcely felt during a falling tide.

Tide-rips may be experienced in the lagoon entrances.

12.35

- 1 **Sea** is sometimes slightly confused over the bar in the main entrance, when an out-going tidal stream opposes wind and swell.

Swell is generally felt throughout the lagoon.

Directions for entry

12.36

- 1 **Leading bearings.** The line of bearing 269° of the distinctive red roof of a house (5°26'9S, 71°45'5E) situated close to the root of a pier at an abandoned settlement on the NW end of Île du Coin leads over the bar of the channel between Île Fouquet and Île Vache Marine, and to anchorage off the E end of Île du Coin, described at 12.41; the bottom can be seen in the shoaler parts of the channel.

- 2 A vessel of 16 000 tonnes drawing 8.7m has used this track for entry and departure.

12.37

- 1 From off the E end of Île du Coin the line of bearing 286° of the N extremity of Île Anglaise, close N of Île du Coin, leads through the fairway of the lagoon towards anchorage off Île du Coin (12.40). See 12.29 as regards changes in topography.

A vessel of 8000 tonnes drawing 5.8m is reported to have followed the tracks described above.

12.38

- 1 **Caution.** Passage E and N of Île Vache Marine is not recommended, nor should a track N of that described be followed on account of various dangers in the locality; this is notwithstanding that, in fair weather, shoals in the lagoon can easily be seen from a high vantage point while, in bad weather, the sea breaks over some of them.

Anchorage

12.39

- 1 **Île Fouquet.** During the South-east Trade Wind anchorage N of Île Fouquet, in the position shown on the plan, is the quietest in the lagoon, but it is only 1 cable off the atoll reef.

12.40

- 1 **Île du Coin.** The usual anchorage during the South-east Trade Wind is off the E side of the NW end of Île du Coin, in a depth of 22m, with the N extremity of the island

bearing 274° and the E extremity bearing 128°; this position, shown on the plan, is moderately well sheltered from the wind and is reported to be so also from the NW Monsoon.

The vessel mentioned at 12.37 is reported to have anchored 5 cables E of the NW end of Île du Coin.

12.41

- 1 The vessel mentioned at 12.36 anchored about 7 cables NE of the E end of Île du Coin, with the W extremity of Île Vache Marine bearing 060° distant 2½ miles; this anchorage is comfortable in fair weather, but is not sheltered from SE swell.

12.42

- 1 **Île Diamant.** During the NW Monsoon, anchorage off Île Diamant (5°15'S, 71°46'E) is to be preferred; the best berth is in depths from 26m to 31m with the centre of the island bearing 310°, distant about 5 cables, as shown on the plan.

12.43

- 1 **Other anchorages** are charted on the plan:
2¾ cables W and 1¼ miles NNW of the N extremity of Petite Île Coquillage (5°20'S, 71°58'E).
1¼ miles SW of Île Yéyé (5°14'S, 71°58'E).

Pier

12.44

- 1 From the NW end of Île du Coin a ruined wooden pier projects 175m NE. The head of the pier is a concrete platform 7.6m long and 9.1m wide with a height of about 3m above the bottom. A flagstaff and a derrick stand on the platform which was constructed for the loading of copra.

The platform does not extend seaward of the edge of the reef fringing Île du Coin.

Landing places

12.45

- 1 It is difficult to land on any of the islands both on account of swell and because of the fringing reefs; in most cases it is not possible except near HW.

On Île du Coin, in 1979, a boat channel close N of the pier described above enabled landings to be made at its root within 4 hours of HW, but the channel silts up during the NW Monsoon. There is another boat channel S of the pier.

Small craft

Île Diamant

12.46

- 1 **Boat passage** leads through the reef on the SE side of Île Diamant, but it is only available when the tide is above mean level.

Other names

12.47

- 1 Coquillage, Grande Île (5°22'S, 71°58'E).
Danger Shoals (5°25'S, 71°48'E).
Grande Soeur (island) (5°20'S, 71°45'E).
Manoel, Île (5°15'S, 71°55'E).
Mapou, Grande Île (5°15'S, 71°45'E).
Parasol, Île (5°16'S, 71°51'E).
Petite Soeur (island) (5°22'S, 71°45'E).
Pierre, Île (5°17'S, 71°44'E).

EAST PART OF CHAGOS ARCHIPELAGO

GENERAL INFORMATION

Chart 3

Scope of the section

12.48

- 1 This section describes the sea passages E of Great Chagos Bank and Diego Garcia (7°20'S, 72°27'E), the S island of Chagos Archipelago.

Also described is the lagoon of Diego Garcia which forms an important naval harbour.

- 2 The section is arranged as follows:

Diego Garcia and approaches, SE of Grand Chagos Bank (12.51).

Passage E of Grand Chagos Bank (12.85).

Ocean routes

12.49

- 1 Routes between Port Louis and Colombo, and from Colombo, Bombay and Bay of Bengal to South African ports, pass SE of Diego Garcia. Details are given in *Ocean Passages for the World*; see also Routeing Chart 5126.

Regulations

12.50

- 1 **Pollution.** Ships' fuel tanks may not be cleaned or blown down within the limits of territorial waters around Diego Garcia (see 1.134 for details).

DIEGO GARCIA AND APPROACHES, SOUTH-EAST OF GRAND CHAGOS BANK

General information

Chart 3

Description of waterway

12.51

- 1 The waters of the SE approaches to Great Chagos Bank appear to be deep and are clear of charted dangers except for Diego Garcia (7°20'S, 72°27'E), and Cauvin Bank (6°49'S, 72°21'E) (12.17).

Charts 3, 920

Topography

12.52

- 1 Diego Garcia consists of a main island which almost encircles an extensive lagoon (12.60), and four small islands lying on reefs in the entrance to the lagoon, at the N end. The land is low-lying, with general elevations from 1 to 1.5m, the outer part being the highest in consequence of the coral boulders piled up by the sea; it is, however, subject to change, being at times washed away in one part and raised in another (see 12.72).

- 2 On first approach the island appears as a dark smudge on the horizon. From a short distance it appears to be covered with vegetation, generally bright green in colour, fringed by a white sandy beach. The principal trees are coconut palms the tops of which are, in some places 50m high; on both sides of the island there are also clumps of casuarina. It is reported that the land and trees of the S part of the island can be more easily seen than the N part, and this may cause confusion when making a landfall. On the E side of the S

end of the island and close ENE of Simpson Point (7°16'S, 72°21'E) there are numerous radio masts.

Principal marks

12.53

1 Landmarks:

Domed tower (7°18'·7S, 72°25'·1E) about 45 m in height.

Airport control tower (7°18'·5S, 72°24'·7E), 40 m in height, from where an aero light is exhibited.

Water tower (red and white chequers, red light) (9 cables WNW of domed tower).

2 Port control tower (yellow) (7°17'·5S, 72°23'·6E).

White dome (7°16'·0S, 72°21'·8E).

Water tower (red and white chequers, red light) (7°15'·9S, 72°22'·5E).

All the above marks are conspicuous; when approaching the island from W the water towers are the first marks to be sighted.

3 Major light:

Minni Minni Direction Light (7°19'·5S, 72°28'·5E) (12.71).

Directions

Approaches to Diego Garcia

12.54

- 1 When navigating the waters SE of Great Chagos Bank, Diego Garcia can be safely approached if visibility is at least 2 miles. Without reliable radar, however, great caution is necessary at night when the island is sometimes enveloped in mist; if the lights on the island are not sighted it should not be approached at all without radar. In the vicinity of the island the coast may be followed at any convenient distance, as described below; the small islands in the entrance to the lagoon can be passed at a distance of not less than 4 cables.

Passage west of Diego Garcia

12.55

- 1 From a position S of Diego Garcia, passing W of the island, a N-bound vessel should pass (with positions from the domed tower (7°18'·7S, 72°25'·1E)):

Clear of an 18m depth (doubtful) (8¾ miles S) (position approximate) off South Point, thence:

W of Simpson Point (4½ miles NW), thence:

- 2 NW of Eclipse Point (4 miles NW) which is easily identified and is reported to show well on a radar display, thence:

NW of West Island (4¼ miles NNW) (12.72) which may be clearly distinguished at a distance of about 5 miles and is reported to show well on a radar display, and on which a light (12.72) is exhibited, thence:

- 3 To a position in the approaches, NW of Main Passage, the entrance to Diego Garcia lagoon (12.62).

12.56

1 Useful marks:

Mast (7°19'·0S, 72°24'·7E).

Radio tower (5 cables WNW of mast).

Radio mast (7°16'·8S, 72°22'·1E).

Domes (about 3½ cables WNW of radio mast).

Dome (white) (5½ cables N of radio mast).

Radio tower (flashing red light) (7°15'·7S, 72°22'·7E).

No 5 Light-beacon (7°14'·9S, 72°23'·1E) (12.72).

(Directions for passage E of Great Chagos Bank continue at 12.86)

Passage east of Diego Garcia

12.57

- 1 From a position S of Diego Garcia, passing E of the island, a N-bound vessel should pass (with positions from the domed tower (7°18'·7S, 72°25'·1E)):

SE of South Point (8 miles S), thence:

E of a depth of 29m (reported 1969) (6¾ miles SE), off Horsburgh Point, thence:

- 2 E of Cust Point (4¾ miles ENE), thence:

NE of Barton Point (4¾ miles NNE), which is low but covered with trees, thence:

NE of East Island (5 miles N) (12.73), which may be clearly distinguished at a distance of about 5 miles, thence:

- 3 NE of Middle Island (5 miles N) (12.72), which may be clearly distinguished at a distance of about 5 miles, thence:

To a position in the approaches to the entrance to Diego Garcia lagoon (12.59), NW of Main Passage (12.62).

12.58

1 Useful marks:

Aero light (7°18'·5S, 72°24'·3E) (12.53).

No 5 Light-beacon (7°14'·9S, 72°23'·1E) (12.72).

(Directions for Diego Garcia lagoon are given at 12.72.

Directions for passage E of Great Chagos Bank are given at 12.86)

Diego Garcia lagoon

Chart 920

General information

12.59

- 1 **Function.** Diego Garcia lagoon (entrance 7°14'·4S, 72°23'·3E) forms a large harbour which is the site of a United States Navy Support Facility and a naval radio station.

The lagoon affords extensive anchorage with holding ground reported to be good everywhere; there are also some alongside berths.

- 2 It is, however, a closed port, the facilities of which are available only to United Kingdom and United States public vessels, or vessels on charter to their governments, or other vessels by prior arrangement with UK Authorities in London, without which they may be refused entry. Landing is at the discretion of the British Representative (1.137).

12.60

- 1 **Topography.** The island virtually surrounds the lagoon which is crescent-shaped and aligned N/S, with the N part, being the widest and deepest, forming the main anchorage.

The majority of the island is narrow, low and covered with trees among which are several small, deserted settlements. The present modern settlement is situated on the widest, NW part of the island, E and SE of Simpson Point (7°16'·3S, 72°21'·2E).

12.61

- 1 In the lagoon, in the N part, including Orient Bay (12.77), and S of about latitude 7°18'·5S, there are numerous shoals the positions of which can best be seen on the chart. Elsewhere, the broad expanse of the N part of the lagoon has been dredged, except for Eclipse Bay (12.76), at the NW end, and Rambler Bay (12.78), at the SE end.

12.62

- 1 **Approach and entry.** Approaching from the W the first object visible will be a large water tower, 48 m in height (7°15'·9S, 72°22'·5E). Ships at anchor will be the next visual objects but the conspicuous dome (7°15'·9S, 72°21'·8E) will not be visible until 8 miles offshore. The lagoon entrance is approached from NW.

- 2 Entry to the lagoon is through Main Passage (7°14'4S, 72°23'3E); neither Middle Passage (1½ miles NE of Main Passage) nor Barton Passage (2½ miles ENE of Main Passage) is recommended.

Outer anchorage. Owing to the depth of water there are no anchorages outside the lagoon, and vessels awaiting entry should drift off at a safe distance, clear of the approach to Main Passage.

- 3 **Traffic.** In 2003, 14 non-naval vessels with a total dwt of 315 869 used the port.

12.63

- 1 **Port Authority.** The United States Naval Authority is:
The Commanding Officer
Navy Support Facility
Diego Garcia
FPO San Francisco
96885 USA.
- 2 The British Representative is:
The Royal Naval Liaison Officer
Naval Party 1002
BFPO 485, Diego Garcia.

See 1.137 for further information, including local responsibilities.

Limiting conditions

12.64

- 1 **Depth.** The deepest draught vessel anchored within the lagoon: 13.7 m.

Routine vessels anchoring: 11.3 to 12.2 m.

See caution at 12.74 regarding navigation in the lagoon and that on the chart regarding depths and shoaling.

- 2 **Deepest and longest berth** is at Deep Draught Wharf (12.81).

Tidal levels. At Diego Garcia the mean spring range is about 1.6 m; mean neap range is about 0.4 m. For further information see *Admiralty Tide Tables Volume 3*.

Arrival information

12.65

- 1 **Port operations.** Vessels enter and leave the lagoon in daylight hours; night movements are practicable but are only allowed with the permission of the Port Authority.

Port radio See *Admiralty List of Radio Signals Volume 6(3)*.

- 2 **Notice of ETA** is required at least 24 hours prior arrival; messages should be addressed to the United States Naval Authority if on charter to the United States Government, otherwise to the Royal Naval Liaison Officer.

12.66

- 1 **Pilotage** is recommended and available during daylight. Pilots are provided by the United States Navy and board by tug or launch about 2 miles NW of Main Passage, in the position indicated on the chart.

- 2 **Tugs** equipped with VHF are available and stand by in the entrance channel on arrival; they use their own lines; for further information see *Admiralty List of Radio Signals Volume 6(3)*.

12.67

- 1 **Regulations concerning entry.** Vessels intending to enter the lagoon must notify their intention before doing so, in the case of the Royal Navy or Royal Fleet Auxiliary ships to the British Representative, and in case of United States public vessels or vessels on charter to the United States Government, to the Commanding Officer US Naval Support Facility. Health and immigration officials board vessels on arrival; Deratting Certificates or Deratting Exemption Certificates are required.

Harbour

12.68

- 1 **General layout.** From Main Passage a dredged and swept entrance channel leads about 1½ miles SE into the broad part of the lagoon which forms the main anchorage (12.76).

On the SW side of the lagoon, between a small craft basin (7°17'5S, 72°23'5E) and a SKARDA Pier, 1¼ miles E, are a number of alongside berths.

12.69

- 1 **Flow.** In the approach to Main Passage the direction and speed of the tide stream are reported as being unpredictable, prior to entering the lagoon. The set is sudden and begins approximately 5 cables W of the buoyed channel and dies once clear of No 6 buoy inbound. In 2001 it was reported that a vessel experienced a 3 kn SW current in the approaches to Main Passage and that on occasions, the current may attain a rate of 4 kn in either a SW or NE direction.

- 2 The tidal streams are strong round the E end of East Island (7°13'6S, 72°25'3E) where they cause considerable erosion.

Within the lagoon the tidal streams decrease rapidly and are barely perceptible about 2 miles inside the entrance.

Off East Point (7°21'2S, 72°27'8E) the tidal streams attain rates of about ½ kn.

12.70

- 1 **Sea and swell.** Rough seas may be experienced in the lagoon, particularly when the South-east Trade Wind is blowing; these winds may also cause swell at the alongside berths.

During the NW Monsoon, swell and a short choppy sea set into the E part of the lagoon.

- 2 **Climatic table.** See 1.244; although rain falls on most days it is often limited to a brief shower; droughts have sometimes lasted for months.

Seismic activity. Earthquake shocks are sometimes felt.

Principal marks

12.71

- 1 **Landmarks:**

Port control tower (7°17'5S, 72°23'6E) (12.53). A light is exhibited from the control tower.

Point Marianne (7°18'7S, 72°25'9E), which is very distinctive from N on account of its tall dark trees.

Major light:

- 2 Minni Minni Direction Light (round stainless steel tower with platform, 14 m in height) (7°19'5S, 72°28'5E) (see view page 294). The light is activated by the Marine Control Centre at the Pilot's request by day or night. The white sector, 0.2°, has a reported beam width of about 50 m at Main Passage entrance, with green and red sectors of 0.7° each.

Directions for entering harbour

12.72

- 1 From the pilot boarding place (7°13'1S, 72°21'8E), the track leads along the line of bearing 134° in the white sector (133.9°–134.1°) of Minni Minni Direction Light (7°19'5S, 72°28'5E) (12.71) for 2 miles to Main Passage, thence through the entrance channel between light-buoys, the positions of which can be seen on the chart, into the lagoon, passing:

- 2 Between West Island (SW side of entrance), covered with trees and bushes and on the NE point of which a light is exhibited from No 5 Beacon (orange and black chequered diamond on silver framework tower), and;



Minni Minni Direction Light (12.71)
(Original dated 2002)

(Photograph – Vega Industries Ltd.)

- 3 SW of Spurs Reef (NE side of entrance), which extends SW from Middle Island, covered with trees and bushes; the sea always breaks on the NW side of the reef. Anniversary Island lies 5½ cables SW of Middle Island. An obstruction, believed to be a tripod structure lying on its side, one leg of which

dries 1.8 m, is situated about 1 cable SW of the islet. The reef is still growing.

- 4 **Caution.** Care should be taken to allow for the flow off the entrance (12.69), which is reported from a tug stationed there, on arrival and on departure. On arrival, it is recommended that a long approach to the entrance be planned, in order to assess the effect of the set before entering the channel, the tidal stream being reported as unpredictable. The channel light-buoys are occasionally off station, particularly during the NW Monsoon.

12.73

- 1 **Useful marks:**

East Island (2¼ miles NE of West Island), the W part of which is composed of sand, piled up on the reef, and is covered with trees; the even surface of the rest of the island has an elevation of about 1.2m and is covered with low scrub.

- 2 Radio tower (8 cables SSW of West Island) (12.56). SKARDA Pier (12.81), on the SW side of the lagoon, is also reported to be a good mark.

Directions for lagoon

12.74

- 1 The chart is adequate guide for navigation of the broad part of the lagoon, between Eclipse Point (7°15′.5S, 72°22′.8E) (12.55) and Minni Minni Patch (7°18′.6S, 72°28′.3E), and of Orient Bay in the NE corner of the lagoon.
- 2 The narrow S part of the lagoon is navigable to within about 3 miles of its S end by a channel entered in the vicinity of D Buoy (7°18′.9S, 72°27′.2E) but it is essential to mark the charted dangers near the intended track, in advance.

Caution should be exercised when navigating in the lagoon as there may be less water than charted; uncharted dangers may also exist.

12.75

- 1 **Useful marks:**

No1 Light-beacon (orange and black chequered diamond on white framework tower) (7°14′.3S, 72°26′.1E), on Observatory Point.

No2 Light-beacon (orange and black chequered diamond on white framework tower) (7°16′.6S, 72°28′.1E) at Trig. Station Bolt.

- 2 Minni Minni Direction Light (7°19′.5S, 72°28′.5E) (12.71).

East Point (7°21′.2S, 72°27′.8E) which may be identified by the trend of the land and is outstanding when bearing more than 170°.

Flagstaff (2½ cables E of East Point), at the root of a ruined pier.

- 3 Harbour control tower (concrete) (7°17′.5S, 72°23′.6E), near the Deep Draught Wharf, and from where a light is exhibited.

Anchorage and landing places

12.76

- 1 **Main anchorage.** The limits of the broad dredged and swept part of the lagoon which forms the main anchorage are marked by light-buoys and can be seen on the chart.

Eclipse Bay affords the smoothest water during the NW Monsoon. The Port Authority should be consulted for current information about anchoring positions.

12.77

- 1 **Orient Bay**, S of Observatory Point (7°14′.3S, 72°26′.1E) affords anchorage in depths of about 10 and 22m, care being taken to avoid the charted shoals in the vicinity. The sea is smooth here during the South-east Trade Wind and landing

is always practicable on Observatory Point (but see 12.84 for restrictions on access).

12.78

- 1 **Rambler Bay**, the E part of the lagoon, affords safe anchorage; a convenient berth, shown on the chart, is in a depth of about 23m with East Point bearing 191° distant 3¼ miles. The bay affords the best anchorage during the South-east Trade Wind, the sea being smooth and boats being able to effect a landing easily at all times (but see 12.84 for restrictions on access). During the NW Monsoon, vessels should anchor farther offshore, or proceed to the other side of the lagoon (but see 12.84 for restrictions on access).

12.79

- 1 **Pointe Marianne**. A vessel can anchor about 9 cables E of Point Marianne (7°18'·7S, 72°25'·9E), in the position shown on the chart, in depths from 16 to 18m, broken coral. Care must be taken to avoid several shoals in the vicinity; the least charted depth is 2·1m (5 cables ENE of the point).

12.80

- 1 **East Point**. Anchorage, which is excellent at all times, can be obtained off East Point (7°21'·2S, 72°27'·8E), in depths from 10 to 17m, coral and sand; a recommended position is shown on the chart. In the vicinity of the anchorage care must be taken to avoid a 2·4m shoal (4 cables SW of East Point) (but see 12.84 for restrictions on access).

Alongside berths

12.81

- 1 Deep Draught Wharf (7°17'·5S, 72°23'·7E); length about 600m, faced with rubber fenders; least charted depth of 13 m alongside.
SKARDA Pier (about 1 mile E of Deep Draught Wharf); length of pierhead 160m; least charted depth of 14·1m in approach with minimum depth alongside of 13 m; mooring buoys off each end of pierhead to assist long vessels.

Port services

12.82

- 1 **Repairs**. Minor repairs can be effected.
Other facilities:
Garbage collection from ships berthed alongside; if at anchor collection facilities can be arranged.
- 2 Waste barge for sewage which must not be disposed of in the lagoon. Bilge water and similar contaminants must not be discharged into the lagoon but may be disposed of by contacting Harbour Operations to organise a sullage barge.
Small hospital.
- 3 **Supplies:**
Marine diesel; Fresh provisions (advance notice required); Fresh water (well chlorinated) is available in limited quantities; Limited supplies of shore electricity.
Supplies are only available to naval vessels and auxiliaries, and chartered merchant ships.
- 4 **Recreation**. It is dangerous to bathe in the lagoon which is infested with sharks. There is a swimming pool ashore for public use. Other recreational facilities are also available by arrangement.
Communication by military aircraft with Singapore, Naples and the Philippine Islands.

Small craft

12.83

- 1 **Harbour** for small craft, protected by a breakwater extending NW from the NW end of Deep Draught Wharf. Entrance channel and basin dredged and swept to a depth of 6·7 m in 1983, but depths of 6·5 m were found in 1988. Lights are exhibited from the breakwater head and from the elbow. Also from a structure standing at the W side of the basin entrance. The Harbour control tower (12.75) stands close to the root of the breakwater.

- 2 The edge of the coastal reef W of the entrance channel is marked by a beacon (starboard hand) and a buoy (green can). In 1991 a 1·2 m patch was reported about 1¼ cables WNW and a 3·3 m patch about ½ cable N of the breakwater head.

Landing places are situated on the SE and NW sides of the small craft harbour.

Repairs. Shiplift in small craft harbour.

Harbour regulations

12.84

- 1 **Restricted area**. In order to conserve wildlife, access to the N and E parts of Diego Garcia is restricted, from West Island to Horsburgh Point. The limits of the area are shown on the chart. All Flora and Fauna are protected under British Indian Ocean Territory law, with the exception of swimming fish which may be taken with rod and line only.

PASSAGE EAST OF GREAT CHAGOS BANK

General information

Chart 3

Description of waterway

12.85

- 1 Except for Cauvin Bank (6°49'S, 72°21'E), situated off the SE point of Great Chagos Bank, the waters of the E approaches to the latter bank appear to be deep and are clear of charted dangers.

Passage directions

(continued from 12.56 and 12.58)

12.86

- 1 From a position NE of Barton Point (7°14'S, 72°26'E) (12.57), the route leads NNE, passing:
ESE of Cauvin Bank (6°49'S, 72°21'E), thence:
ESE of Great Chagos Bank (6°0'S, 72°47'E), thence:
ESE of Blenheim Reef, (5°12'S, 72°28'E) (12.92), thence:
- 2 ESE of Colvocoresses Reef (4°55'S, 72°37'E), to which a wide berth should be given as it has not been closely examined. thence:
To a position NE of the Chagos Archipelago.
(Directions for passages NE of Great Chagos Bank are given at 12.92)

12.87

- 1 **Outlying dangers:**
Bank, depth 33m (reported 1961) (4°24'S, 72°42'E) (position approximate); the bank has not been examined.
Shoal (reported 1962 by an aircraft; existence doubtful) (3°15'S, 72°55'E) (position approximate).

NORTH PART OF CHAGOS ARCHIPELAGO

GENERAL INFORMATION

Chart 3

Scope of section

12.88

- 1 In this section are described the sea passages N of Great Chagos Bank, among the islands and banks extending about 60 miles N of the bank, which form the N part of Chagos Archipelago. Also described are a number of anchorages available in the area.

- 2 The section is arranged as follows:
NE approaches to Grand Chagos Bank, including Salomon (Saloman) Islands (12.89).
Passage N of Grand Chagos Bank (12.92).

PASSAGE NORTH OF
GREAT CHAGOS BANK INCLUDING
SALOMON ISLANDS

General information

Chart 3

Description of waterway

12.89

- 1 The NE approaches to Great Chagos Bank are encumbered by Salomon Islands (5°20'S, 72°15'E) and other banks and reefs, the positions and known extent of which can be seen on the chart. The channels between these parts of Chagos Archipelago appear to be deep and clear of dangers.

Topography

12.90

- 1 Salomon (Saloman) Islands (5°20'S, 72°15'E), situated around an atoll reef, are flat and covered with coconut palms up to 24m high.
Blenheim Reef, 30 miles E, (12.92) is visible only at low states of tide. These and the lesser banks are all steep-to with wide, deep-water channels between.

Current

12.91

- 1 A current setting SE at a rate of 1½ kn has been observed on Speakers Bank in January.

Directions

Passage west between Salomon Islands and
Great Chagos Bank

12.92

- 1 From a position NE of Nelson's Island (5°41'S, 72°19'E) the route leads WSW, passing (with positions from Nelson's Island):
SSE of Blenheim Reef (30 miles NNE) where, in 1837, some large blocks of coral and sandstone showed above water on the E side of a narrow strip, generally covered at HW, which encloses a lagoon. Thence:
2 SSE of Salomon Islands (20 miles N) (12.94), and: NNW of Nelson's Island (4 m in height), lying on the N edge of Great Chagos Bank and from the N coast of which a bank with depths less than 5.0m extends up to 2 cables; in 1934, the island was covered in low scrub with a few coconut palms up to about 9m high. Thence:

- 3 Clear of Victory Bank (9 miles NW), consisting of coral and rock with a least charted depth of 5.5 m over it, thence:
NNW of a 9 m bank extending 17 miles W from Nelson's Island, lying on the N edge of Great Chagos Bank, thence:
4 SSE of Peros Banhos (29 miles NW) (12.29), thence: NNW of the NE point of Great Chagos Bank (5°50'S, 71°34'E).

North-eastern approaches

12.93

- 1 The chart is sufficient guide for navigation of the NE approaches N of Salomon Islands but, when navigating in the vicinity of Speakers Bank, (4°54'S, 72°20'E), the SW part of that bank should be avoided. The bank consists of coral and sand with some rock and, on the W edge, there is a least charted depth of 5.5m over which the sea breaks heavily during the South-east Trade Wind. The remainder of the bank should not be crossed unless essential (see caution at 12.4). In the middle of the E side of the bank there is a buoy.

Salomon Islands lagoon

Chart 725, plans of Salomon Islands and Entrance to Lagoon

General information

12.94

- 1 **Description.** The Salomon Islands lie round a pear-shaped lagoon which affords several anchorages, at its entrance and, for smaller craft, within the reef that encircles it. The islands, mostly small, are flat and covered with coconut palms. Île Boddam (5°21'S, 72°12'E), at the head of the narrow end of the lagoon, has a deserted settlement on it with a pier which has served as an alongside berth for small craft.
2 The lagoon is encumbered by numerous coral heads the positions of which can best be seen on the plans.
Approach and entry. The lagoon is approached from NW and entered through a gap in the reef on its NW side.

Limiting conditions

12.95

- 1 **Largest vessels.** Survey ships (12.97) have anchored off the lagoon entrance, smaller vessels can enter the lagoon.
Local weather. The bar cannot be crossed during the NW Monsoon (12.7).
Local knowledge is required for navigation of the SW part of the lagoon.

Tidal streams

12.96

- 1 **Lagoon entrance.** The tidal stream at the anchorage in the entrance to the lagoon runs NNE to E at a rate of about ½ kn on a rising tide and NW to W on a falling tide at rates of ½ kn to 1¼ kn. There is no period of slack water and each stream is at its maximum strength at the start of its run, then gradually slackening off.
2 On the bar across the entrance the streams are strong, sometimes attaining a rate of 2½ kn on a rising tide shortly after springs.
Lagoon. At an anchorage in the lagoon off Île Takamaka, 2¼ miles SE of the entrance, the streams are not felt.

Anchorage off lagoon entrance

12.97

- 1 **Directions.** The line of bearing 137° of the SW extremity of Île Takamaka leads to the berth from which the SE extremity of Île de la Passe (NE side of the entrance) bears 085°.

- 2 **Anchorage**, usable during the South-east Trade Wind, is just outside the entrance to the lagoon in a depth of 18m, in the position shown on the plan. It was used on numerous occasions in 1905 by HM Surveying Ship *Sealark* (900 tonnes) and in July 1964 by HM Surveying Ship *Dampier* (length 91m, draught 4.3m).

Anchorage in lagoon

12.98

- 1 **Directions** cannot be given; vessels should be conned from a high vantage point to avoid the coral heads in the lagoon.

Anchorage in a depth of 22m off Île Takamaka is excellent, with the N extremity of the island bearing 059° and the N extremity of Île Fouquet (close SSW) bearing 126°, in the position shown on the plan.

Small craft

12.99

- 1 **Anchorage** can be found, by conning from a high vantage point, off the abandoned settlement (5°21'3S, 72°12'4E) on Île Boddam.

Pier, with depths of 1.2m alongside, is situated in front of the abandoned settlement; the pier was usable in 1979.

Anchorage and landing place

Charts 3, 727

Nelson's Island

12.100

- 1 **Anchorage**, reached through a deep channel close E of Nelson's Island (5°41'S, 72°19'E), can be obtained in depths from 29 to 31m on Great Chagos Bank (see general directions at 12.4).

Landing can be effected through a narrow channel in the reef on the N side of the island. The profiles of the island beaches change with changes in the winds described at 12.7.

Blenheim Reef

12.101

- 1 **Anchorage** has been obtained in an inlet at the S end of the narrow strip around the lagoon described at 12.92, in depths from 11 to 13m; the lagoon is encumbered by coral reefs.

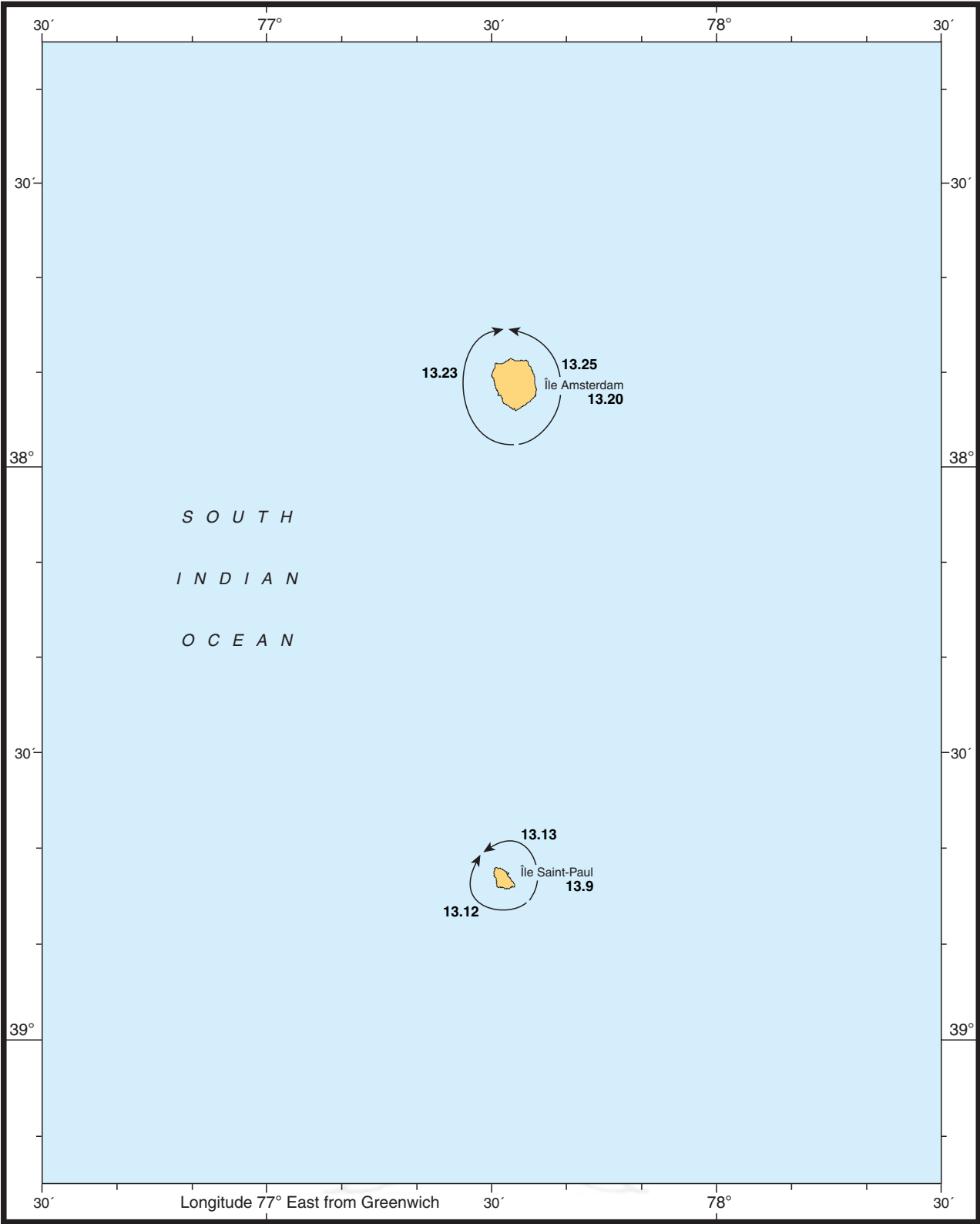
Other names

Chart 725, plan of Salomon Islands

12.102

- 1 Anglaise, Île (5°20'S, 72°13'E).
Mapou, Île (5°19'S, 72°16'E).

Chapter 13 - Île Saint-Paul and Île Amsterdam



CHAPTER 13

ÎLE SAINT-PAUL AND ÎLE AMSTERDAM

GENERAL INFORMATION

Chart 4713, French Charts 7171, 7170

Scope of the chapter**13.1**

- 1 This chapter contains a description of the waters around the small isolated islands of Île Saint-Paul (38°43'S, 77°32'E) and Île Amsterdam (37°51'S, 77°33'E), about 50 miles N. A seamount with a depth of 71 m lies midway between the islands. The chapter is arranged as follows:

Île Saint-Paul (13.8).

Île Amsterdam (13.19).

Offshore fishing**13.2**

- 1 Fishing with traps is carried on in the waters described; see 1.10 for further information.

Rescue**13.3**

- 1 See 1.57 for details of a reporting system designed to provide information for SAR operations.

Weather**13.4**

- 1 **Winds** from SSW to WNW predominate throughout the year although E winds are significant between December and March. Gales are common.

Flow**13.5**

- 1 **Current.** The islands lie within the generally E-going Southern Ocean Current described at 1.169; in this vicinity it is of low constancy with an average rate of $\frac{3}{4}$ kn.

Swell, described at 1.176, is a common feature.

Regulations**13.6**

- 1 Île Saint-Paul is a protected zone for its environment and heritage, and access is prohibited without permission; for regulations on pollution of the sea, entry, quarantine and protection of wildlife for both islands, see 1.47.

Single-hulled tankers carrying heavy petroleum products are prohibited, see 1.45.

Caution**13.7**

- 1 In good visibility the islands can be seen at a considerable distance. They also show up well on a radar display but both are steep-to and, in thick weather without radar, sounding gives little warning of their proximity. From April to October, particularly, when strong W winds prevail and the sky is often overcast, they should be approached with great caution.

ÎLE SAINT-PAUL

General information

Scope of the section**13.8**

- 1 In this section are described the waters around Île Saint-Paul (38°43'S, 77°32'E) and the anchorages off the island.

Topography**13.9**

- 1 Île Saint-Paul is the moderately high, above-water part of an extinct volcano. A large area is occupied by a deep, circular basin, open to the sea, formed by the crater of the volcano which rises to a height of 268 m.
- 2 The S and W coasts are precipitous and inaccessible while the NE coast is precipitous at its extremities, the central part being broken by the narrow entrance to the basin described above. Inland, the terrain slopes gently then more steeply to the rim of the volcanic crater.
- There are some hot springs on the island which is covered with grass and tall rushes.

Depths**13.10**

- 1 The waters surrounding Île Saint-Paul are moderately deep with no known dangers at a distance of more than about 5 cables from the coast. To the NE, there are no known dangers having depths less than 16 m over them lying more than $3\frac{1}{2}$ cables offshore. A wreck, with a depth by sounding of 41 m over it, lies about 5 cables off the W coast, 9 cables SW of Pointe Schmith (13.12).

Natural conditions**13.11**

- 1 **Winds.** See 13.4; when winds blow from SW, violent squalls sweep down the sides of the crater, interspersed by calm conditions. Winds between NW and NE raise a heavy sea.
- 2 **Tidal streams.** About 1 mile off the NE side of the island the tidal stream flows NW from LW until 2 hours after HW; from 2 hours after HW until LW it flows SE. Inshore, in the vicinity of the anchorage (13.15) $4\frac{1}{4}$ cables NE of the basin entrance, the ebb flows NW and the flood SE, attaining a rate of about 1 kn at spring tides.
- 3 **Swell.** See 13.5; the swell caused by W winds always rounds the SE and N points of the island, which is too small to afford protection.

Volcanic activity is limited to the emission of sulphurous fumes and hot water springs mentioned above. The water from the springs is sulphurous.

Directions

Passing to south and west

13.12

- 1 From a position SE of Pointe Hutchison (38°44'·1S, 77°33'·0E), the SE end of the island, the route through coastal waters S and W of Île Saint-Paul to a position NW of Pointe Schmith (38°42'·1S, 77°30'·7E), the NW extremity, a distance of about 5 miles, leads initially W, remaining at least 4 cables offshore and passing (with positions from Pointe Hutchison):
- 2 S of dangerous underwater rocks (1¼ cables SE), thence:
S of Les Deux Frères (1 cable WSW), above-water rocks, thence:
S of Pointe Sud (6 cables WSW), which is fronted by dangerous underwater rocks upon which the sea continuously breaks. Thence:
- 3 S of Pointe Ouest (1¼ miles W), the SW extremity of the island.
The route then turns NNW, passing (with positions from Pointe Schmith):
WSW of Terrasse des Pingouins (1½ miles S), a small headland surmounted by a hill and fronted by several above-water rocks. Thence:
- 4 Clear of several areas of kelp off the W coast, thence:
WSW of a wreck (9½ cables SW) (13.10), thence:
WSW of Chaussée du Phoque, a group of above-water rocks which extend about 2½ cables NW from Pointe Schmith, thence:
To a position clear of a 19 m patch (3½ cables NNW).

Passing east and north

13.13

- 1 From a position SE of Pointe Hutchison (38°44'·1S, 77°33'·0E), the route through coastal waters NE of Île Saint-Paul to a position NW of Pointe Schmith (38°42'·1S, 77°30'·7E), a distance of about 4½ miles, leads NW, remaining at least 4 cables offshore and passing (with positions from La Quille (38°42'·7S, 77°32'·2E)):
- 2 NE of Banc Roûre (1·1 miles SE), over which the sea breaks occasionally, thence:
NE of the entrance to the basin (3 cables SSW), thence:
NE of La Quille; the rock is formed of horizontal layers of lava divided by perpendicular fissures, many filled with obsidian. Kelp extends 6 cables SE from the rock. Thence:
- 3 NE of kelp extending about ½ cable ENE from La Quille, thence:
NE of Rocher du Milieu (3 cables NW), the largest of a group of rocks. Kelp extends about 1 cable E from these rocks. Thence:
- 4 NE of a dangerous rock (5¾ cables NW), lying within a belt of kelp which extends about 4½ cables NW from Rocher du Milieu, and;
Clear of a 16 m patch (5½ cables NNW), thence:
NE of a bank (6½ cables NNW), extending N with a least charted depth of 13 m over it, thence:

- 5 NE of a reef near the seaward end of which lies Îlot Nord (9 cables NW), thence:
Clear of a 14·0m patch (9½ cables NW) and of a 20·7 m patch (1¼ miles NNW), thence:
NE of Chaussée du Phoque (38°42'·0S, 77°30'·4E) (13.12), thence:
- 6 To a position clear of a 19 m patch 3½ cables NNW of Pointe Schmith.

Anchorage

General information

13.14

- 1 The bottom is generally hard and very uneven; and strong winds and high seas may be experienced.

North-east side of island

13.15

- 1 There is anchorage off the basin entrance (38°42'·9S, 77°32'·5E) between 2¾ and 4 cables ESE from La Quille (2½ cables NNE of the entrance), in depths of 23 to 32 m, black sand, good holding ground. A second berth lies 4 cables SSE of La Quille in depths of 12 to 17 m.
- 2 Several vessels have remained secure in these anchorages during winds from between NW and NNW. Vessels should be prepared to sail at short notice in event of a gale from between N and SE; these gales are, however, few at any time of year.
The swell mentioned at 13.5 causes vessels to roll and, even during fresh breezes, a vessel is usually tide-ride.

North end of island

13.16

- 1 A small vessel has obtained secure anchorage during a strong gale from SSE with Pointe Schmith bearing 245° distant 4 cables.

Small craft

Basin

13.17

- 1 **Topography.** The sides of the crater basin are generally sheer.
Controlling depth is 1·8m in a channel with a navigable width of 50m over a bar about ½ cable wide; the bar extends across the entrance to the basin between a gravel spit on each side.
- 2 **Limiting conditions.** Frequently, and sometimes suddenly, the bar becomes dangerous, or even impassable, due to breakers caused by swell.
Tidal streams often attain rates of 2 or 3 kn over the bar.
- 13.18**
- 1 **Directions for entry.** When entering the basin a 1·4 m patch on the seaward side of the bar, on which the sea breaks, should be avoided.
Landing is easy near the root of the gravel spit on the N side of the entrance, on a rock in front of the building of an old fishing station.
- 2 **Supplies.** There are pools of fresh water on the outer slopes of the crater.
Wildlife, which could provide an abundant supply of food, is protected (13.6). Seafood is abundant.

ÎLE AMSTERDAM

General information

Scope of the section

13.19

- 1 In this section are described the waters around Île Amsterdam (37°51'S, 77°33'E), and the anchorages off the island, which are temporary only.

Topography

13.20

- 1 Île Amsterdam is a high, rugged cone on which there are several old volcanic craters, the highest being Mont de la Dives, 881 m in height. The W side of the island is rugged and barren with high, inaccessible cliffs, while the remaining sides slope more gently and are faced with irregular cliffs about 30m high. Behind these the land slopes gradually up to the summit of the island.

- 2 The SE part is covered with tufts of long grass while, on the NE side near the coast, there are some stunted trees and thick grass. From a distance, the island appears verdant.

A meteorological and scientific station is situated at Roche Godon near Pointe Hosken, the NE point of the island.

Depths

13.21

- 1 The sea bed surrounding the island is, for the most-part, steep-to with no known isolated dangers beyond 3 cables from the shore. The depths reach 50 m within 8 cables of the shore except SW, between Pointe del Cano (37°52'4S, 77°32'2E) and Pointe d'Entrecasteaux, 1¼ miles NW, where these depths extend to 1½ miles offshore.

Tidal streams

13.22

- 1 Off the E coast the tidal streams are strong.

Directions

Passing to westward

13.23

- 1 From a position S of Pointe Vlaming (37°52'9S, 77°33'6E), the S extremity of the island, the route through coastal waters, W of Île Amsterdam, to a position N of Pointe Goodenough (37°47'6S, 77°33'4E), the N extremity, remains at least 3 cables offshore, seaward of heavy rollers which break off the salient points of the W coast, and passing (with positions from Pointe Vlaming):
- 2 SW of Pointe Vlaming which appears as a precipitous bluff, seen from WNW, thence:
SW of Pointe del Cano (1¼ miles WNW), behind which the headland is marked by steep ravines. Thence:
SW of Pointe d'Entrecasteaux (2½ miles NW), which is remarkable for its pointed summit and jagged edges, thence:
- 3 W of Pointe de la Rookerie (3½ miles NW), the W extremity of the island and formed by a sheer escarpment, 500 m high. Thence:
NW of Pointe de la Recherche (1½ miles WSW of Pointe Goodenough), from which rocks extend about 2 cables NW.
To a position N of Pointe Goodenough.

13.24

1 Useful marks:

Dome, signal mast and flagstaff of a meteorological station (37°47'9S, 77°34'2E) (13.20).

Two pylons at Pointe Goodenough (37°47'6S, 77°33'4E).

Passing to eastward

13.25

- 1 From a position S of Pointe Vlaming (37°52'9S, 77°33'6E) the route through coastal waters, E of Île Amsterdam, to a position N of Pointe Goodenough (37°47'6S, 77°33'4E), remains at least 3 cables offshore, and passes (with positions from Pointe Vlaming):
- 2 SE of a bank (2½ miles NE), with a charted depth of 15 m over it, extending 3 cables ESE from the shore. A group of above-water rocks mark the inshore part of the bank. Thence:
SE of Pointe de la Novara (2½ miles NE), which is dominated by the rims of two craters, one irregular in outline, thence:
- 3 E of Falaises Rouges (4½ miles NNE), a range of red cliffs where a landslip is prominent, thence:
NE of Pointe Hosken, the NE point of the island, seaward of kelp which extends 4 cables E from the point, thence:
- 4 NE of Chaussée des Otaries (about 7 cables W of Pointe Hosken), the only beach on the island, thence:
NE of a depth of 17m, about 3½ cables NE of Pointe Goodenough.
To a position N of Pointe Goodenough.

13.26

1 Useful marks:

Dome, signal mast and flagstaff of meteorological station (13.20) near Pointe Hosken.

Two pylons at Pointe Goodenough (37°47'6S, 77°33'4E).

Anchorages

General information

13.27

- 1 Except as stated below the bottom is very uneven and strong winds and heavy swell may be experienced.

East coast

13.28

- 1 The safest anchorage, known as Mouillage Ribault, is situated 5 cables SE of Pointe Hosken, 3 cables offshore, in depths from 25 to 40m, on a narrow strip of black sand, good holding ground. The alignment (246½°) of two beacons (red and white chequered) (about 5 cables SSE of Pointe Hosken), from which lights are occasionally exhibited, leads to the berth. The berth lies on the bearing 170° of a pointed rock in line with a cliff above Pointe de l'Éboulement (1¼ miles SSE of Pointe Hosken), and is suitable for vessels of 130m maximum length.
- 2 Anchorage can also be obtained 1.1 miles SSE of Pointe Hosken, 3 cables offshore, in a depth of about 18m.

North coast

13.29

- 1 Mouillage de Gonio, situated N of the meteorological station (13.20) 3½ cables offshore, has depths of about 35m, hard and irregular bottom with poor holding ground. The alignment (224½°) of two beacons (black and white

chequered) (about 6 cables W of Pointe Hosken), from which lights are occasionally exhibited, leads to the berth; the berth lies on the bearing 173° of the meteorological station flagstaff.

- 2 It is reported that, at night, a second alignment of fixed red lights bearing 163° intersects the first on the anchoring position. The rear light is mounted on a meteorology pylon and the front light on the edge of a helicopter platform, but the positions of these sites are not charted. It is also reportedly inadvisable to anchor any closer to the shore due to the possibility of fouling ships' water intakes with seaweed growing close inshore.

- 3 **Landing** may be effected N of the meteorological station, immediately E of a group of fuel tanks, where a lava flow in deep water forms a small natural jetty. Personnel and supplies are landed by a shore crane, but this is usually difficult and sometimes impossible because

of surf which is nearly always considerable.

Other landing places are not recommended.

South-east coast

13.30

- 1 In the event of the previous northerly anchorages becoming untenable, there is a good temporary anchorage known as Mouillage de la Cascade, sheltered from N winds and swell, 3 cables off the SE coast in depths from 25 to 31m, good holding ground, with Pointe Vlaming bearing 255° distant 1¼ miles.

Services

13.31

- 1 **Facilities.** Clinic and doctor at the meteorological station.

Supplies. Fish; no fresh water.



INDEX

Abambo, Pointe 3.139
 Abbé Bank 11.243
 Ablette, L' 6.203
 Achombo Beacon 3.116
 Adelaide Bank 10.27
 Africains, Bancs 10.68
 Agalega Islands 11.305
 Anchorage
 North Island 11.314
 South Island 11.312
 Directions 11.310
 Services 11.315
 Small craft 11.317
 Aigle, Pointe de l' 8.162
 Aigrettes, Île aux 11.226
 Aigrettes, Pointe des 11.22
 Airport Channel 10.233
 Ajangoua, Îles 3.163
 Ajangoua, Récif 3.142
 Alaâna, Nosy 7.179
 Alandrota, Baie 6.132
 Albatros, Rocher 4.15
 Albatross Island 11.341
 Albatross Shoal 4.232
 Albrand, Pointe 7.224
 Light 7.221
 Aldabra Island 9.31
 Anchorage 9.40
 Lagoon 9.43
 Anchorage 9.51
 Alidade Bank 7.197
 Alphonse 10.71
 Anchorage 10.76
 Amandro, Roche 6.74
 Amarella, Banc 4.226
 Ambafaho, Cône d' 6.90
 Ambahivavy, Pointe d' 6.87
 Ambalaombe, Pointe 7.224
 Ambamonetsimani, Roche 6.150
 Ambaniou 7.85
 Ambanitazana, Sommet 8.75
 Ambanizana River 8.21
 Ambanizana, Banc d' 8.21
 Ambanoro Bay 6.65
 Ambararata River 6.183
 Ambararata, Baie d': 12°18'S 6.183
 Anchorage 6.185
 Village 6.184
 Ambararata, Baie d': 13°34'S 6.31
 Ambararata, Pointe 5.111
 Ambariobé, Îlot 6.92
 Ambariomena, Îlot 6.92
 Ambariomena-kely, Roche 6.92
 Ambariotelo, Îlots 6.86
 Ambaro, Baie d' 6.94
 anchorage 6.100
 Ambaro: Baie Andranoaomby 6.141
 Ambasavaka, Rochers 6.151
 Ambasy Sakaleona 7.131
 Ambatambe' 8.31
 Ambato 8.48
 Ambato Rano 6.80
 Ambato, Mont 6.94
 Ambato, Presq'Île d' 6.94
 Ambatoarara, Mont 6.163
 Ambatobé, Mont 6.147
 Ambatoharana, Nosy 8.49
 Ambatomarangitsi, Nosy 6.193
 Ambatomifoko, Pointe 5.109
 Ambatomilay 5.160
 Ambatomilo village 4.78
 Ambatomisiotaka, Pointe 4.153
 Ambatomkéna, Nosy 8.136
 Ambatoroa 7.230
 Ambatosarotra, Falaises d' 4.270
 Ambatovaky Avaratra 7.57
 Ambatovorona, Rocher 7.114

Ambatozavavi, Baie d';
 see Ambatozavavy, Baie d' 6.88
 Ambatozavavy, Baie d' 6.88
 Ambavanibé, Baie d' 6.200
 Anchorage 6.206
 Ambavatobi, Baie d' 6.28
 Ambavatoby, Baie d' 6.28
 Ambenja 5.113
 Ambenja River 5.113
 Amberiovato, Nosy 6.80
 Ambero, Pointe 7.23
 Ambila-Lemaitso 7.149
 Ambinantsandra, Mont 6.198
 Ambitsika, Pointe d' 8.18
 Amboaboaka, Pointe 6.29
 Amboahangy, Baie d' 6.30
 Anchorage 6.30
 Amboanio 5.89
 Amboanio, l'Anse d' 8.91
 Anchorage 8.93
 Amboanio, Pointe 5.86
 Ambodifototra 7.231
 Anchorage 7.234
 Directions 7.233
 Harbour 7.232
 Port services 7.235
 Ambodilamoty, Pointe 8.116
 Ambodimadiro, Pointe 6.36
 Ambodivahibé 8.138
 Ambodivahibé, Baie d' 8.138
 Ambodivahibé, Pointe d' 8.132
 Ambohife village 4.135
 Ambohiviri, Mont 8.128
 Ambohivola, Cap 4.10
 Ambohivola, village 4.20
 Ambohimirahavavy 5.169
 Ambohivosa, Mont 6.115
 Ambohitra Koholahi, Mont 6.178
 Ambohitrakongona 8.77
 Ambohitrambobé 8.50
 Ambohitramporia, Cap 6.118
 Ambohitrionby, Pointe 6.125
 Ambohitosy 4.273
 Ambohisambo 5.108
 Amboliboso, Pointe 5.175
 Ambolibozo, Pointe 5.112
 Ambolobozo, Baie d' 8.129
 Ambongoabo, Massif de l' 6.187
 Amborovy 5.73
 Amborovy Light 5.47
 Amboulbouzekély, Baie d' 8.134
 Ambozaka, Cap 4.193
 Ambozaka, Passe d' 4.196
 Ambozoména, Pointe 5.112
 Ambre, Cap d' 6.118
 Light 6.198, 8.128
 Ambre, Île d' 11.232
 Ambre, Montagne d' 6.115
 Ambre, Sommet d' 6.115
 Ambulante Passe 11.128
 American Creek 4.29
 Amirantes, Les 10.32
 Amoha, Pointe 3.170
 Amora, Anse 3.155
 Amora, Pointe; lights 3.149
 Ampahanivorona 7.142
 Ampajony cliffs 5.70
 Ampajony Pass 5.23
 Ampamonty, Baie 6.137
 Anchorage 6.137
 Ampamonty, Banc 6.127
 Ampampamena 5.34
 Ampantansova 5.152
 Ampanasina, Baie 6.207
 Anchorage 6.209
 Ampanassi, Pointe 6.75
 Ampanassy, Pointe 6.75

Ampanavoana 8.52
 Ampanavoana River 8.52
 Anchorage 8.52
 Ampandrafitra, Nosy 8.129
 Ampandrozone, Pointe d' 8.76
 Ampangorinana 6.92
 Ampanihy, Anse d' 7.236
 Ampanotomaizina 7.149
 Amparafaka, Cap 4.282
 Amparihingidro, Rivière d' 5.69
 Ampasikély 5.150
 Light 5.142
 Ampasilava, Baie d' 4.133
 Ampasilava, Pointe 5.112
 Ampasimanoro, Pointe 4.29
 Ampasimena, Baie d':
 Baie Andranomaimbo 6.181
 Ampasimena, Baie d':
 Nosy Mitsio 6.133
 Ampasimena:
 Baie d'Ambararata 6.31
 Ampasimenakely, Pointe 6.132
 Ampasindava, Baie: lat 12°38'S 6.136
 Village 6.136
 Anchorage 6.136
 Ampasindava, Baie d':
 lat 13°35'S 6.34
 Anchorage 6.37
 Ampassipohé, Pointe d' 6.87
 Ampilahoa, Pointe d' 6.72
 Ampio, Baie d' 8.123
 Ampirimpirina, Pointe 5.85
 Ampoahana, Pointe d' 6.24
 Ampomalobe, Pointe 8.20
 Ampombiabo 5.164
 Amponkarana Bay 6.190
 Amsterdam, Île 13.19
 Meteorological station 13.20
 Anakao village 4.27
 Anakao, Banc Ouest 4.258
 Anakao, Pointe 4.27
 Anakio Bank 4.192
 Analalava 5.129
 Berths 5.145
 Directions 5.139
 General information 5.129
 Harbour 5.135
 Light 5.138
 Limiting conditions 5.133
 Middle Pass 5.141
 North Pass 5.144
 South Pass 5.143
 Analavelona, Massif 4.77
 Anambo, Nosy 6.149
 Light 6.147
 Anaovandrano, Baie d' 8.49
 Andambo Bank 4.193
 Andamoty, Pointe 6.135
 Andampy 6.44
 Andantsara, Nosy 6.193
 Andassy Bé, Baie d', anchorage 6.30
 Andavadoaka village 4.91
 Andavadoaka, Pointe 4.98
 Andavaka Cap 7.17
 Andefitra 4.92
 Andembi, Pointe d' 6.87
 Andemby, Pointe d' 6.87
 Andevoranto 7.149
 Andevoranto Bank 7.152
 Andiaoko, Pointe 6.121
 Andifitra, Pointe 4.92
 Andilah, Mont 6.73
 Andoany 6.46
 Andohazampo, Anse 8.168
 Andolopahy, Banc d' 4.250
 Andolopahy, Passe d' 4.235
 Andovo Honkou, Baie d' 6.154

INDEX

- Andrahibo, Pointe 5.185
 Andrahomana, Crique d' 7.25
 Andrahombava, Nosy 4.94
 Andrahompotsy, Pointe 8.161
 Andrahona, Mont 8.128
 Andramahiba Bay 6.172
 Andramaimbo, Mont 6.163
 Andramasay village 4.196
 Andramona, Nosy 4.120
 Andranamby 7.93
 Andranizani, Pointe d' 6.87
 Andranizany, Pointe d' 6.87
 Andrano Miserano 6.23
 Andrano, Nosy 4.231
 Andranoaomby, Baie 6.140
 Anchorage 6.141
 Andranogaoka, Pointe 6.88
 Andranolava Pass 5.99
 Andranolava River 5.115
 Andranomaimbo, Baie 6.173
 Andranomanilika River 5.180
 Andranomatavy 6.16
 Andranomena, Pointe 5.165
 Andranomody, Cap 8.133
 Light 8.133
 Andranopasy village 4.133
 Andranotsimanga River 8.50
 Andranovato, Pointe 8.21
 Andranovondrony, Pointe 6.200
 Andraverava River 4.160
 Andravina, Baie d' 8.111
 Anchorage 8.111
 Andravoho, Nosy 4.150
 André, Cap 6.118
 Andréa, Nosy 4.29
 Andrefana, Toraka 4.227
 Andréma, Île 3.168
 Andréma, Baie 3.181
 Andriamanao, Cap 4.14
 Andriambe, Pointe 4.153
 Andriamitaroka, Nosy 4.150
 Andriangory, Nosy 4.150
 Andriava Rangotro, Récif 6.157
 Androfiabé, Baie d', anchorage 6.30
 Androka, Baie d' 4.19
 Andromache Islands 6.144
 Andromache Shoal 10.18
 Andronjana South 5.139
 Androtra, Nosy 4.223
 Angadoka, Pointe d' 5.178
 Angarahoka Reef 4.152
 Angèle, Pointe 4.63
 Anglaise, Île: Peros Banhos 12.37
 Anglaise, Île: Salomon Îles 12.102
 Angoakoa 5.95
 Angongo, Banc d' 8.132
 Angongo, Nosy 8.132
 Angontsy, Baie d' 8.61
 Anchorage 8.63
 Angontsy, Nosy 8.49
 Anjahanambo River 8.32
 Anjajavy, Pointe 5.120
 Anjanazana 8.51
 Anjanazana River 8.51
 Anjanazana village, Anchorage 8.51
 Anjanozano, Pointe d' 6.34
 Anjombavola, Nosy 6.178
 Anjouan 3.77
 Anjouan, Pic d' 3.79
 Ank-Horraka 7.239
 Ankalafa 5.123
 Ankao, Nosy 8.113
 Light 8.115
 Ankarakatova 8.128
 Ankarama, Mont 6.126
 Ankaramay Bank 4.152
 Ankaramisampana, Mont 6.119
 Ankaramy 5.169
 Ankarana Bank 4.152
 Ankarana, Cap 4.153
 Ankarea, Banc d' 6.129
 Ankarea, Nosy 6.129
 Ankasofotsy River 8.20
 Ankasofotsy, Baie d' 8.20
 Anchorage 8.28
 Ankazoberavina 5.181
 Ankazomalemy, Baie 6.135
 Anketsabé 6.92
 Ankevo, Bancs d' 4.152
 Ankifi, Pointe d' 6.27
 Ankify, Massif d' 6.40
 Ankify, Pointe d' 6.27
 Anchorage 6.40
 Ankilahoa, Pointe d' 6.72
 Ankirakanga, Pointe 5.165
 Ankirihiri 8.19
 Ankitikona 6.163
 Ankoba village 4.144
 Ankoba, Bancs d' 4.152
 Ankomba, Nosy 8.116
 Ankorobé, Pointe 5.131
 Ankorokorobe, Presqu'île 8.168
 Ankotaka, Mont 6.73
 Annanas Bank 11.212
 Anniversary Island 12.72
 Anoeritabé, Presqu'île 8.166
 Anokao village 4.250
 Anomavo River 5.37
 Anorombato, Pointe, Light 5.71
 Anorontany, Cap 8.91
 Anorontsangana 5.176
 Anosibe 7.205
 Anosy, Pointe 4.41
 Anse = cove small bay.
 See proper name
 Anse, Île l' 9.69
 Antaimpitili, Banc d' 6.27
 Antaimpitily, Banc de;
 see Antaimpitili, Banc de 6.27
 Antaimpitily, Pointe d' 6.34
 Antakobola, Banc d' 7.222
 Antala, Banc d' 8.132
 Antalaha 8.64
 Anchorage 8.70
 Arrival information 8.66
 Directions 8.68
 Harbour 8.67
 Limiting conditions 8.65
 Port services 8.71
 Small craft 8.72
 Antalaha, Pic d' 8.64
 Antalaotra, Anse des 6.65
 Antalavia 8.20
 Anchorage 8.29
 Antalikely, Nosy 8.130
 Antaly, Baie d' 8.142
 Antaly Bé, Nosy 8.130
 Antaly, Nosy: Nosy Mitsio 6.125
 Antampolo 5.180
 Antanalova, Nosy 6.193
 Antanalovo, Nosy 6.164
 Antanamazala 7.195
 Antanambalana River 8.13
 Antanambe 7.237
 Antanamivitra 8.75
 Antananabo 7.80
 Antangena, Pointe 5.178
 Antanianaoomby 6.80
 Antany Mora 5.168
 Antetezana Bank 7.203
 Antevialabe, Sommet 8.24
 Antoanina 5.169
 Antoha River 6.108
 Antolo, Nosy 6.140
 Antolohizana 6.143
 Antoloho, Nosy 6.140
 Antonibe 5.123
 Antoraka, Banc d' 8.43
 Antsabé, Baie d' 8.134
 Antsafety; *see Beravina* 4.264
 Antsahabé, village 6.138
 Anchorage 6.138
 Antsahambingo, Roche 5.74
 Antsahampana 6.91
 River 6.91
 Antsahapano, Mont 8.139
 Antsakoabe 5.114
 Antsamanara, Pointe 5.123
 Antsamotra, Pointe 4.87
 Antsantsa Bay 6.191
 Anchorage 6.192
 Antsatroto 5.169
 Antsatsiaka, Pointe 5.165
 Antsavaky, Pointe 4.232
 Antsepoka 4.86
 Antseranandava, Nosy 5.49
 Antsibonko, Pointe 5.144
 Antsimaloto, Baie 6.139
 Antsirabé, Cap 7.27
 Antsiraka, Pointe:
 Baie d'Ambavatoby 6.28
 Antsiraka, Pointe:
 Baie d'Antongil 8.21
 Antsirakakambana, Lohantanjona 7.221
 Antsirakariaka, Pointe 7.224
 Antsirakosy, Tanjong 8.48
 Antsirana 8.171
 Antsirikiria, Cap 8.20
 Antsivaregna 8.110
 Antsoha, Nosy 5.183
 Antsohihy 5.150
 Antsoibery 6.78
 Ararano Atsimo; *see South Pass* 4.177
 Ararano Avarata; *see North Pass* 4.178
 Ararano=channel.
 See proper name
 Arbre Mort, Sommet de l' 6.27
 Arguille, Rocher 6.205
 Aride, Île 10.103
 Arsenal, Baie de l' 11.179
 Artemise, Pointe de l' 8.119
 Assimpao 3.89
 Assomption Island 9.20
 Anchorage 9.26
 Pier 9.30
 Settlements 9.20
 Astove Island 9.56
 Anchorage 9.60
 Lagoon 9.62
 Astove: Cosmoledo group 9.69
 Atafa, Nosy 7.224
 Atsimo Atsinanana, Toraka 4.248
 Avaratra, Toraka 4.227
 Ave Maria Rock 10.148
 Avirons, Pointe de 11.31
 Avocaré Island 11.344
 Babet, Îlot aux 7.66
 Baie d'Ambanizana 8.31
 Baie du Cap River 11.182
 Baie=bay. *See proper name*
 Baignoire, Pointe 11.180
 Baleine Rocks 11.342
 Baleine, Récif 6.129
 Baleine, Roche 10.103
 Baleineaux, Bancs des 7.239
 Baleiniers, Rocher des 7.222
 Ballon Loza Peak 5.119
 Ballon, Le 6.203
 Ballou, Jetée 3.166
 Baly 5.33
 Baly, Baie de 5.33
 Bambao 3.112
 Bambo, Anse 3.181
 Bambo, Chissioua 3.141
 Bambo, Île 3.141
 Bambo, Rassi 3.139

INDEX

- Bambo, Récif 3.142
 Bambou, Mont 11.184
 Bambou, Pointe 11.226
 Bambou Mountains 11.193
 Banc=bank. *See* proper name
 Bandélé, Île 3.143
 Bandélé, Passe 3.148
 Bandélé, Pointe 3.141
 Bandélé, Récife 3.142
 Bandaboi, Pointe 3.167
 Bandraboua, Pointe de 3.167
 Bandrélé, Anse 3.181
 Bandrélé, Chissioua 3.143
 Bandrélé, Passe de 3.148
 Leading lights 3.149
 Bandrélé, Pointe 3.141
 Bandrélé, Récif de 3.142
 Bar de l'Est 10.22
 Baramahamay River 5.184
 Barata, Mont 8.133
 Baravo, Pointe 4.10
 Barker Bank 5.17
 Barkly Island 11.122
 Barn Hill, Pointe 4.29
 Baron Cawdor (shoal) 6.114
 Baron, Pointe 6.152
 Barona, Nosy 4.14
 Barriquand, Quai 5.78
 Barton Passage 12.62
 Barton Point 12.57
 Bassas da India 2.51
 Basse, La 8.133
 Basse, Pointe 6.187
 Bateau, Roc 3.51
 Bateau, Rocher 6.125
 Bateaux, Passe aux 3.132
 Batterie des Grenadiers 11.176
 Batterie des Mortiers 11.176
 Bawden Shoal 4.152
 Bayadère Bank 4.193
 Bayfield, Banc 4.224
 Bazarca, Anse 10.193
 Be, Nosy: 13°20'S, 48°15'E 6.12
 Bé, Nosy: Morombé 4.117
 Beau Vallon, Baie 10.192
 Befotaka 6.156
 Befotaka, Baie de: Nosy Bé 6.78
 Befotaka, Baie de:
 Presqu'île d'Orontany 6.156
 Befotaka, Pointe 4.63
 Behangovo, Nosy 6.129
 Behara River 4.279
 Behentona, Nosy 8.20
 Light 8.20
 Bekotoko, Pointe 6.136
 Village 6.136
 Bel Ombre, ... 10.192, 11.188
 Bel-Air, Pointe de 11.78
 Light 11.77
 Bellalanda village 4.79
 Bellone, Cap 7.195
 Belo River 4.144
 Belo, Hautfond de 4.152
 Belo-sur-Mer, village 4.153
 Belo-sur-Tsiribihina, village 4.196
 Belobaka River 4.286
 Belobaka village 4.284
 Belomotro, Nosy 6.170
 Bemahia, Pointe 8.124
 Bemaraha, Plateau de 4.162
 Bemariva River 8.91
 Bemoka, Nosy 4.99
 Bemoka, Pointe 6.136
 Benanorema 7.72
 Bénara, Mlima 3.128
 Bénard, Le Grand 11.20
 Bénard, Petit 11.20
 Benares Shoal 12.24
 Bénitiers, Île aux 11.130
 Benjamin Island 10.62
 Bepoaka, Cap 4.263
 Berahodo 5.169
 Berambo, Pointe 6.89
 Berangomaina, Pointe 5.174
 Beravina village 4.264
 Berry, Pointe 8.107
 Bertaut Reef 10.43
 Besalampy 4.276
 Besiska, Pointe 5.90
 Betaitra River 8.163
 Betalinjona, Nosy 6.129
 Betamenaka, Pointe 6.125
 Betaniazo, Nosy 6.129
 Béthania, Canal de 4.160
 Betsiboka River 5.90
 Betsimananate River 4.160
 Betsizaraina, Selle de 7.136
 Bevaoko, Rocher 6.133
 Bevoay, Banc 4.232
 Beza, Nosy 5.72
 Bienvenue, Piton 11.22
 Bigeaut, Pointe 8.129
 Bijoutier, ... 10.71
 Binao, Roche 6.100
 Biter Rock 10.130
 Bitte, La 7.212
 Bivouac, Anse du 8.168
 Blacksmiths, The 11.243
 Blanche, Île 3.168
 Blanche, Pointe de la Ravine 11.101
 Blanchisseuse Rocks 10.103
 Blenheim Reef 12.92
 Anchorage 12.101
 Blevac Shoal 7.196
 Blevac, Pointe 7.222
 Blinder, The 11.246
 Boa Sadia, Banc 3.181
 Boanamaray, Pointe 5.87
 Bobaala 8.133
 Bobahala; *see* Bobaala 8.133
 Bobaomby, Tanjon'i; 6.118
 Light 6.198
 Bobaombyvatobe 8.167
 Bobby, Pic 7.89
 Boddam, Île 12.94
 Boeufs, Pointe aux 11.235
 Boileau Bay 10.187
 Boileau, Anse 10.187
 Boina, Baie 5.49
 Bois des Amourettes 11.219
 Aircraft moorings 11.203
 Bois Mangué, Grande Île 12.29
 Bois Sacré, Baie de 5.152
 Bombetoke, Baie de 5.83
 Anchorage 5.88
 Bonne Espérance, Pointe du 11.110
 Booby Island 11.284
 Booby Islet 10.148
 Bory, Nosy 6.127
 Bosy River 4.205
 Bosy, Banc de 4.193
 Bosy, village 4.195
 Boteler, Sommet 5.26
 Boubier, Pointe du 11.110
 Boucan Canot, Cap 11.24
 Boudeuse 10.37
 Boué, Île 3.164
 Bouélachamba, Îlot 3.46
 Bouélamahombé, Rocher 3.63
 Bouéni, Baie de 3.127
 Bouéni, Passe 3.133
 Bouéni, Pointe 3.127
 Boursaint Bank 5.97
 Boursaint Shoal 4.214
 Bouzi, Île 3.163
 Bras de Mer des Citronniers 11.188
 Bras de Mer Saint Martin 11.188
 Brisant Point 11.215
 Brisantes, Roches 7.72
 Brisares Rocks 10.143
 Brocus, Îlot 11.182
 Buff's Reef, beacon 11.217
 Bulldog Bank 9.89
 Butte aux Papayes 11.180
 Butte de Betaolampia Light 4.153
 Cabris, Pointe 10.150
 Cachalot Bank 4.150
 Cachée, Île 10.202
 Caille Bank, La 11.243
 Cailloux Blancs, Baie des 8.167
 Anchorages 8.169
 Caïmans Banks 4.134
 Caimant, Pointe 10.149
 Calvary 7.47
 Camp d'Ankorika; *see* Ramena 8.165
 Canale, Roche 10.145
 Canales, Les Roches 10.155
 Cano, Pointe del 13.23
 Canonnières Point 11.176
 Canzoni, Île 3.49
 Cap Barbi, Pointe 10.155
 Cap, Baie du 11.185
 Cap=cape, headland. *See* proper name
 Capricorn Bank 7.206
 Capricorne, Passe du 6.172
 Capucin Rock 10.96
 Capucin, Cap 11.318
 Capucins, Pointe 10.196
 Carbonnier Light 7.85
 Cargados Carajos Shoals 11.333
 Anchorages 11.345
 Services 11.349
 Small craft 11.350
 Caribou Light-buoy 3.137
 Carpenters, The 11.245
 Carre Pate, Île 12.19
 Carré, Mont 8.128
 Carré, Sommet 3.62
 Cascade Bay 10.247
 Cascade, Mouillage de la 13.30
 Cascades, Pointe des 11.107
 Castor, Banc du 6.114
 Cauvin Bank 12.17
 Cavalier, Banc du 5.52
 Caves, Pointe aux, Light 11.121
 Cayenne, Pointe de la 11.92
 Centurion Bank 12.16
 Cerf Passage 10.234
 Cerf, Île au 10.202
 Chagos Archipelago 12.1
 Chaloupe, Ravine de la 11.22
 Chaloupe, Récif 3.137
 Chameaux, Cap des 11.22
 Chandroudé, Île 3.40
 Chandzi, Île 3.52
 Charlot, Mount 11.286
 Chartres, Îlot de 7.66
 Chat, Île 11.217
 Châteaux, Pointe des 11.31
 Chaussée des Otaries 13.25
 Chaussée du Phoque 13.12
 Chauve Souris: Baie Curieuse 10.171
 Chauve Souris: Boileau Bay 10.182
 Chesterfield Island 4.274
 Chevalier, Baie 10.169
 Chevalier, Pointe 10.149
 Chèvres, Îlot aux 7.66
 Chèvres, Pointe de la Ravine des 11.86
 Chien, Île 10.62
 Chien, Le 6.183
 Chikoundou, Île 3.52
 Chimney Rocks 10.130
 Chindini 3.36
 Chira Bouéni 3.181
 Chira Gourd 3.181

INDEX

- Chira M'Sangua 3.181
 Chira Matré 3.181
 Chissioua=Île. *See* proper name
 Choa, Pointe 3.139
 Choazil, Îles 3.136
 Passe des 3.136
 Choizil, Îles 3.136
 Passe des 3.136
 Choungui Kéli, Mlima 3.141
 Choungui, Mlima 3.128
 Cimendef, Le 11.20
 Cimetière, Pointe 9.69
 Cinq Metres, Banc de 6.25
 Citadel, The 11.156
 Citronniers, Passe des 11.235
 Citronniers, Pointe 11.190
 Coco Island 11.338
 Cocoa Island 11.258
 Cocos, Île 11.337
 Coco, Banc 10.62
 Cocos, Île aux 10.159
 Cocos, Pointe 10.150
 Coelacanth Banks 4.96
 Coëtivy 10.79
 Anchorages 10.82
 Coin du Mire 12.29
 Coin, Île du 12.29
 Coins de Mire, Les 4.78
 Colline de l'Arbre Jaune 4.284
 Colline=hill. *See* proper name
 Colvocoresses Reef 12.86
 Combani, Mlima 3.128
 Comoros 3.1
 Comores 3.1
 Compagnie, Sommet de la 6.30
 Cône, Sommet 5.119
 Conique, Rocher 3.109
 Constant Bank, Le 10.12
 Coq, Banc du 3.168
 Coquillage, Grande Île 12.47
 Coquillage, Petite Île 12.43
 Corail, Anse 10.193
 Corail, Cap 11.318
 Corail, Pointe du 8.154
 Corbigeau, Roche 10.163
 Cordelière, Banc de la:
 12°06'S, 47°50'E 6.114
 Cordelière Bank: Morondava 4.178
 Corgat, Mont 10.123
 Corigean, Roche 10.146
 Cormorans, Banc des 8.24
 Corne Point 11.259
 Corps du Garde 11.120
 Correira Bank 10.25
 Cosmoledo Group 9.63
 Anchorages 9.72
 Lagoon 9.75
 Coton, Pointe 11.259
 Countries and ports
 British Indian Ocean Territory 1.133
 General description 1.133
 Government 1.136
 History 1.135
 National limits 1.134
 Physical features 1.138
 Population 1.137
 Comores 1.63
 Flora and fauna 1.70
 General description 1.63
 Government 1.66
 History 1.65
 Industry and trade 1.72
 Languages 1.68
 National limits 1.64
 Physical features 1.69
 Population 1.67
 French Southern and Antarctic
 Territories 1.139
 Fauna 1.145
 General description 1.139
 Government 1.142
 History 1.141
 National limits 1.140
 Physical features 1.144
 Population 1.143
 La Réunion 1.109
 General description 1.109
 Government 1.112
 History 1.111
 Industry and trade 1.116
 Languages 1.114
 National limits 1.110
 Physical features 1.115
 Population 1.113
 Madagascar 1.85
 Flora and fauna 1.92
 General description 1.85
 Government 1.88
 History 1.87
 Industry and trade 1.94
 Languages 1.90
 National limits 1.86
 Physical features 1.91
 Population 1.89
 Mauritius 1.119
 Fauna 1.127
 General description 1.119
 Government 1.122
 History 1.121
 Industry and trade 1.128
 Languages 1.124
 National limits 1.120
 Physical features 1.125
 Population 1.123
 Mayotte 1.75
 Flora and fauna 1.82
 General description 1.75
 Government 1.78
 History 1.77
 Industry and trade 1.83
 Languages 1.80
 National limits 1.76
 Physical features 1.81
 Population 1.79
 Seychelles 1.97
 Flora and fauna 1.104
 General description 1.97
 Government 1.100
 History 1.99
 Industry and trade 1.106
 Languages 1.102
 National limits 1.98
 Physical features 1.103
 Population 1.101
 Terres Australes et Antarctiques
 Françaises (TAAF) 1.139
 Courier Bay 6.187
 Courier, Baie du 6.187
 Anchorages 6.189
 Courier, Îlot du 6.188
 Cousin 10.145
 Anchorage 10.167
 Cousin, Le 11.78
 Cousine 10.138
 Crab Island 11.260
 Crabe, Le 6.17
 Cratère, Pointe du 6.42
 Cratère, Anse du 6.42
 Berths 6.44
 General information 6.42
 Créoles, Mont des 11.186
 Cristaux, Les 6.177
 Croissant, Récif 4.224
 Cul-de-sac Gallois 8.172
 Curieuse 10.137
 Curieuse Marine National Park 10.137
 Curieuse, Baie 10.170
 Cust Point 12.57
 d'Andilah, Pointe 6.74
 D'Arros 10.62
 Anchorage 10.64
 D'Estaing 4.192
 D'Estaing Bank 4.216
 Dalrymple, Roche 6.29
 Damou, Pointe 3.46
 Danger Island 12.17
 Anchorage 12.25
 Danger Shoals 12.47
 Danish Entrance 11.195
 Dans Nord, Pointe 9.33
 Dapani, Pointe 3.143
 Daphné, Roche 6.143
 Dart Rocks 4.274
 Dauban, Mont 10.123
 Dauphine, Anse 7.40
 Davie Ridge 2.39
 Delcy, Pointe 11.92
 Delight Sand 6.117
 Delta de la Tsiribihina 4.196
 Dembéné 3.16
 Dembéné, Anse 3.155
 Dengin dengin' i=deep.
 See proper name
 Denis, Île 10.112
 Anchorage 10.115
 Light 10.114
 Dent, Sommet la 7.71
 Dénudé, Pic 6.27
 Déposé 9.84
 Desnoeufs 10.54
 Desroches 10.47
 Anchorage 10.52
 Light 10.51
 Deux Cocos, Îlot des 11.190
 Deux Frères, Les 13.12
 Deux Soeurs, Les 6.23
 Diable, Cap du 8.113
 Diable, Le 6.140
 Diable, Pointe du 11.206
 Anchorage 11.222
 Diamant Reef 11.215
 Diamant, Île 12.29
 Diamond Bank:
 Pointe Maromony 5.120
 Diamond Bank: Île Ste. Marie 7.197
 Diego Garcia 12.52
 Conservation regulations 12.84
 Lagoon 12.59
 Alongside berths 12.81
 Anchorages 12.76
 Arrival information 12.65
 Directions 12.72
 Harbour 12.68
 Limiting conditions 12.64
 Port services 12.82
 Small craft 12.83
 Diégo, Île 8.130
 Diégo-Suarez, Baie de 8.144
 Digue, Cap La 11.318
 Digue, La 10.175
 Light 10.175
 Digue, Pointe la;
 see Digue, Cap la 11.318
 Digue=mole, breakwater.
 See proper name
 Dives, Banc de la 6.116
 Dives, Mont de la 13.20
 Djimanguira, village 6.181
 Dombala, Nosy 7.152
 Domodé, Pointe 3.52
 Domoni: Anjouan 3.111
 Domoni: Mohéli 3.65
 Domonymbé, Rassi 3.139
 Dondosy, Nosy 4.231
 Dongoandranon,
 dongoandranon 'i=reef, bank.
 See proper name

INDEX

- Dos de Baleine, Banc du 4.78
 Dos de Baleines 4.78
 Douamounyo, Rassi 3.150
 Douamougno, Cap 3.150
 Double, Récif 6.193
 Doueny, Anse 3.67
 Doujani, Pointe 3.127
 Dundas Island;
 see Pain de Sucre 8.133
 Dune, Baie de la 8.142
 Dupuis, Mont 5.178
 Dzaha, Île 3.49
 Dزاماندزار, Banc de 6.74
 Dzaoudzi 3.152
 Arrival information 3.154
 Berths 3.173
 Directions 3.159
 Harbour 3.157
 Limiting conditions 3.153
 Port services 3.176
 Small craft 3.177
 Dzaoudzi, Île 3.139
 Dziani Bolé, Mlima 3.128
 Eagle Islands 12.23
 Anchorage 12.26
 East Island 12.73
 East Point 12.80
 Eastern Pass 11.271
 Éboulement, Pointe de l' 13.28
 Eclipse Bay 12.76
 Eclipse Point 12.55
 Egmont Islands 12.17
 Elambo, Mont 4.16
 Emeraude Banks 4.150
 Emile Bank 5.17
 Emile Bank 4.283
 Emile Héloïse Bank 4.214
 Emokala 7.109
 Emokala Light 7.89
 English Channel 11.153
 Ennerdale Rocks 10.106
 Entrance Shoal 6.177
 Entrecasteaux, Pointe d' 13.23
 Entrée, Banc de l';
 see Entrance Shoal 6.177
 Éponge Shoal 4.159
 Erdwin, Banc 6.75
 Esny, Pointe d' 11.182
 Esprit, Île 9.43
 Est d'Anokao, Banc 4.250
 Est, Cap 8.49
 Light 8.48
 Est, Pointe 2.58
 Est, Récif 6.193
 Étang-Salé, Pointe de l' 11.18
 Étang-Salé;
 see Étang-Salé les Bains, L' 11.25
 Étang-Salé-les-Bains, L' 11.25
 Étoile 10.37
 Etuis, Banc des 6.100
 Europa, Île 2.41
 Light 2.43
 Euryalus Bank 5.17
 Evatra, Mont 7.48
 Evatra Light, Pointe 7.22
 Evatra Milieu 7.48
 Evatra Sud 7.48
 Faho, Nosy 7.153
 Faby, Nosy 6.117
 Falaise(s)=cliff(s). *See* proper name
 Falaises Rouges;
 Île Amsterdam 13.25
 False Loza Peak 5.138
 Faly, Nosy 6.80
 Light 6.87
 Famaho, Nosy 6.177
 Fanala, Nosy 8.49
 Fanandomotra, Passe 4.80
 Fanantara River 7.133
 Fandrarazana River 7.218
 Fanemotra, Baie de 4.87
 Fanenahana River 8.18
 Fanihi, Nosy 6.75
 Faninana, Îlot 6.127
 Faninana, Nosy 6.127
 Fano, Nosy 8.168
 Fanrarazana River 7.227
 Faohina, Nosy 5.139
 Farafakabé, Anse 8.168
 Farafangana 7.82
 Farany River 7.114
 Farihy=lake. *See* proper name
 Farine, Pointe La 10.156
 Farquhar Group 9.85
 Anchorage 9.98
 Inner harbour 9.94
 Pier 9.98
 Settlement 9.98
 Wrecks, prominent 9.88
 Fascène, Baie de 6.89
 Fasy, Nosy: 12° S 6.117
 Fasy, Nosy: 22° S 4.96
 Fati, Nosy 6.117
 Fausse Table: 14°24'S 8.75
 Fausse Table: 15°04'S 5.119
 Fausse Mamelles 7.202
 Faux Cap 7.14
 Félicité island 10.155
 Anchorage 10.176
 Femme, Passe 9.40
 Fenambosy, Helodranon'i;
 see Minorodo, Baie de 4.18
 Fénérive 7.213
 Anchorage 7.215
 Directions 7.214
 Fenoambany 7.72
 Fenoarivo, Mont 7.73
 Fer à Cheval Spit 11.212
 Fer à Cheval, Baie 11.216
 Feuillée Banc, La 11.301
 Fierenamasay village 4.78
 Fièvre, Pointe à la 6.55
 Fihérénana River 4.41
 Fisaka, Nosy;
 Andromache Islands 6.148
 Fisaka, Nosy: Nosy Mitsio 6.129
 Fitsitika village 4.78
 Flacourt Light 7.47
 Flacq, Passe 11.235
 Flamand Point 11.226
 Flamand, Île 11.215
 Flat Island 11.241
 Anchorage 11.247
 Light 11.239
 Flying Fish Bank 4.274
 Flying Fish Shoal 4.264
 Fomboni 3.67
 Fonga, Nosy 7.152
 Fontaine, Ravine de la 11.22
 Forfait Bank 5.97
 Foro, Île 3.54
 Fort George 11.160
 Fort Hova 7.205
 Fort William 11.160
 Fort-Dauphin 7.27
 Baie de 7.29
 Fortune Bank 10.25
 Fosse, Récif de la 6.177
 Foti, Nosy 6.164
 Foty, Nosy 6.164
 Fouche, Île La 10.159
 Foulpointe 7.209
 Foulpointe, Bancs de 7.210
 Foubouni 3.40
 Fouquet Island 10.62
 Fouquet, Île: Peros Banhos 12.32
 Fouquet, Île: Salomon Îles 12.98
 Fouquets, Île aux 11.186
 Fourche, La 11.306
 Fournaise, Piton de la 11.90
 Fourneau, Îlot 11.190
 Fous, Île aux 11.207
 Français, Baie
 (Baie de Rigny) 8.134
 Français, Baie des
 (Diego Suarez) 8.163
 Anchorage 8.165
 Français, Montagne des 8.133
 Francis Bay 11.314
 Frankish Rock 10.130
 Frégate island 10.134
 Anchorage 10.135
 Frères, Banc de 6.97
 Frigate Island 11.342
 Fry Shoal 7.222
 Gabriel Island 11.246
 Gabrielle, Banc de la 7.131
 Galets, Pointe des 11.34
 Light 11.58
 Port 11.32
 Galets, Ravine de la Rivière des 11.24
 Galets, Rivière des 11.34
 Galions, Baie des 7.26
 Galoka, Sommet 6.16
 Ganges Bank 12.23
 Garland Rock 7.66
 Gégé Beacon 3.109
 Geyser, Récif du 3.188
 Geyser Reef 3.188
 Gilberte Shoal 10.97
 Gionnet, Passe 9.53
 Glacis, Mont 10.120
 Glaud, Port 10.188
 Glorieuse, Île 3.190
 Glandza, Îlot 3.63
 Godon, Roche 13.20
 Goëlette Isle:
 Cosmoledo Group 9.80
 Goëlettes Island:
 Farquhar Group 9.84
 Goëlettes, Pas des 11.235
 Goliath, Banc du 6.75
 Golo, Passe du 7.229
 Gomajou, Pointe 3.109
 Gombé Ndroumé 3.164
 Gonio, Mouillage de 13.29
 Goodenough, Pointe 13.23
 Gouffre, Pointe de 11.78
 Gouffres, Cap des 8.91
 Goulaivoini, Pointe 3.40
 Goulet, Îlot du 5.122
 Grand Anse, Piton de 11.91
 Grand Baie 11.180
 Grand Banc de l'Entrée 6.17
 Grand Banc, Le 8.132
 Grand Barbe, Pointe 10.126
 Grand Bois, Piton de 11.92
 Grand Brûlé, Le 11.103
 Grand Brûlé, Pointe du 11.110
 Grand Cacassaye Island 10.62
 Grand Glacis, Pointe 10.160
 Grand Pass 5.102
 Grand Passe 6.133
 Grand Paté 11.217
 Grand Pelé 6.140
 Grand Polyte Island 9.66
 Grand Port 11.191
 Arrival information 11.198
 Berths and services 11.216
 Directions 11.207
 Harbour 11.202
 Limiting conditions 11.195
 Small craft 11.224
 Grand Récif 6.149
 Grand Récif du Nord-Est 3.142

- Grand Récif, Le 4.28
 Grand Récif: Foulpointe 7.204
 Grand Récif: Tamatave 7.153
 Grand River South East 11.225
 Grand Rocher 10.232
 Grand Serpent, Le 6.17
 Grande Anse 9.101
 Grande Anse: Mahé 10.193
 Grande Anse: Praslin 10.161
 Berths 10.164
 Leading lights 10.162
 Grande Comore 3.12
 Grande Île 9.66
 Grande Maman, Roche 10.169
 Grande Passe 11.259
 Grande Passe de l'Ouest 3.129
 Grande Passe, anchorage 11.351
 Grande Passe: Aldabra Group 9.44
 Grande Passe:
 Cosmoledo Group 9.76
 Grande Rivière Noire 11.126
 Grande Rivière Noire Bay 11.124
 Anchorage 11.126
 Grande Soeur 10.159
 Grande Soeur (Island) 12.47
 Grande Terre 9.32
 Grappin, Le 8.142
 Great Chagos Bank 12.2
 Great Reef 6.149
 Great Road 6.48
 Great Serpent, The 6.17
 Green Bank 6.17
 Grenadiers, Batterie des 11.174
 Grenouille Bank 4.208
 Gueule Bras Channel 9.62
 Guibert, Roche 6.78
 Gunner's Quoin 11.241
 Guy, Îlot 8.119
- Habu, Ras 3.31
 Hachiroungou 3.128
 Hahala 3.31
 Hajangoua, Iles 3.163
 Hajangoua, Récif 3.142
 Hall Bank 2.40
 Hamilia, Pointe 3.92
 Hamouro, Pointe 3.139
 Handréma, Baie de 3.181
 Handréma, Chissioua 3.168
 Hao, Nosy (12° S) 6.117
 Hao, Nosy (22° S) 4.78
 Hara, Nosy 6.170
 Anchorage 6.170
 Reefs 6.176
 Harambato, harambaton,
 harambaton 'i=rocks.
 See proper name
 Haramy, Nosy 8.22
 Harandriaka, harandriakan' i=reef(s).
 See proper name
 Harmonie, L' 11.125
 Hastie, Pointe 7.161
 Haut-fond=shoal. *See proper name*
 Haziers, Pointe des 11.86
 Hélène, Pointe 10.40
 Hell-Ville 6.46
 Anse du Plateau, Leading lights 6.63
 Arrival information 6.55
 Berths 6.65
 Directions 6.63
 General information 6.46
 Harbour 6.61
 Port services 6.67
 Reef 6.48
 Small craft 6.71
 Hellville, Baie d' 6.46
 Hellville, Rade d' 6.48
- Helodrano, helodranon,
 helodranon' i=bay.
 See proper name
 Heloise, Banc de l' 6.26
 Hermes Bank 10.121
 Hermione Spit 11.125
 Hermitage Island 11.265
 Hoani, Pointe 3.61
 Hodou, Roche 10.247
 Hodoul, Pointe 9.39
 Horsburgh Point 12.57
 Hosken, Pointe 13.25
 Houareau, Passe 9.53
 Houssaye, Cap la 11.28
 Huîtres, Île aux 8.135
 Hutchison, Pointe 13.12
- Ianantsony, Helodrano 4.28
 Ianantsony 4.38
 Iantsary 7.90
 Iataka 4.153
 Iconi 3.17
 Iconi, Cratère 3.17
 Ifontsy River 7.208
 Ilansambo, Nosy 7.206
 Ilay handriaka=large reef.
 See proper name
 Île Sainte-Marie 7.219
 Île(s)=island(s). *See proper name*
 Iles Choazil, Passe des 3.136
 Îles Glorieuses 3.190
 Îlot(s)=islet(s). *See proper name*
 Îlots au Sable 7.239
 Imerina Bank 4.177
 Indien Bank 4.192
 Indien, Îlot 4.195
 Intendance, Anse 10.193
 Intendance, Roche de l' 10.181
 Intermédiaire, Banc 5.112
 Intermédiaire, Récif 7.104
 Intermediate Bank 6.116
 Iranja, Nosy 5.160
 Light 5.159
 Iris, Banc de l' 3.129
 Ironono, Baie d' 6.158
 Ironono, Mont 6.140
 Ironono, village 6.156
 Issouf, Môle 3.169
 Isandra River 7.72
 Itampolo village 4.26
 Itampolo, Pointe 4.24
 Itapère, Anse 7.40
 Itapérina, Pointe 7.23
 Light 7.22
 Itsandra 3.32
 Ivoloïna, Récifs d' 8.43
 Ivondro River 7.149
 Ivondro, Baie d' 7.157
- Jacole Point 11.212
 Jacotet, Bay 11.189
 Jacques, Pointe 10.159
 Jais Bank 4.150
 Jardins, Pointe des 11.78
 Jean Marie, Piton 10.196
 Jiojio, Rochers 6.137
 Jonchée Bar 11.221
 Juan de Nova, Île 2.55
 Jumeaux, Bancs 3.168
 Junon Bank, La 10.25
- Kakambana, Baie 5.185
 Kakazou 3.170
 Kalakajoro, Nosy 5.168
 Kandranj, Massif de 5.70
 Kangani 3.168
 Kani, Pointe 3.128
 Kapiloza River;
 see Behara River 4.279
 Karimbela 7.79
- Kartala, Le 3.15
 Katsépé 5.84
 Lighthouse 5.70
 Massif de 5.70
 Pass 5.22
 Pointe de 5.70
 Keli, Nosy 6.37
 Kiakala Reef 4.274
 Kilibré, Pointe 4.41
 Kimby, Cap 4.194
 Kinandrano, Passe de la 4.235
 Kirindy River 4.144
 Kirindy, Hautfond de 4.152
 Kiota, Banc 6.100
 Kisimany, Nosy 6.31
 Kisimasi, Nosy 6.31
 Kivinjy, Nosy 5.181
 Kolo Issa, Chissioua 3.163
 Koba, Nosy 8.168
 Komamery, Pointe 5.180
 Komany, Pointe 5.98
 Komatsana, Pointe 5.124
 Komba, Nosy, Anchorage 6.41
 Koraraika, Baie de 4.266
 Kongo, Pointe 3.169
 Koungou, Pointe de 3.169
- L'Arête 4.117
 L'Etoile, Banc de 4.11
 l'Ouest, Banc de 3.189
 Laclochétier, Banc 3.181
 Lacroix, Pointe 11.105
 Lady Denison-Pender Shoal 10.37
 Lafayette, Pointe 11.235
 Laguna Panantsopa 5.151
 Laguna=lagoon. *See proper name*
 Lakandava, Nosy 6.149
 Lakandranon'=canal.
 See proper name
 Lalaria Light 7.206
 Laliara, Nosy 8.135
 Lambelabe, Baie de 4.24
 Lamboara village 4.87
 Lamboharana, Pointe 4.87
 Laminor, Récif du 3.161
 Langarano, Baie de 4.24
 Langevin, Pointe de 11.92
 Lango Tail 5.139
 Lango, Nosy 5.139
 Langoro, Nosy 8.157
 Light 8.157
 Langoustes, Banc les 4.120
 Lanivato, Falaises de 4.24
 Laperouse Banks 7.196
 Lapin, Île 9.91
 Large, Récif du 7.104
 Large, Rochers du 7.146
 Larras, Roche 6.90
 Larrée, Pointe à 7.222
 Lascar, Cape 10.198
 Latazar, Passe 11.235
 Launay, Port 10.190
 Lava, Nosy: Analalava 5.125
 Light 5.119
 Lava, Nosy:
 Baie de Diego Suarez 8.130
 Lava, Nosy: Nosy Mitsio 6.125
 Lava, Nosy: Morombé 4.97
 Lava, Nosy: Pradel Bank 4.224
 Lavalohalika, Pointe 5.174
 Lavanono village 4.17
 Laverdie Point 11.212
 Laverdie Spit 11.207
 Lazare, Baie 10.181
 Lazare, Pointe 10.181
 Leja, Mont 6.133
 Leven, Banc du 6.114
 Leven, Îles 8.113
 Leven, Port 8.117
 Anchorage 8.120

- Leviqiu, Pointe 8.138
 Libanona, Pointe 7.27
 Lima Combani, Mont 3.128
 Lion Mountain 11.206
 Lion, Le 6.176
 Lion's Head 11.206
 Little Bank 7.206
 Little Mapou Bay 11.312
 Lockwood, Récif 4.214
 Lohatanajona, lohatanjon'
 lohatanjon' i=point.
 See proper name
 Lohatrozana, Cap 7.224
 Lokintzy 7.230
 Lokja 8.121
 Lokja, Baie de 8.121
 Lokobé, Pointe 6.48
 Lokobé, Mont 6.23
 Lokobé, Passe 6.84
 Leading beacons, E part 6.86
 Leading beacons, W part 6.85
 Lolo, Nosy 6.37
 Long, Îlot 8.142
 Long, Le Cap 11.101
 Long, Récif 6.193
 Longany, Nosy 5.112
 Longogori, Passe 3.151
 Longoni, Baie de 3.179
 Longoni, Pointe de 3.178
 Longoni, Porte de 3.178
 Longue, Île 10.202
 Lotsoina, Baie 6.210
 Anchorage 6.213
 Louarea, Anse 7.230
 Lovokampy River 4.29
 Lowry, Îles 8.129
 Loza River 5.150
 Loza, Pointe 5.151
 Lozok' i=canyon. *See* proper name
 Lubine, Île 12.19
 Luce, Sainte 7.65
 Rade de 7.65
 Lynx, Banc du 4.283
 Lyra Bank 5.165
 Lyra, Banc de la 5.109
 Lys, Île du 3.190

 M'Batsé 3.65
 M'Bougo, Île 3.60
 M'Bouzi, Chissiouua 3.163
 M'Bouzi, Îlot 3.63
 M'Chaco, Île 3.52
 M'Chacojou, Îlot 3.92
 M'Ramani 3.109
 M'Sangani Beacon 3.116
 M'Sangararou, Pointe 3.62
 M'Vouni, Pointe 3.36
 M'Zamboro, Île 3.130
 M'Zamboro, Passe 3.150
 M'Zouazia, Baie de 3.181
 Ma Flore, Pointe 10.159
 Macaque, Île 9.69
 Madame, Îlot 7.231
 Light 7.233
 Maévarano 5.90
 Magnetic anomalies, local
 E and N of Pointe Itapérina 7.62
 Îles Glorieuses 3.191
 Farafangana 7.83
 Fénérive 7.213
 Île Sainte-Marie 7.220
 Mahanoro 7.135
 Saint-Denis 11.81
 Tamatave 7.150
 Vatomandry 7.141
 Vohémar 8.89
 Magnet Sand; *see* Fasy, Nosy 6.168
 Magnougni, Île 3.46

 Mahabo 7.84
 Mahabo, Pointe 3.139
 Mahajamba, Baie de 5.111
 Mahajanga 5.50
 Mahalsandry River 4.15
 Mahambo 7.212
 Mahambolona 8.23
 Mahamindro River 6.179
 Mahanara River 8.91
 Mahanara, Cap 8.91
 Mahanoro 7.135
 Lighthouse 7.130
 Residency 7.136
 Mahatsinjo, Pointe 6.42
 Signal station 6.43
 Mahavary River 5.27
 Mahavatsy Pier 4.67
 Mahavatsy, Banc de 4.60
 Mahavatsy, Pointe 4.41
 Mahazandry, Baie de 6.90
 Mahé 10.178
 E approaches 10.127
 Directions 10.130
 General information 10.127
 N Approaches 10.99
 Directions 10.103
 General information 10.99
 NE approaches 10.136
 Directions 10.142
 General information 10.136
 S Approaches 10.92
 Directions 10.96
 Small craft 10.198
 SW approaches 10.184
 Anchorage 10.179
 Directions 10.179
 W approaches 10.119
 Directions 10.95
 General information 10.119
 Mahebo River 6.101
 Mahébourg 11.193
 Cathedral 11.186
 Mahela 7.133
 Mahela, Récif 7.229
 Maheloholo Reef 4.152
 Mahinavatoubé, Mont 6.193
 Mahinia, Mont 4.57
 Mahonotsa, Nosy 6.157
 Mailaka, village 6.38
 Maillet, Pointe 9.101
 Main Passage 12.62
 Maintapaka River 4.144
 Maintirano 4.233
 Lighthouse 4.247
 Maintirano Maty, Passe 4.235
 Majambo, Pointe de 5.118
 Major, Anse 10.193
 Majunga 5.50
 Arrival information 5.61
 Berths 5.76
 Directions 5.71
 General information 5.50
 Harbour 5.66
 Limiting conditions 5.57
 Mean tide levels 5.59
 Services 5.79
 Makambi, Cap 6.31
 Makamby Pass 5.21
 Makamby, Cap 6.31
 Makamby, Nosy 5.27
 Makamby, Pointe 6.28
 Makoen, Pointe 3.181
 Malabar, Île 9.34
 Malagasy, Banc 7.153
 Malé 3.40
 Malgaché; *see* Pilot Patches 10.181
 Malheureux Rock 11.176
 Malheureux, Cap 11.172
 Malin Bank 4.136

 Mamelles de Nattes 7.202
 Mamelles island 10.143
 Mamelles, Dunes 4.284
 Mamelles, Les 6.188
 Mamelons d'Ankorika 8.158
 Mamoko, Nosy 6.37
 Mamoudzou 3.166
 Mamutzu 3.166
 Manaha Hill 9.92
 Manaha Islands 9.84
 Manakara 7.94
 Arrival information 7.97
 Directions 7.101
 General information 7.94
 Harbour 7.98
 Light, Residency (La Résidence) 7.101
 Limiting conditions 7.96
 Manakara River 7.94
 Manambato River:
 22°49'S, 47°50'E 7.82
 Manambato River:
 22°11'S, 49°54'E 8.107
 Manambato, Cap 8.108
 Manambia, Banc de 8.43
 Manambidy, Nosy 8.113
 Reef 8.116
 Manambolo River 4.194
 Manambondro River 7.74
 Manambotra 7.79
 Manambovo River 7.17
 Manampaho, Nosy 8.116
 Manampanihy River 7.68
 Manampatra River 7.82
 Manana, Bouche de 5.90
 Mananana River 7.114
 Mananara 8.23
 Mananara River: 16°10'S, 49°46'E 8.23
 Mananara River: 23°21'S, 47°42'E 7.76
 Mananara village
 Anchorage 8.26
 Residency 8.23
 Mananivo River 7.81
 Mananjary 7.116
 Anchorage 7.124
 Arrival information 7.118
 Directions 7.122
 General information 7.116
 Harbour 7.119
 Light 7.122
 Port services 7.126
 Manankarana Bay 6.182
 Mananoka, Nosy 6.120
 Mananono, Nosy 6.120
 Manantenina 7.68
 Manatangen, Banc de la 8.132
 Mancel, Pointe 8.136
 Mancienne, Roches 10.181
 Mandazona, Nosy 6.127
 Mandoava, Pointe 6.121
 Mandrare River 7.17
 Manery River 7.66
 Mangabe, Nosy 8.13
 Light 8.16
 Mangatsifotra 7.90
 Manghily, Nosy 4.231
 Mangiho, Nosy 6.125
 Mangoaka 5.113
 Mangoaka, Pointe 6.176
 Mangoky River 4.138
 Mangoky, Delta du 4.132
 Mangoro River 7.131
 Mangoro, Pointe 4.24
 Manguier Boule, le 7.205
 Maningory Canyon 7.239
 Maningory River 7.218
 Manitsa, Nosy 4.14
 Manja, Pointe 5.112
 Manja, Tombée 5.113
 Manoel, Île 12.47

INDEX

- Manombo Atio village 4.78
 Manombo River 4.78
 Manongarivo River 5.174
 Manongariyo, Massif du 5.169
 Mantialac River 8.94
 Maoussi, Rassi 3.143
 Mapare Island 11.343
 Mapou, Grande Île 12.47
 Mapou, Île 12.102
 Mapous Pointe des 8.193
 Mapu Patch 11.243
 Maques, Île des 8.193
 Maratondro River 4.270
 Marcellin, Pointe 11.92
 Mareana, Banc 4.63
 Marianne Island 11.258
 Marianne island 10.160
 Marianne, Île 11.207
 Marianne, La 11.78
 Marianne, Pointe 12.79
 Maribé, Baie de 6.133
 Marie Eugénie Bank 7.196
 Marie Louise 10.56
 Anchorage 10.58
 Marie, Récif de 6.129
 Marie-Louise, Anse 10.198
 Marify, Nosy 4.227
 Marimbona River 7.226
 Mariner Bank 5.17
 Marjolaine Bank 4.193
 Maroambitsy, Baie de 5.39
 Maroantaly, Nosy 4.224
 Maroantsetra 8.32
 Anchorage 8.40
 Arrival information 8.34
 Harbour 8.38
 Leading lights 8.39
 Supplies 8.41
 Maroazo, Passe 4.82
 Marocain, Roche 11.107
 Marofototra village 4.276
 Marokafiry River 4.284
 Marolahy, Pointe de 5.120
 Marolay, Pointe 6.29
 Marolo River 7.145
 Maromanjo, Pointe 5.46
 Maromokotro, Mont 6.16
 Maromony, Pointe 5.120
 Marosakoa 5.116
 Marotaolana, Mount 5.169
 Marotaolana, Tombée de 5.119
 Marotia 5.34
 Marovanana, Sommet 7.130
 Marovoay 5.90
 Marovoay River 5.90
 Marsouin Bank 4.134
 Martin de Vivres, Base 1.141
 Marutéza Point, Anchorage 6.154
 Marutéza Point 6.151
 Mascarene Plateau 11.319
 Masianaka River 7.72
 Masiaposa 5.111
 Masihanaka River 7.75
 Masoala, Cap 8.49
 Light 8.48
 Masora River 7.131
 Massif=mountain mass.
 See proper name
 Mâtassé, Le, beacon 11.217
 Matesanaomby, Pointe 5.85
 Mathurin Bay 11.267
 Mathurin, Port 11.267
 Arrival information 11.275
 Berths 11.289
 Directions 11.285
 Harbour 11.281
 Services 11.290
 Small craft 11.293
 Matitana River 7.90
 Matoopa, Cap 10.181
 Matoopa, Pointe 10.181
 Mauritius 11.111
 North-west coast 11.172
 South coast 11.181
 West coast 11.117
 Mavony, Nosy; anchorage 6.154
 Mavony, Nosy: Îles Barren 4.226
 Mavony, Nosy: 12°26'S, 48°39'E 6.148
 Maxime, Baie 8.142
 Mayeux Beacon 7.85
 Mayotte, Île 3.119
 Mayotte, Ile de 3.119
 Mbouzi, Cissioua 3.163
 McLeod Bank 9.89
 Mea, Île 3.54
 Méchant, Le Cap 11.101
 Median Bank 4.177
 Meli, Nosy, *see* Mely, Nosy 6.178
 Melville, Anse 8.165
 Mely, Nosy 6.178
 Memoria, Port 8.35
 Menabé 4.161
 Menai Island 9.65
 Menarandra River 4.10
 Mer Rouge 11.153
 Miarinarivo 7.151
 Michel, Île 9.43
 Microbe, Roche 4.63
 Middle Brother 12.23
 Middle Ground 11.259
 Middle Island 12.72
 Middle Pass, Analalava 5.141
 Middle Passage 12.62
 Milanja Shoal 4.274
 Milieu, Passe du 5.141
 Milieu, Banc 5.23
 Milieu, Banc du: Îles Barren 4.226
 Milieu, Banc du: Maintirano 4.248
 Milieu, Île du 9.91
 Milieu, Piton du 11.120
 Milieu, Récif du 6.193
 Milieu, Rocher du 13.13
 Miller's Point 10.145
 Anchorage 10.168
 Milomboky, Nosy 8.21
 Miné, Cap 8.133
 Light 8.128
 Signal station 8.150
 Minni Minni Light 12.71
 Minni Minni Patch 12.74
 Minorodo, Baie de 4.18
 Mirafy, Mont 4.162
 Miremani, Anse 3.57
 Miremani, Pointe 3.46
 Miringoni, Pointe 3.46
 Miroana Bay 6.191
 Mironsi, Pointe 3.105
 Mitaine Bank 4.178
 Mitomby, Nosy 8.43
 Mitsamiouli 3.31
 Mitsio, Îles 6.121
 Mitsio, Nosy 6.121
 Mitsoudjé 3.16
 Mlima=Mount. *See proper name*
 Mohambo Bank 7.206
 Mohéli 3.42
 Mohila, Pointe 3.127
 Moindzaza, Cratère 3.15
 Moindzaza, Pointe 3.14
 Moines Bank 4.193
 Mondon, Anse 10.126
 Mont Vert, Piton de 11.93
 Mont=mountain. *See proper name*
 Montagne du Rampart 11.120
 Montagne=mountain.
 See proper name
 Monyé Amiri, ... 3.164
 Moramba, Baie de 5.122
 Moresby Channel 12.32
 Moresby Islands 12.31
 Morne Blanc 10.120
 Morne Brabant, Le 11.120
 Morne de Mahanara 8.90
 Morne H 3.169
 Morne Noir 8.90
 Morne Rouge, Passe du 3.135
 Morne Seychellois 10.94
 Morne=hill. *See proper name*
 Morombé 4.102
 Directions 4.117
 Morombé Banks 4.96
 Morombe, Cap 4.91
 Morondava 4.160
 Morondava Deep 4.145
 Morondava Light 4.175
 Morondava River 4.160
 Moroni 3.19
 Light 3.23
 Morrison Reef 4.96
 Mouche, Anse à la 10.187
 Mouettes, Île aux 8.43
 Mounyambani, Anse 3.181
 Mougendre, Pointe 3.160
 Mounyendre, Pointe 3.160
 Mouillage=anchorage.
 See proper name
 Mount Antsatramahavelona 5.131
 Mount. *See proper name*
 Moury, Îlot 8.118
 Moustique, Île 9.69
 Moya 3.80
 Moyenne, Île 10.202
 Mozambique Channel 2.1
 Mpaninabo, Pointe 6.211
 Mpanjaka Shoal: Îles Barren 4.214
 Mpanjaka Shoal: Pracel Bank 4.274
 Mpay, Nosy 6.191
 Mtsamboro, Chissioua 3.130
 Mtsamboro, Passe 3.150
 Mtsapéré, Mlima 3.141
 Mtsongoma, Chissioua 3.150
 Mur, Le 11.343
 Mutsadiniky, Nosy 4.150
 Mutsamudu 3.95
 Harbour 3.101
 Light 3.102
 Tanker berth 3.105
 Mwali 3.42
 N'Dragani, Pointe 3.109
 N'Gouni, Pointe 3.17
 Nab Reef 11.242
 Nacre, Bancs de la 4.150
 Namakia 5.95
 Namakia Bank 4.139
 Namakia Pass 5.101
 Namakia River 5.41
 Namakia, Pointe 4.232
 Namela River 4.233
 Namela, Banc de 4.258
 Namorona River 7.114
 Nandrahana, Pointe 8.31
 Nandrasana, Cap 8.18
 Nanga, Récif 3.169
 Narcissus, Banc du 5.52
 Narendry 5.123
 Narendry Pass 5.103
 Narendry, Baie de 5.123
 Natural conditions
 Climate and weather 1.184
 Air temperature 1.224
 Anticyclones 1.192
 Cloud 1.213
 Depressions 1.193
 Fog and visibility 1.222
 Fronts 1.195
 Gales 1.204

- General conditions 1.185
 General information 1.184
 Humidity 1.226
 Precipitation 1.216
 Pressure 1.188
 Winds 1.197
 Climatic tables
 Data in the tables 1.230
 Currents, tidal streams and flow 1.162
 Ice conditions 1.182
 Icebergs 1.182
 Maritime topography 1.153
 Seabed 1.153
 Seismic activity 1.161
 Volcanic activity 1.160
 Sea and swell
 Abnormal waves 1.178
 Sea conditions 1.175
 Swell conditions 1.176
 Sea level and tides 1.173
 Sea water characteristics
 Density 1.180
 Salinity 1.179
 Sea surface temperature 1.181
 Navigation and regulations
 Charts
 Admiralty charts 1.12
 Datums 1.20
 Foreign charts 1.22
 Distress and Rescue
 General information 1.49
 Ship reporting systems 1.51
 Limits of the book Area covered 1.1
 Navigational dangers and hazards
 Coastal conditions 1.3
 Ice 1.9
 Navigation amongst coral 1.5
 Navigation amongst over banks ... 1.6
 Navigation marks 1.7
 Rollers 1.4
 Piracy 1.8
 Navigational aids
 Buoyage 1.24
 Lights 1.23
 Pilotage 1.26
 Piracy and armed robbery 1.58
 Radio facilities
 Distress and rescue 1.49
 GMDSS 1.50
 Position fixing systems 1.27
 Racons 1.29
 Radio medical advice 1.33
 Radio navigational warnings 1.31
 Radio stations 1.30
 Radio weather reports 1.32
 Regulations
 International regulations 1.35
 National regulations 1.39
 Signals
 International signals 1.48
 Traffic and operations
 Fishing 1.10
 Oil and gas 1.11
 Nazareth Bank 11.353
 Nécessaire, Banc du 8.129
 Needle Rock; see Arguille, Rocher ... 6.205
 Neiges, Piton des 11.20
 Nelson's Island 12.92
 Anchorage 12.100
 Nepato, Nosy 8.49
 Néréide Reef 11.226
 Nièvre, Port de la 8.170
 Anchorage, outer 8.185
 Anchorages 8.197
 Arrival information 8.182
 Basins and berths 8.196
 Commerce, Port de 8.200
 Caboteurs, Quai des 8.200
 Commerce, Quai du 8.200
 Directions 8.193
 Harbour 8.188
 Light 8.154
 Limiting conditions 8.177
 Port Militaire 8.188
 Amis, Baie des 8.193
 Dry dock 8.202
 Torpileurs, Darse des 8.201
 Port services 8.202
 Prohibited anchorage 8.196
 Small craft 8.207
 Ninepin 6.26
 Niol, Mont le 10.120
 Nioumachoua, Port 3.58
 Njazi'dja 3.12
 Noir, Roche 6.100
 Noir, Rocher: Anjouan 3.109
 Noir, Rocher: Fascène 6.89
 Noir, Rocher: Manakara 7.105
 Noirs, Îlots 8.109
 Noirs, Rochers 7.146
 Nord, Banc du 4.227
 Nord, Île du 9.71
 Nord, Îlot 13.13
 Nord, Îlot du 8.116
 Nord, Passe 6.193
 Nord, Passe du: Maintirano 4.250
 Nord, Passe du: Tuléar 4.58
 Nord, Passe: Morombé 4.120
 Nord, Récif du 3.129
 Nord-Est, Banc du 8.129
 Nord-Est, Chenal du 5.74
 Nord-Est, Grand Récif du 3.142
 Nord-Est, Île 9.71
 Nord-Est, Rocher de 6.87
 Nord-Est, Pointe 2.41
 Nord-Ouest, Banc du 3.189
 Nord-Ouest, Chenal du 5.71
 Nord-Ouest, Point 2.41
 North Brother 12.23
 North East Point 10.106
 North Island: Les Amirantes 10.68
 Light 10.37
 North Island: Farquhar Group 9.84
 North Island,
 Cargados Carajos 11.343
 North Pass: 14°55'S, 46°54'E 5.102
 North Pass: 20°12'S, 44° 01'E 4.178
 North Persépolis Bank 4.134
 North Point: Farquhar Group 9.92
 North Point: Mahé 10.100
 Northern Entrance 11.213
 Nosikely village 7.92
 Nosindolo 4.120
 Nosy Hao, Passe de 6.172
 Nosy, nosi nossi=island.
 See proper name
 Nouvel Hôpital, Pointe du 7.213
 Novara, Pointe de la 13.25
 Nu, Mont 6.188
 Nzwani; see Anjouan 3.77
 Observatoire, Pointe de l' 8.118
 Ochoungui 3.128
 Oiseaux, Île aux 11.226
 Olive Bank 11.212
 Onibe River 8.61
 Onilahy River 4.38
 Oravaka, Rocher 6.127
 Oreste, Roche 3.181
 Orient Bay 12.77
 Orongéa 8.162
 Orongéa, Banc d' 8.159
 Orongéa, Passe d' 8.144
 Tidal streams 8.152
 Orontany, Presq'île d' 6.121
 Orontany=peninsula.
 See proper name
 Orsini, Quai 5.78
 Osorne, Pointe 11.232
 Ouani, Mouillage d' 3.105
 Ouani, Pointe 3.105
 Ouénéfou, Île 3.52
 Ouest, Chenal de l' 5.75
 Ouest, Pointe: île Juan de Nova 2.58
 Ouest, Pointe: île Saint-Paul 13.12
 Ovy, Nosy 5.168
 Owen Bank 10.95
 Pagé 3.99
 Pagode 9.79
 Pahangi, Nosy 6.165
 Pahanjy, Nosy 6.165
 Pain du Sucre 5.95
 Palisade Bay 11.241
 Mooring buoy 11.247
 Pamandzi, Baie de 3.157
 Pamandzi, Ile 3.141
 Pamandzi, Récif 3.142
 Pangalanes, Canal des 7.57
 Papanga 7.71
 Parasol, Île 12.47
 Parasol, Roche 11.318
 Parc, Pointe du 11.91
 Parisiennes, Les 10.145
 Parnel, Mount 10.197
 Parson, Récif 4.96
 Passe de l'Île Poule 12.32
 Passe du Nord 7.161
 Passe Femme, Pointe 9.54
 Passe, Île de la:
 Moresby Islands 12.31
 Passe, Île de la: Mauritius 11.208
 Passe, La 10.123
 Passe=pass, passage, channel.
 See proper name
 Passes, Récif des 6.193
 Paté Nord-Ouest 11.342
 Patsy, Pointe 3.106
 Paul Island 10.62
 Paul, Île 11.343
 Pearl Island 11.337
 Pêcheurs, Pointe 11.130
 Peïtro, Récif 3.169
 Pelerin Bank 4.192
 Pélor Bank 4.139
 Péninsule=peninsula.
 See proper name
 Perle Island 11.337
 Perle Reef 10.85
 Perle, Île 11.337
 Perle, Récif de la 4.159
 Peros Banhos 12.29
 Petit Ambohitrosy 4.273
 Petit Cour, Anse 10.171
 Petit Paté 11.217
 Petit Récif 7.153
 Petit Robert, Banc du 4.150
 Petite Passe, Bancs de la 6.193
 Petite Rivière Bay 11.118
 Petite Rivière Noire Bay 11.129
 Petite Rivière Noire,
 Piton de la 11.120
 Petite Rivière, Pointe 11.130
 Petite Soeur 10.159
 Petite Soeur (Island) 12.47
 Petite-Terre 3.141
 Petrel Bank 4.136
 Philomel Shoal 4.263
 Pic=mountain peak.
 See proper name
 Pic=peak. See proper name
 Picard, Île 9.33
 Light 9.39
 Pierre, Île 12.47
 Pieter Both 11.156
 Pigeon House Rock 11.242
 Pilier Sud 4.159

- Pilot Patches 10.181
 Piment Point 11.212
 Piments, Pointe 11.172
 Pins, Anse aux 10.198
 Pintade, Pointe 8.136
 Piracy and armed robbery 1.58
 Pirogues, Passe des 11.235
 Piton de Fouge 11.182
 Piton de l'Eboulis 10.94
 Piton de Sambirano 8.82
 Piton Marron 11.217
 Piton, Le 11.284
 Presqu'île=peninsula.
 See proper name
 Pitt Bank 12.16
 Planneau, Montagne 10.201
 Plat, Rocher 7.105
 Plate, Île 10.85
 Anchorage 10.87
 Plateau Cove;
 see Anse du Plateau 6.63
 Plateau de la Table 5.143
 Plateau, Anse du, Hellville 6.48
 Plates, Roches 3.54
 Platte, Île 10.159
 Pléiades bank, Les 6.17
 Point Marianne 12.79
 Pointe Amboaniho 5.112
 Pointe Analalava 5.162
 Pointe, Morne de la 3.79
 Pointe, Récif de la 7.161
 Pointe=point. *See* proper name
 Poivre 10.59
 Anchorage 10.60
 Police Bay 10.185
 Police, Pointe 10.98
 Light 10.98
 Polite, Anse 10.193
 Pollution 1.37
 Polygone, Pointe du 8.163
 Polymnie Island 9.34
 Pomoni 3.79
 Anchorage 3.82
 Port Bébé 4.163
 Port Cruizer 4.20
 Port Louis 11.131
 Arrival information 11.143
 Basins and berths 11.163
 Directions 11.159
 Harbour 11.153
 Limiting conditions 11.138
 Outer anchorage 11.146
 Port services 11.165
 Dry dock 11.165
 Prohibited anchorages 11.148
 Small craft 11.169
 Slipways 11.170
 Port Réunion 11.32
 Port Saint-Louis 6.101
 Arrival information 6.103
 Berths 6.106
 Directions 6.105
 General information 6.101
 Harbour 6.104
 Leading lights 6.105
 Limiting conditions 6.102
 Port services 6.107
 Small craft 6.108
 Possession, Baie de la 11.47
 Poste de Flacq 11.234
 Pot à Eau, Mont 10.123
 Potopoto 6.152
 Pouce, Le 11.156
 Pouce, Le; *see* Tsaramborona 8.108
 Poudre d'Or 11.234
 Pouhou, Chissioua 3.164
 Pouhou, Ile 3.163
 Poydenot Shoal 11.360
 Pracel Bank 4.207
 Prairie, Pointe Corail de la 11.190
 Praslin 10.137
 Preneuse, La 11.122
 Presqu'île Radama 5.174
 Prévoyante, Récif de la 3.169
 Providence, Bancs 9.103
 Providence Island 9.103
 Prudente, Banc de la 3.138
 Prunes, Île aux 7.179
 Landing place 7.207
 Light 7.179
 Puits à Eau 11.333
 Purdy Sand 4.224
 Puy, Bancs du 4.159
 Pyramid Rock 10.135
 Pyramide, Rocher 7.104
 Quai la Rose, Pointe du 11.110
 Quatre Frères, Les (Ile de Mayotte) 3.170
 Quatre Frères, Les (Madagascar) 6.97
 Quatre-Vingts Brisants 11.258
 Quille, La 13.13
 Quoin Channel 11.241
 Race Jetty 11.218
 Race Point 9.91
 Radama, Îles 5.168
 Radama, Port 5.174
 Rade=roadstead. *See* proper name
 Radio Facilities 1.27
 Rafales, Anse des 8.168
 Rafaralahy, Baie de 5.176
 Ramanetaka, Baie 5.173
 Ramasse Tout, Pointe 10.123
 Rambler Bay 12.78
 Ramena 8.165
 Ranavalona, Cap 7.23
 Rance, Passe de la 6.165
 Rangazavaka, Lac 7.131
 Ranobe River 4.264
 Ranobé, Baie de 4.80
 Rantabe River 8.42
 Rantabé, Baie 6.142
 Raphaël, Île 11.344
 Rassi=Point. *See* proper name
 Rassi Bolé, Mont 3.133
 Rassi Gouja, Mont 3.128
 Ratafanika, Nosy 4.101
 Rats, Île aux 10.197
 Rats, Île des 12.19
 Ratsianarana 8.53
 Ratsianarana River 8.53
 Ravina, Nosy 8.43
 Ravine à Malheur, Pointe de la 11.78
 Ravine Blanche, Pointe de la 11.91
 Ravine Sèche, Pointe de la 11.103
 Ravine, La Grande 11.22
 Ravine, Petite 11.22
 Raynaud, Mont 8.128
 Recherche, Pointe de la 13.23
 Récif, Ilot du 3.141
 Récif=reef. *See* proper name
 Récifs de l'Etoile 4.14
 Récifs, Île aux 10.133
 Anchorage 10.133
 Reith Bank 10.121
 Rémire 10.66
 Anchorage 10.67
 Light 10.66
 Rémire Reef 10.41
 Rene de Rodriguez, Statue 11.284
 Renommée Rocks 10.130
 Requin Bank: Madagascar 4.134
 Requin Bank: Seychelles 10.121
 Requin, Pointe 11.333
 Resource Island 10.62
 Résidence Light, La: Manakara 7.101
 Residency Light, Manakara 7.101
 Réunion, Île de La
 North coast 11.74
 South coast 11.87
 West coast 11.17
 Réunion, La 11.9
 Réunion, Port 11.32
 Arrival information 11.44
 Basins and berths 11.67
 Directions
 Port Est 11.65
 Port Ouest 11.59
 Harbour 11.53
 Limiting conditions 11.39
 Main light 11.58
 Outer anchorages 11.47
 Services 11.69
 Ribault, Mouillage 13.28
 Rigny, Baie de 8.134
 Anchorage 8.137
 Rip Bank 11.243
 River Citrons 11.179
 River du Tombeau 11.178
 Rivière des Galets,
 Pointe de la 11.18
 Rivière du Mât, Pointe de la 11.103
 Rivière du Rempart 11.234
 Rivière la Chaux 11.193
 Rivière Noire 11.126
 Rivière Saint-Denis,
 Ravine de la 11.79
 Rivière=river. *See* proper name
 Rivomena Bank 4.192
 Roberts Bank 10.18
 Roche du Confluent 6.33
 Roche Noire, Pointe de 11.232
 Roche(s), =rock(s). *See* proper name
 Rocher des Oiseaux 11.207
 Rocher Tente 4.29
 Rocher, Pointe du 6.32
 Rocher(s)=rocks usually above-water.
 See proper name
 Rochers du Sud 8.133
 Roches, Île des 11.214
 Roches, Pointe aux 11.190
 Rocheux, Îlot 8.24
 Light 8.24
 Rodo, Baie du 8.129
 Rodriguez Island 11.250
 Anchorage 11.261
 Coastal passages 11.257
 Rodriguez Ridge 1.156
 Rogier, Banc 4.99
 Rogier Nord, Récif 4.96
 Rogier Sud, Récif 4.96
 Romanche Bank 5.97
 Ronde, Île: Mahé 10.202
 Ronde, Île: Praslin 10.155
 Rookerie, Pointe de la 13.23
 Rôti, Mont 6.140
 Rouge, Pointe 10.148
 Round Head 4.136
 Round Island: Mauritius 11.240
 Round Island: Praslin 10.155
 Roûre, Banc 13.13
 Roza, Colline de 5.52
 Royale Bay, Anse 10.198
 Royale, Passe 7.227
 Ruby Bank 7.197
 Ruby Shoal 4.192
 Saba, Nosy 5.165
 Sable Blanc, Récif du 3.142
 Sable, Pointe de 5.52
 Light 5.73
 Sable, Pointe de:
 Baie de Mangerivy 8.120
 Sables Blancs, Pointe des 11.92
 Sables, Pointe aux 11.122
 Sables, Pointe Butte aux 11.235

INDEX

- Sables, Pointe des:
 Port de la Nièvre 8.161
 Sada, Fort de 5.171
 Sada, Passe 3.134
 Sada, Pointe de 5.34
 Safrana, Nosy 4.24
 Sahaleona River 8.29
 Sahamalaza, Baie de 5.174
 Sahantsio River 7.131
 Sahazo 4.195
 Saikanosy, saikanosin',
 saikanosin' i=peninsula.
See proper name
 Saint André, Cap 4.275
 Saint Augustin village 4.29
 Saint Augustin, Baie de 4.28
 Saint Benoît 11.107
 Saint Brandon 11.333
 Saint François 10.71
 Anchorage 10.76
 Saint Jacques, Passe 11.187
 Saint James Anchorage 11.314
 Saint Joseph Island 10.62
 Saint Lazarus Bank 2.17
 Saint Louis Hill 10.225
 Saint Louis, Pic 7.18
 Saint Martin, Mont 11.206
 Saint Pierre Island 9.104
 Saint Pierre islet 10.149
 Saint Thomas Anchorage 9.28
 Saint-Denis 11.81
 Anchorage 11.82
 Saint-Denis Gillot airport 11.79
 Saint-Étienne, Pointe de la Rivière 11.101
 Saint-Étienne, Rivière 11.88
 Saint-Gilles les Bains 11.27
 Saint-Joseph 11.92
 Saint-Leu 11.22
 Saint-Paul, Baie de 11.29
 Anchorage 11.30
 Light 11.29
 Saint-Paul, Île 13.8
 Basin 13.17
 Saint-Philippe 11.92
 Saint-Pierre 11.94
 Arrival information 11.96
 Berths and services 11.99
 Directions 11.98
 Harbour 11.97
 Limiting conditions 11.95
 Sainte Anne Channel 10.236
 Sainte Anne Marine
 National Park 10.246
 Sainte Anne, Baie 10.172
 Anchorage 10.174
 Sainte Anne, Île 10.203
 Tanker berth 10.226
 Wind generators 10.225
 Sainte Marie, Cap 4.14, 7.14
 Light 4.13, 7.16
 Sainte Rita, Port 11.306
 Sainte Vincent River 4.91
 Sainte Vincent, Cap 4.91
 Sainte-Marie, Canal de 7.219
 Sainte-Marie 11.83
 Pointe 11.83
 Sainte-Marie, Port;
see Ambodifototra 7.231
 Sainte-Suzanne 11.84
 Sakara River 7.131
 Sakarivo 7.73
 Sakatia, Nosy 6.12
 Sakeleona River 7.134
 Salapaly, Baie de 4.26
 Salara 5.125
 Salohy 7.71
 Saloman Islands;
see Solomon Islands 12.90
 Solomon Islands 12.90
 Sambao River 4.270
 Sambava 8.78
 Anchorage 8.84
 Arrival information 8.80
 Directions 8.82
 Harbour 8.81
 Limiting conditions 8.79
 Port services 8.86
 River 8.78
 Sambirano River 6.39
 Sand Cay 10.43
 Sandringham reef 11.243
 Sandy Island 11.258
 Sangajira, Pointe 5.178
 Sanson, Pointe 8.135
 Santon Rock 4.248
 Santon, Banc 4.248
 Sapéré, Mont 3.141
 Saphir Bank 7.197
 Sarodrano: 15°30'S, 46°38'E 5.95
 Sarodrano: 18°10'S, 44°02'E 4.248
 Sarodrano, Pointe 4.29
 Satza, Nosy 6.135
 Saya de Malha Bank 11.356
 Anchorages 11.362
 Sazilé du Milieu, Passe 3.145
 Sazilé du Nord, Passe 3.144
 Sazilé du Sud, Passe 3.144
 Sazilé, Milima 3.145
 Sazilé, Pointe 3.127
 Sazilé, Récif 3.142
 Saziley du Milieu, Passe 3.145
 Saziley, Pointe 3.127
 Schmith, Pointe 13.12
 Schneider, Digue (Mole) 5.77
 Schneider, Port 5.66
 Seagull Shoal 10.95
 Sébastien, Cap Saint 6.121
 Sèche, Île 10.202
 Sel, Pointe au 10.196
 Sel, Pointe du 11.285
 Selle, Île de la 3.80
 Selle, La 6.187
 Selle, Mont de la 4.59
 Sentinel Rock 6.204
 Sentinelle, Rocher 6.204
 Sepulcre, Île du 8.168
 Serpent Island 11.242
 Serpent, Pointe du 4.63
 Seychelles Bank 10.1
 Areas to be Avoided 10.8
 Fishery rafts 10.4
 IMO Regulations 10.8
 Rescue 10.9
 Through routes 10.10
 Central - Northbound 10.28
 East 10.24
 North 10.20
 North-west 10.16
 South 10.11
 West 10.13
 Shark Rocks 10.40
 Signal Hill 10.201
 Signal Mountain 11.156
 Silhouette island 10.123
 Anchorages 10.124
 Silhouette, Bar 10.111
 Simpson Point 12.60
 Simpson, Banc 4.224
 Singe, Île 11.217
 Sipaille, Île 12.19
 Siren Island 11.342
 Sirène Island; *see Siren Island* 11.342
 Sirius Reef 11.226
 Six Metres, Banc des 7.203
 Snail Rock 11.156
 Soa, Roche 6.78
 Soalala 5.34
 Soalara 4.37
 Soalary 4.37
 Soamianina River 7.218
 Soanierana-Ivongo 7.226
 Sofia River 5.114
 Solitaire, La 8.18
 Sommet=summit. *See proper name*
 Sorciers, Pointe des 7.222
 Souadzou, Îlot 3.22
 Leading lights 3.25
 Soudan Bank 11.331
 Directions 11.332
 Souffleur, Le 11.190
 Souillac 11.182
 Souillac, Îlot 7.66
 Souris, Île 10.197
 South Brother 12.23
 South East, Port 11.262
 Anchorage 11.266
 Arrival information 11.264
 Directions 11.265
 Limiting conditions 11.263
 South Island 10.68
 South Island: Farquhar Group 9.84
 South Pass 4.177
 South Persépolis Bank 4.134
 South Point 12.57
 South Reef 4.224
 Southern Entrance 11.210
 Souzy, Banc 6.26
 Soy, Nosy 5.95
 Speakers Bank 12.93
 Spurs Reef 12.72
 Stork Patch 10.181
 Suarez 8.130
 Submarine cables 1.35
 Submarine pipelines 1.36
 Sucre, Pain de: 15°13'S, 46°54'E 5.95
 Sucre, Pain de: 12°18'S, 49°19'E 8.133
 Sud, Banc du 7.204
 Sud, Île du 10.59
 Sud Est, Port 11.262
 Sud, Île du; *see Coco Island* 11.338
 Sud, Passe du: Baie de Tintingue 7.227
 Sud, Passe du: Maintirano 4.248
 Sud, Passe du: Tamtave 7.161
 Sud, Passe du: Tuléar 4.62
 Sud, Pointe 13.12
 Sud, Récif du: Ile de Mayotte 3.139
 Sud, Récif du:
 18°10'S, 49°25'E 7.157
 Sud, Rocher: 13°26'S, 48°22'E 6.92
 Sud, Rocher: Îles Glorieuses 3.192
 Sud-Est, Banc du 4.248
 Sud-Oest, Île 9.66
 Sud-Ouest, Passe 9.76
 Sud-Ouest, Pointe 11.118
 Sudest, Île 12.19
 Suene, Pain de 8.133
 Suète, Île du 10.196
 Surprise Shoal 4.224
 Surprise, Banc de la 3.167
 Suzi, Banc 6.26
 Swan Shoal 10.18
 Tabinta, Banc 7.2
 Table Beacon 5.141
 Table, La 4.57
 Table, La: Grande Comore 3.41
 Table, Pointe de la 11.92
 Light 11.93
 Tafara, Nosy 4.62
 Tafondro, Pointe: Nosy Bé 6.79
 Tafondro, Pointe:
 Canal de St. Marie 7.222
 Taillevent Point 11.318
 Taillevent, Cap 11.318
 Takamaka Point 11.318

- Takamaka, Anse 10.193
 Takamaka, Île 12.96
 Tala, Pointe 4.78
 Tamarin mountain 11.123
 Tamarin, Baie du 11.127
 Tamatave 7.158
 Arrival information 7.170
 Berths 7.184
 General information 7.158
 Harbour 7.177
 Limiting conditions 7.164
 Outer anchorages 7.173
 Port services 7.187
 Tambohorano village 4.260
 Tambohorano, Banc de 4.260
 Tampina 7.149
 Tampolo, Banc 7.222
 Tampolo, Pointe 8.20
 Anchorage 8.30
 Tampon=summit peak.
 See proper name
 Tanga, Nosy 6.74
 Tangorombohitra, tangorombohitra',
 tangorombohitra' i=mountain pass.
 See proper name
 Tanguin, Point 9.51
 Tania, Nosy 4.152
 Tanifotsy, Cap 8.124
 Tanikely, Nosy 6.26
 Light 6.27
 Tanilatsaka, Pic du 6.23
 Tanio, Pointe, Light 7.151
 Tanjona Pass 5.20
 Tanjona, Cap 5.26
 Tanjona, Cap: Baie d'Antongil 8.18
 Tanjona, Cap: NNW of Vohémar 8.109
 Tanjona, Cap:
 S of Anjanazana River 8.49
 Tanjona, tanjon', tanjon'i=cape.
 See proper name
 Tappe-à-Terre 11.311
 Taranta 5.33
 Tattamuca, Île 12.19
 Taunton Castle Shoal 4.263
 Tazar Point 11.223
 Tec Tec, Îles 11.344
 Tandraka, Îlot 6.90
 Tandro, Nosy 8.129
 Tendrombohitra'=mountain.
 See proper name
 Ternay, Baie 10.191
 Ternay, La Passe 10.181
 Terrasse des Pingouins 13.12
 Terre Rouge, La 11.206
 Tête(s)=head(s). *See proper name*
 Têtes des Nosindolo 4.120
 Thérèse, Île 10.181
 Thétis Bank 5.17
 Thétis, Banc de la 5.112
 Thorp Bank 10.121
 Three Brothers islands 12.23
 Thumb, The 11.206
 Tintingue, Baie de 7.227
 Tirailleuse 6.203
 Toamasina 7.158
 Tolagnaro 7.27
 Arrival information 7.38
 General information 7.27
 Harbour 7.44
 Limiting conditions 7.33
 Port services 7.53
 Toliara 4.39
 Toloho, Nosy:
 Baie de Navendry 5.127
 Toloho, Nosy:
 13°00'S, 48°33'E 6.143
 Tombeau Bay 11.178
 Tonnerre, Baie du 8.166
 Tony, Pointe 4.75
 Topaze Bank 10.26
 Torabe, toraben', toraben' i,
 toraben' ny=large bank.
 See proper name
 Toraben'ny Fidirana;
 see Grand Banc de l'Entrée 6.17
 Toraka Afovoany; *see* Milieu,
 Banc du: Îles Barren 4.226
 Toraka, torak', torak' i, torak' ny,
 toreaky
 ny=bank(s), shoal(s).
 See proper name
 Toraky ny Kintana 4.11
 Torotoro, Mont 7.73
 Tortue, Île 11.351
 Tortue, La 6.17
 Tortue, Rocher 10.232
 Tortues, Baie aux 11.179
 Touareg, Banc du 6.27
 Toupie, Mount 10.180
 Tourmaline Bank 7.152
 Tozer, Banc 4.14
 Trafonomby 7.16
 Trambatsini 3.141
 Tranofotaka, Pointe 5.36
 Trapèze, Sommet 8.167
 Treize Cantons 11.206
 Tremblet, Pointe du 11.103
 Tremblet, Rempart du 11.103
 Trois Bassins, Pointe des 11.31
 Trois Chameaux, Les 11.22
 Trois Dames, Les 10.182
 Trois Îles 9.84
 Trois Salazes, Les 11.20
 Tromelin, Île 11.298
 Anchorage 11.302
 Directions 11.301
 Trompeuse Rocks 10.103
 Trou d'eau Douce 11.234
 Trou Fanfaron 11.153
 Trou, Île du 9.70
 Trous d'Argent 11.259
 Trozona, Nosy 4.119
 Tsandzani, Pointe 3.46
 Tsara Bajina, Nosy 6.97
 Tsaramborona 8.108
 Tsarapitsaha River 4.274
 Tsiala, Baie 8.168
 Tsiankazo, Îlot 6.128
 Tsihananina, Cap 8.59
 Tsimanandrafozana village 4.195
 Tsimanandrafozana, Bras de 4.198
 Tsimanenoakoho Pass 5.100
 Tsimanenoakoho River 5.116
 Tsimipaika, Baie de 6.80
 Tsinavouni, Pointe 3.52
 Tsingilofilo, Baie de 4.91
 Tsingilofilo, Cap 4.91
 Tsinjomantsy, Pointe 5.112
 Tsiyoy, Nosy 4.119
 Tsiraka Kahirimtrou 3.127
 Tsihibihina Deep 4.193
 Tsihibihina River 4.196
 Tsiringidringitra, Nosy 6.136
 Tsiitra River 7.212
 Tsitampevina, Nosy 6.125
 Tsoa, Anse 3.76
 Tuléar 4.39
 Tuléar, Rade de 4.39
 Turquoise Bank 5.17
 Turtle Hill 9.91
 Umzinto Bank 9.110
 Vache Marine, Île 12.32
 Vaches, Île aux: Mahé 10.182
 Vaches, Île aux: N. Seychelles 10.109
 Anchorage 10.111
 Vacoas, Îlot; *see* Vakois, Île 11.226
 Vacoas, Pointe aux 9.54
 Vaha, Nosy 6.164
 Vahala, Nosy 8.116
 Vahibe River 7.237
 Vahidranoro 4.13
 Vailheu, Récif 2.19
 Vakois, Île 11.226
 Valia, Nosy 6.148
 Valiha, Nosy: Îles Radama 5.168
 Valiha, Nosy:
 Andromache Îles 6.148
 Vangaindrano 7.76
 Vangaindrano, Mouillage de 7.76
 Vao, Nosy 4.265
 Vao, Nosy, Passe de 4.265
 Varabé 7.63
 Varika, Nosy 7.131
 Vato=reefs, rocks.
 See proper name
 Vatamainty, Cap 8.161
 Vatomandry 7.145
 Anchorage 7.147
 Beacon 7.146
 Directions 7.146
 Vatonomby, Pointe 5.124
 Vatou 3.165
 Vatovavy 7.113
 Vaucluse 4.192
 Vaucluse Bank 4.216
 Vaucluse, Récif; Light 3.167
 Vaudreuil Bank 5.97
 Vaudreuil Shoals 4.227
 Vaudreuil, Banc de 5.170
 Vaudreuil, Banc du:
 Vatomandry 7.143
 Vaudreuil, Banc du:
 20°54'S, 43°41'E 4.150
 Vazoana, Nosy 6.125
 Vé, Nosy 4.237
 Vedette, Pointe 6.200
 Veringotra, Pointe 8.19
 Verronge 11.344
 Vert, Banc 6.75
 Vert, Île 5.175
 Verte, Île: Porte de Longoni 3.178
 Verte, Île:
 13°18'S, 50°00'E 8.109
 Vertes, Roches 3.194
 Vestal Shoal 4.274
 Vestal, Banc 5.180
 Via, Nosy 8.129
 Victoria 10.199
 Arrival information 10.215
 Berths 10.237
 Directions 10.226
 General information 10.199
 Harbour 10.224
 Limiting conditions 10.209
 Port services 10.242
 Victoria Lighthouse 10.225
 Victory Bank 12.92
 Vigilant Bank 5.109
 Vigilant, Banc du 5.35
 Vigilant Shoal 10.18
 Vilamatsa River 4.286
 Vilandro, Tanjona 4.275
 Villars, Mont 11.206
 Vinanibe, Baie de 8.49
 Vinanibefaka=delta.
 See proper name
 Vinanivao village 8.50
 Vinés Bank 2.38
 Vines, Banc; *see* Vinés Bank 2.38
 Vingt Cinq 11.306
 Vingt Cinq Francs, Passe 9.94
 Vitamatsaha village 4.284
 Vlaming, Pointe 13.23
 Voalavo, Nosy 4.270
 Voailava, Cap 6.165

INDEX

Vohémar 8.94
 Anchorage 8.102
 Arrival information 8.96
 Berths 8.102
 Directions 8.98
 Harbour 8.97
 Leading lights 8.99
 Limiting conditions 8.95
 Port services 8.104
 Vohémar, Pointe de 8.91
 Vohibato, Lohatanjona 7.222
 Vohilava, Cap 6.165
 Vohimasina 7.213
 Vohimena, Tanjona; 4.1
 Vohisandria 7.16
 Vohitrakoholahy 7.130

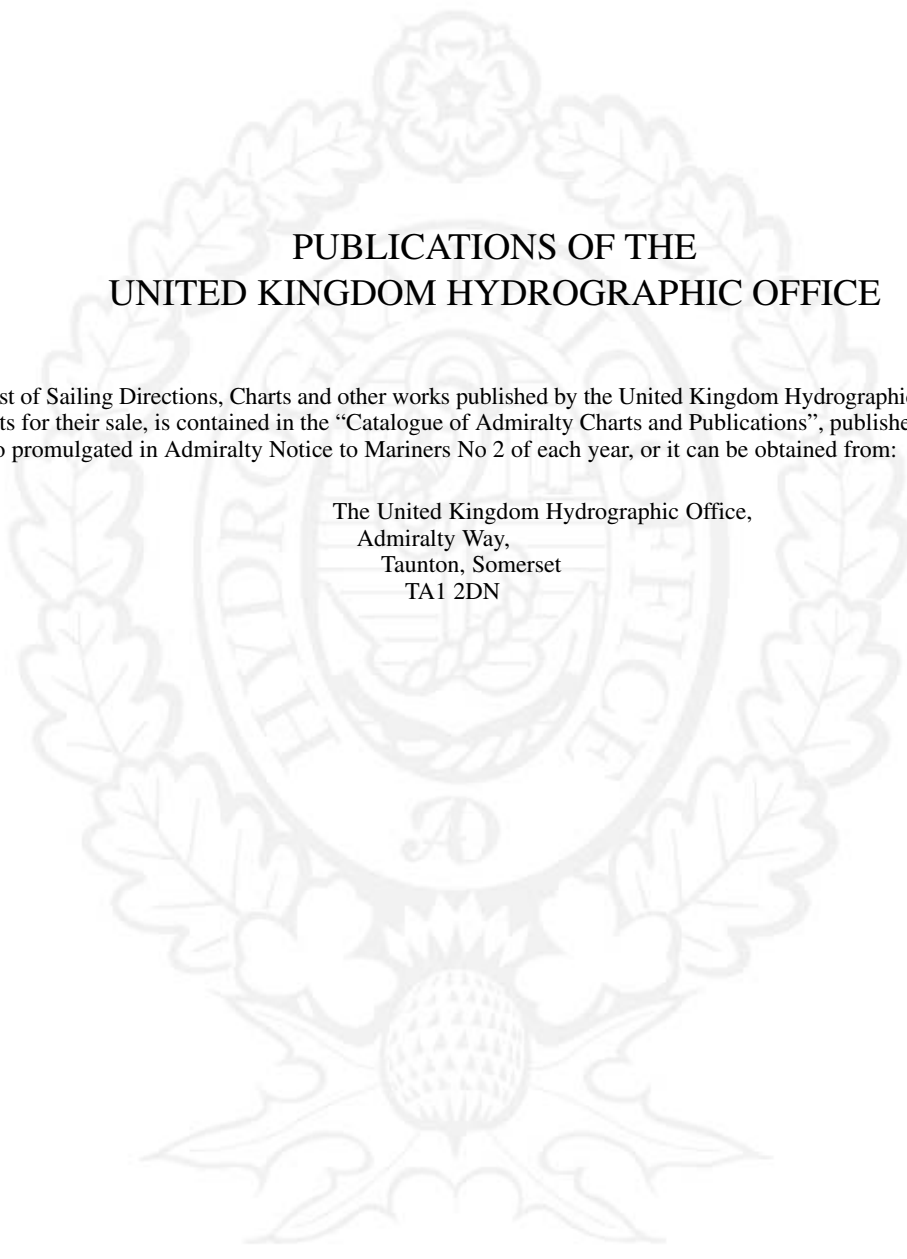
Vohitravoha 7.202
 Volana, Nosy 8.133
 Volbert, Anse 10.171
 Voltaire's Face 11.206
 Voltigeur, Banc du 6.114
 Vorona, Nosy 6.84
 Light 6.84
 Vouani 3.80
 Vulla Sand 4.263
 Vulture Rock 4.274
 West channels: Aldabra Group 9.53
 West Island 12.72
 West Shoal 4.227
 Western Pass 11.271
 Western Patch 11.258

Whale Rock 11.176
 Wight Bank 12.16
 William Pitt Bay 6.173
 Wizard Reef 9.110

Yang-Tsé, Roche 6.151
 Yéyé, Île 12.43
 Yvonne, Banc de l' 8.132

Zanguilles, Pointe 10.149
 Light 10.149
 Zélée, Banc de la 3.184
 Zélée Bank 3.184
 Ziné, Zissioua 3.170
 Zissioua=Iles. *See* proper name
 Zoroaster Shoal 10.26





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