HANDBOOKS PREPARED UNDER THE DIRECTION OF THE HISTORICAL SECTION OF THE FOREIGN OFFICE.—No. 88

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BRITISH NEW GUINEA

(PAPUA)

LONDON:
PUBLISHED BY H.M. STATIONERY OFFICE

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Editorial Note.

In the spring of 1917 the Foreign Office, in connection with the preparation which they were making for the work of the Peace Conference, established a special section whose duty it should be to provide the British Delegates to the Peace Conference with information in the most convenient form—geographical, economic, historical, social, religious and political—respecting the different countries, districts, islands, &c., with which they might have to deal. In addition, volumes were prepared on certain general subjects, mostly of an historical nature, concerning which it appeared that a special study would be useful.

The historical information was compiled by trained writers on historical subjects, who (in most cases) gave their services without any remuneration. For the geographical sections valuable assistance was given by the Intelligence Division (Naval Staff) of the Admiralty; and for the economic sections, by the War Trade Intelligence Department, which had been established by the Foreign Office. Of the maps accompanying the series, some were prepared by the above-mentioned department of the Admiralty, but the bulk of them were the work of the Geographical Section of the General Staff (Military Intelligence Division) of the War Office.

Now that the Conference has nearly completed its task, the Foreign Office, in response to numerous enquiries and requests, has decided to issue the books for public use, believing that they will be useful to students of history, politics, economics and foreign affairs, to publicists generally and to business men and travellers. It is hardly necessary to say that some of the subjects dealt with in the series have not in fact come under discussion at the Peace Conference; but, as the books treating of them contain valuable information, it has been thought advisable to include them.

It must be understood that, although the series of volumes was prepared under the authority, and is now issued with the sanction, of the Foreign Office, that Office is not to be regarded as guaranteeing the accuracy of every statement which they contain or as identifying itself with all the opinions expressed in the several volumes; the books were not prepared in the Foreign Office itself, but are in the nature of information provided for the Foreign Office and the British Delegation.

The books are now published, with a few exceptions, substantially as they were issued for the use of the Delegates. No attempt has been made to bring them up to date, for, in the first place, such a process would have entailed a great loss of time and a prohibitive expense; and, in the second, the political and other conditions of a great part of Europe and of the Nearer and Middle East are still unsettled and in such a state of flux that any attempt to describe them would have been incorrect or misleading. The books are therefore to be taken as describing, in general, *ante-bellum* conditions, though in a few cases, where it seemed specially desirable, the account has been brought down to a later date.

G. W. PROTHERO,
General Editor and formerly
Director of the Historical Section.

January 1920.

TABLE OF CONTENTS

PAGE

I. GEOGRAPHY PHYSICAL AND POLITICAL

(1) Position and Area 1
(2) Surface, Coasts, Rivers, and Islands
Surface 1
Coasts 2
Rivers 3
Islands 3
(3) Climate 7
(4) Sanitary Conditions 7
(5) Race and Language... 8
(6) Population
Numbers... 10
Towns and Villages 10
Movement 11

II. POLITICAL HISTORY

Chronological Summary 12
(1) Discovery and Annexation... 12
Discovery 12
Annexation 13
Interest of the Australian Colonies 13
Australian attempts to colonize and annex New Guinea 14
Discovery of Gold 15
Queensland annexes non-Dutch New Guinea 16
British Protectorate established 17
German Protectorate... 17
Feeling in Australia 17
(2) The Protectorate, 1884-88 18
Scratchley's Administration 18
(3) The Crown Colony 19
Macgregor's Administration 19

III. SOCIAL AND POLITICAL CONDITIONS

(1) Religious 22
(2) Political 23
(3) Public Education 24
(4) Social 24
Progress of the Natives... 24

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PAGE

IV. ECONOMIC CONDITIONS

(A) MEANS OF COMMUNICATION

(1) Internal 26
(a) Roads and Tracks 26
(b) Rivers 28
(c) Transport 29
(d) Proposed Railway 30
(e) Posts, Telegraphs, and Telephones... ... 31
(2) External 32
(a) Ports 32
(b) Shipping Lines 35
(c) Wireless Communication 36

(B) INDUSTRY

(1) Labour 37
(2) Agriculture 39
(a) Products of Commercial Value 41
Copra 41
Rubber 43
Hemp 44
Tobacco 45
Cotton 45
(b) Plantation Statistics 45
(c) Stock-Raising 46
(d) Methods of Cultivation 47
(e) Forestry 47
(f) Land Tenure 48
(g) Government Assistance to Agriculture ... 49
(3) Fisheries 50
(4) Minerals 50
Gold 51
Copper 52
Coal 52
Petroleum 52

(C) COMMERCE

(1) Domestic 54
(2) Foreign 54
(a) Exports 55
(b) Imports 55
(c) Countries of Destination and Origin ... 56
(d) Customs 56

PAGE

(D) FINANCE
(a) Public Finance 57
(b) Currency 57
(c) Banking 58

(E) FUTURE POSSIBILITIES 58

APPENDIX
Treaty I. Arrangement between Great Britain and Germany 61
Treaty II. Convention between Great Britain and the Netherlands 61
Table I. General Comparative Statistics 63
Table II. Agricultural Distribution 63
Table III. Imports and Exports 64
Table IV. Principal Articles of Export and Import ... 65
Table V. Output of Goldfields 66
Table VI. Indentured Native Labour... 66

AUTHORITIES 67

MAPS... 69

I. GEOGRAPHY PHYSICAL AND POLITICAL

(1) Position and Area

The territory of Papua, or British New Guinea, comprises the south-eastern part of the island of New Guinea together with the D'Entrecasteaux, Lusancay, Trobriand, Woodlark and Laughlan Islands, the Louisiade Archipelago, and some other small groups off the south-eastern promontory. The boundary between Papua and Kaiser Wilhelm's Land follows the parallel of 8° south latitude from the east coast to 147° east longitude; thence it passes in a straight line to latitude 6° south and longitude 144° east; thence in another straight line to latitude 5° south and longitude 141° east, where it meets the frontier of Dutch New Guinea. Between British and Dutch New Guinea the frontier runs south from latitude 5° south along the meridian of 141° east longitude, until it meets the Fly River, which it follows until that river crosses the meridian of longitude 141°1′48″ east; after which the boundary follows this meridian to the south coast, at the mouth of the River Bensbach.

The total area of Papua, which is about 28 per cent. of the total area of New Guinea, is about 90,500 square miles, of which some 2,700 square miles is made up of islands.

(2) Surface, Coasts, Rivers, and Islands

Surface

The south-eastern part and the interior of the western part of Papua are very rugged and mountainous. A range of high mountains, known as the Main Range, runs from the Snowy Mountains in Dutch territory along the German frontier and south-east through Papua to its extreme eastern end. Only

parts of this range have been explored. The loftiest peaks in Papua are situated in the middle region of the south-east, where it is called the Owen Stanley Range. On the north-eastern side of Papua the mountains approach the sea, and spurs form bold mountainous headlands such as Cape Nelson. There is, however, a good deal of low swampy land, 20 to 30 miles wide in places. At the extreme east the area of low-lying land is more restricted. The southern and south-western slopes of the Owen Stanley Range are as a rule some distance from the sea, and leave more flat land in that part of Papua, much of which is cultivated. At the head of the Gulf of Papua, particularly on its western side, there is a great area of flat, marshy country, lying practically at sea level and intersected by a network of creeks and swamps. This region extends 50 to 200 miles inland to the beginning of the mountain slopes.

In the region of Cape Nelson there are several extinct or dormant volcanoes. Steam is often emitted from Mount Victory. It is not improbable that further exploration will reveal other volcanoes. Slight earthquakes are not infrequent in the D'Entrecasteaux Archipelago, but are rare on the mainland.

Coasts

The coastline is much indented and the shores are rocky and steep in the eastern half of Papua, except at the head of the numerous inlets, where they are low and faced by beaches or mangrove swamps. Round the north and west of the Gulf of Papua the shores are low, swampy, and ill-defined. On the south coast a fringing coral reef, broken by many passages, extends from about Redscar Bay to the east end of New Guinea and is continued into the Louisiade Archipelago (*see* p. 5). Except for the wide break off the Gulf of Papua, this reef is continuous with the Great Barrier Reef of Queensland, which stretches across Torres Strait in about longitude 144° east. The reef shelters

the south coast during the prevalence of the trade winds, and makes anchorage safe and landing easy in the numerous bays. The other coasts of the mainland have no coral reefs. They are well provided with harbours, though few of these are of great size or suitable for large vessels.

Rivers

Several large rivers flow into the Gulf of Papua. The most important are the Fly, with its tributary the Strickland, Turama or Gawai, Wairori, Purari, and the smaller Lakekamu. The entrance to the Fly River is 50 miles wide, but the navigation of the river is difficult on account of uncertain channels and shifting sandbanks. Farther east are the Vanapa, Laloki, and Kemp Welch rivers. On the north-east coast, close to German territory, is the mouth of the River Mambare. The only other streams worthy of mention are the Kumusi, Musa, and Gira. These all flow out on the same coast as the Mambare; the last-mentioned immediately north-west of that river, the others farther to the south-east.

All rivers are perennial, but navigation is liable to be interrupted in years of drought. Shifting channels and snags present difficulties at all times. The Rona Falls, 200 ft. high, on the Laloki River, which flows into Redscar Bay, might be a source of water power for Port Moresby.

Islands

The island groups to the east of Papua include some of the most important parts of the territory. With the exception of a few low coral islands all are rugged, and generally lofty; some are partly volcanic; practically all are fertile.

A number of small islands are separated from the mainland by China Strait, a channel whose intricate navigation, strong tidal streams, uncertain winds, and lack of anchorage discourage its use by large vessels.

This group includes the small but important Samarai, or Dinner Island, about 60 acres in area and rising to a height of 155 ft.; Sariba or Hayter, somewhat larger; Sideia, or Basilisk Island, rising to over 1,000 ft.; Basilaki, or Moresby Island, about 30 square miles in area, rising to an elevation of 1,740 ft.; and several smaller islands. All these islands are surrounded by coral reefs. Samarai has anchorage but no harbour. Sariba has several good harbours, to one of which, Maga Ikarona on Stanley Bay, it was at one time proposed to transfer the settlement on Samarai, owing to congestion on its present site. Moresby Island has a fair harbour in Hoop Iron Bay.

The Engineer Group, east of Moresby Island, consists of four small lofty islands without harbours. Farther east is the Conflict Group of about 20 low islands surrounding a lagoon in which there is anchorage.

The D'Entrecasteaux Islands, the largest of all, comprise three principal islands—Normanby, or Duau; Fergusson, or Moratau; and Goodenough, or Morata, besides Sanaroa, or Welle, and numerous smaller islands. They are partly of volcanic origin. Hot springs and saline lakes occur on Fergusson and Normanby. Earthquake shocks are not uncommon. The islands are steep and mountainous; Goodenough, the loftiest, rising to over 8,500 ft.; but all are fertile. There are scarcely any coral reefs. The little known Sewa Bay, north of Massie Bay, on the west coast of Normanby, is a land-locked harbour, with an area of about 10 square miles and anchorage in 10 fathoms. It has at least one entrance with 20 fathoms of water. Anchorages for small vessels are numerous except in Goodenough. The waters of the group are incompletely surveyed.

The important Trobriand Islands lie north of the D'Entrecasteaux Islands. This group comprises several low coral islands, of which the largest is Kiriwina. On the west coast of this island there is reported to be a sheltered anchorage with easy entrance; but the north and east coasts, which are

bordered by reefs, have no anchorage. Kitava, Kaileuna, and Vakuta are smaller islands. All are well watered and have a fertile, though shallow, soil.

The Lusancay Islands, west of the Trobriands, are low coral islets of little importance. Murua, or Woodlark Island has an area of about 200 square miles. The western part is over 1,300 ft. high, but the eastern half is lower. Although this island is much frequented there seems to be some uncertainty as to its extent and topography and even as to its exact position. The coasts on the whole are rugged and steep. There are several fair harbours, principally on the south side, of which the best is Guasopa. The Laughlan, sometimes miscalled M'Laughlin, Islands, east of Woodlark Island, consist of a dozen or more low coral islands partially surrounding a lagoon which affords good anchorage.

The Alcester, or Tokuna, Islands and Yanaba, or the Egum Group, are two collections of small rocky islands, south and south-west respectively of Woodlark Island. They have no harbour, but there is anchorage in the Egum lagoon.

The Louisiade Archipelago embraces most of the remaining islands. It is imperfectly surveyed, and may contain islands not shown on the chart. A large fringing reef encircles a great part of the archipelago, including all the southern islands. Within the archipelago, the Bonvouloir Islands consist of five or six small harbourless islands, 200 to 500 ft. in height. The Deboyne Islands, immediately east of the already mentioned Conflict Group, are larger and have much fertile soil. The principal of these, Misima, or St. Aignan, is about 100 square miles in area. It is mountainous, and rises to an elevation of 3,400 ft.; but there are extensive well-watered and fertile valleys. The coasts are steep, and there is no reef except on the south-east. Anchorage for large vessels is poor. The Renard Islands are low and rocky, but have some fertile ground. There are no harbours. The Calvados Chain is a group of high, rocky islets, among which navigation

is difficult on account of reefs and currents. The anchorages are poor. The Duperré Islands are five small coral islets on an atoll reef, west of the Calvados Chain. Their only importance is due to the lagoon, Bramble Haven, which is an extensive safe anchorage, available to large vessels and with an easy deep entrance on the south-west. East of the Calvados Chain is Joannet, or Pana Tinani, Island, with an area of 25 square miles. It is mountainous, but well watered and fertile. The low, smooth north coast offers no anchorage; but the indented south coast has good anchorage in Hatilawi, or Joannet harbour. Sudest, or Tagula, the principal island of the Louisiade Archipelago, has an area of about 250 square miles. A lofty range extends along the island, culminating in Mount Rattlesnake, 2,545 ft. high; but there are large areas of fairly flat ground. Several streams are navigable by canoes for a mile or so from their mouths. A reef encircles the island, and there are several fair harbours, the best of which, between Sudest and Joannet Islands and bounded on the north and east by reefs, is Coral Haven. This harbour has secure and sheltered anchorage, and is accessible for large vessels. Rossel Island, the most easterly of the Louisiades, has an area of about 100 square miles. It is mountainous, rising to a summit of 2,750 ft., but its shores are low and frequently swampy. The island is fertile. There are many small streams. A reef surrounds Rossel Island and several islets to the east, and forms a large lagoon, into which there are several channels. This reef shelters the bays on the east, which afford good anchorage.

The islands lying in Torres Strait off the coast of Papua all belong to Queensland, with the exception of Daru, Bristow, Bampton, and a few smaller islands. For some years it has been proposed to transfer Saibai and adjacent islands from Queensland to Papua, but the transfer has not yet taken place.

(3) Climate

The climate is hot and moist during the greater part of the year. The warmest period is from December to March with a mean temperature at or near sea-level of about 83° F. (28° C.). Places in the south-east are a degree or two cooler. The coolest period is from July to September with a mean temperature of about 77° F. to 80° F. (25° to 26·6° C.). The nights are never really cool, and the constant humidity of the atmosphere at most seasons makes the heat somewhat trying.

The prevailing wind from May to November is the south-east trade, which often blows strongly. It generally drops at night. This wind is succeeded by calms and variable winds; but the north-west monsoon sets in about December or January and lasts till March or April, when there is again a period with frequent calms. The north-west monsoon is intermittent and squally. Typhoons do not occur. Thunderstorms are frequent at the periods of calm before and after the monsoon.

Rain falls in all months, but principally from December to April, and is heaviest in February or March. The annual fall is greatest on the north-east coast and the eastern islands, 100 to 150 ins. (2·5 to 3·8 m.), and least on the south-west coast, which is sheltered by high mountains from the rain-bearing monsoon, 40 to 80 ins. (1 to 2 m.). The rainfall varies much from year to year, and every 5 or 6 years there is a deficiency severe enough to cause a drought in the less-watered regions of the south.

(4) Sanitary Conditions

Papua is not healthy either to Europeans or natives; but its reputation for unhealthiness has probably been exaggerated. Knowledge of the nature of several diseases and adequate medical treatment have done much to reduce mortality in recent years. Efforts to improve sanitation, especially in the neighbourhood of white settlements, have made a marked improvement

in the health of the white and native population. Samarai and Port Moresby are now comparatively healthy. The Gulf of Papua has a bad reputation which it probably merits. Disease-bearing mosquitoes can only be coped with locally, owing to the swampy nature of the country. Hospitals have been established at Port Moresby, on Samarai and Woodlark Islands, and Losuia in the Trobriands.

Malaria occurs throughout the territory; but it is seldom severe, and accounts for few deaths among the white population. Dysentery is more serious, and generally appears in the wet season. Every few years an epidemic occurs, and the natives suffer much. Blackwater fever is uncommon, and is usually mild. From time to time there are epidemics of beri-beri. Some success has been attained in places in combating this disease by adding proteids and fats to the native diet of rice. Yaws and several other venereal diseases are common, especially in the Trobriand Islands, but syphilis is rare. Leprosy is of occasional occurrence, chiefly in the Trobriand Islands and the Mekeo district. So far there is no systematic isolation of lepers. Elephantiasis is not common. There is no small-pox; but outbreaks from time to time in Dutch and German New Guinea have caused some apprehension in Papua. Many natives around Port Moresby, Daru, and other settlements have been vaccinated; and, though their number is small compared with the total population, it is probable (according to the chief medical officer) that small-pox, if it appeared, could be kept under control. Typhoid is unknown. Bronchial and lung troubles, especially whooping-cough, probably introduced by white men, cause some mortality among the natives. Parasitic intestinal worms seem to affect 50 to 80 per cent. of the native population. Their general effect on health is not yet ascertained.

(5) Race and Language

The natives are Papuans with much Melanesian admixture. The Papuans are the aborigines, and may

possibly be related to the natives of Australia. The Melanesians are supposed to have entered New Guinea on the north-east from the Bismarck Archipelago, and to have spread along the east and south coasts, in some places penetrating inland. There is the same mingling of races in the islands, except in Rossel Island, the inhabitants of which seem to be pure Papuans.

There are numerous Papuan and Melanesian languages and dialects. The Papuan languages differ widely from one another and from the Melanesian languages; the Melanesian dialects are closely related to one another. A knowledge of English is being spread, especially in the islands, by means of the mission schools and planters, but the only *lingua franca* at present is *bêche-de-mer* English, and that is little understood away from the coast.

Most of the natives are of fine physique, but people of small stature are occasionally met with in the interior. Some of the inhabitants of the deltaic region of the Fly River are of poor physique. In the south-east and in the islands the people are small but well-proportioned.

The various tribes are normally in a state of war with one another; but European influence has introduced peaceful conditions in many parts. On the mainland Government influence has penetrated to the interior, chiefly along certain river valleys; but many tribes are quite free from control. The islanders, except in some parts of the D'Entrecasteaux group and in Rossel Island, are peaceful; the Rossel Islanders still have a bad name. The inhabitants of Sudest Island are said to be the most civilized and peaceful in the whole territory. Beyond the sphere of Government influence no part of Papua can be regarded as safe. Head-hunting and cannibalism are still practised in parts. The natives are superstitious, and it is easy to offend their susceptibilities. Most natives are armed: those in the gulf region with bow and arrow; those of the south-east and islands with spears and clubs.

(6) Population[1]

Numbers

The native population is estimated to number 250,000 to 350,000. Only in a few small districts has there been a census. The Trobriand Islands have a population of 8,500, included in the above estimate. Population is densest round the coasts and on the islands. West of the Fly River it is sparse; but parts of the interior are well populated. Very few of the islands, even the smallest, are uninhabited. Large villages are the rule everywhere on the mainland and in the islands.

The alien coloured population in 1916 included 351 South Sea Islanders, mainly Samoan mission teachers, 8 Japanese, and 3 Chinese.

The white population in June 1916 was 992, compared with 1,037 in the previous year, the decrease being entirely due to causes arising out of the war. The total included 105 Government officials, 115 planters, 108 miners (chiefly gold miners), and 75 missionaries.

Towns and Villages

Port Moresby, the capital of Papua, lies on the east shore of the gulf, and has a population of 700. Tanubada, on the coast, and Elavara, on an island, are two large native villages, adjacent to Port Moresby. The only other centre comparable with Port Moresby is Samarai Island, 250 miles to the east, where there is an important training settlement on the north-west of the island. Woodlark Island, on account of its gold-fields, is an important centre. Government and mission stations are scattered along the coast, but rarely inland. The most westerly Government station is on Daru Island, and the most northerly is at Ioma, at the confluence of the Tamata and Mambare Rivers, about 20 miles from the coast. In the Trobriand Islands, Losuia is the seat of the resident magistrate.

[1] See foot-note, p. 26.

Movement

In the few districts for which it is possible to get accurate figures, the population seems to be increasing. Thus, in the Trobriand district in 1915, the birth rate was 51·2 per 1,000, and the death rate 46·7 per 1,000. Investigations in certain villages in the central district also show a slight increase. These are not sufficient figures, however, to admit of any general conclusions. According to the present Governor the population of that part of the territory which is under control is " certainly not diminishing, though the increase, if any, is probably very small."

II. POLITICAL HISTORY

Chronological Summary

1511 Portuguese discover New Guinea.
1700 Dampier discovers New Britain.
1768 Bougainville reaches south coast of New Guinea.
1770 Cook surveys Torres Strait.
1793 East India traders annex Manasuari Island, off north-west coast. D'Entrecasteaux explores south-east coast and neighbouring islands.
1828 Dutch take formal possession of west part of New Guinea.
1829 D'Urville surveys the south coast.
1846 Lieut. Yule takes possession of the south coast.
1853 France annexes New Caledonia.
1873 Capt. Moresby takes possession of the large islands east of the mainland.
1875 Government of New South Wales proposes annexation of East New Guinea and other Pacific islands.
1883 Government of Queensland annexes East New Guinea.
1884 British Protectorate proclaimed over the south-east coast. German Protectorate proclaimed over the north-east coast.
1885 Anglo-German agreement as to frontiers.
1888 Definite annexation of the Protectorate.
1895 Anglo-Dutch frontier defined.
1902 Authority of Governor of Queensland over Papua transferred to Governor-General of Commonwealth.
1905 Papua Act transfers New Guinea to Federal control.

(1) Discovery and Annexation

Discovery.—The island of New Guinea was known long before it was thought worth annexing. All the great colonizing nations discovered it in turn—the Portuguese in 1511, the Spaniards in 1528, and the Dutch in 1616. The first Englishman to visit it was William Dampier, who, in 1700, sailed along the northern shore and discovered and named the neighbouring island of New

Britain. The great voyages of French and English navigators into the Pacific in the later eighteenth century, when Bougainville reached the south coast of New Guinea (1768), and Cook surveyed Torres Strait (1770), brought New Guinea out of its obscurity, and raised the question of its settlement and annexation.[1]

Annexation.—In 1914 New Guinea was under the sovereignty of three Powers—the Netherlands, Great Britain, and Germany. The Dutch, basing their claims on a cession made by the Sultan of Tidore, took formal possession of the western half of the island in 1828, though their first attempts at settlement were not very successful. Great Britain maintained a continuous interest in New Guinea from the time of Cook's voyages, and on more than one occasion showed signs of an intention to make settlements on, or annex, some part of the island. In 1793, the East India traders, Kormuzin and Chesterfield, took possession of New Guinea and of islands in Torres Strait,[2] and again, in 1846, Lieutenant Yule took possession of the southern coast. Neither of these actions was confirmed by the Government; British interests did not at the time seem sufficient to justify the annexation of the island. The aspect of the matter was changed with the growth of the Australian colonies. As large European communities in the Pacific, they thought themselves entitled to a very important voice in determining the political future of the island groups that surrounded them and commanded their routes of communication. They looked on the Pacific as their field of expansion; and, when foreign merchant agents and foreign travellers began to penetrate the Pacific, they became apprehensive that foreign colonization would follow, and would have been glad to establish a Monroe doctrine against the intrusion of other Powers.

[1] A sketch of the history of the discovery and exploration of New Guinea is given in a Memorandum by Captain F. J. Evans; Parliamentary Papers 1876, c. 1566, p. 21.

[2] Accounts and Papers, 1876, c. 1566, p. 1.

The difficulties to which the French convict station in New Caledonia gave rise emphasized in their minds the undesirability of foreign neighbours. National feeling, trade interests, the peace and order of the Pacific, the security of their shores, and their immunity from European wars were the principal motives that influenced them. Of all the islands New Guinea was the most important to Australia (as Samoa is to New Zealand) because of its nearness, its strategic position relatively to Australia, and its command of the Torres and China Straits. Enterprising spirits in Australia began to frame projects of colonization. In 1867 a Company was formed in Sydney to colonize non-Dutch New Guinea;[1] but the promoters abandoned their project when they found they could not form a colony without the consent of the Imperial Government. In 1870-71 a band of youths attempted a prospecting expedition to New Guinea, but met with shipwreck and disaster.

This attempt, foolhardy as it was, reflected the feeling of the country and drew attention to the island at a moment when other and different causes were doing the same. Merchant vessels had begun more and more to frequent Torres Strait; the *bêche-de-mer* and pearl fishers of Queensland had extended their operations to Louisiade in the east and Saibai in the north; missionaries were visiting the mainland, where in 1871 the London Missionary Society established a station at Daru, near the mouth of the Fly River; Russian, French, and Italian travellers were exploring on the coast; in the neighbouring islands the ill-regulated labour trade was giving rise to all sorts of abuses; and in the Bismarck Archipelago German business agents were pioneering in search of trade. Both those who wished to exploit and those who wished to protect the natives sought the ear of the Colonial Office. Then, in 1873, Captain Moresby discovered the harbour on the south to which he gave the name of

[1] A. & P. 1876, c. 1566, p. 27.

Port Moresby, and provisionally annexed the larger islands off the extreme eastern point of the mainland.'[1]

This action received no recognition, but was soon followed by a definite proposal from New South Wales. In 1875 the administration of Mr. John Robertson put forward an ambitious scheme of annexation,[2] including not only New Guinea, but the adjacent islands, the Solomons, the New Hebrides, and the Marshall, Gilbert, and Ellice Islands. They argued that the matter was one of Imperial, and not simply of Australian, importance. At the time such annexations would probably have aroused no feeling of antagonism among foreign Powers. Meanwhile, in England, a New Guinea Colonizing Association was pressing for recognition. The Home Government were not indifferent in the matter, and made enquiries as to the Dutch title to New Guinea and the boundaries of their possessions; but, taking the view that the prime interest in the matter was Australian and not Imperial, and that there was no reason to anticipate any action by other Powers, they declined the proposal for annexation.

Then it seemed that events would force their hand and that the immigration of adventurers to New Guinea, which the Colonial Government predicted, would necessitate the declaration of a protectorate; for, in 1877, gold was discovered, and soon afterwards a party of miners arrived at Port Moresby. For a time a Queensland agent, though without legal authority, maintained order. In the following year the Government extended the boundary of Queensland to include the whole of Torres Strait and the islands in it up to a short distance from New Guinea; and the station at Somerset, near Cape York, on the mainland, was moved to Thursday Island, from which the Strait could be controlled. But the gold rush soon ended in complete disappointment, and the gold seekers departed. The new argument for annexation thus fell to the ground, and in

[1] J. Moresby, *Discoveries in New Guinea*, p. 208.
[2] A. & P. 1876, c. 1566, p. 26.

January 1883 Lord Derby stated definitely that the Government would not reopen the question.

In Australia, however, the event stimulated anew the feeling in favour of annexation, which was still further strengthened by fear of the intentions of Germany and Italy. In 1882-83 there were signs that Germany might be contemplating colonization in New Guinea,[1] and in April 1883 the Government of Queensland, apprehensive lest some foreign Power should take possession of the islands and coasts opposite to Cape York and the entrance to the waterway inside the Barrier Reef,[2] sent Mr. Chester, Police Magistrate at Thursday Island, with instructions to annex all non-Dutch New Guinea.[3] The action of Queensland was supported by the other Australian colonies; and the Home Government, confronted by this bold act of self-assertion, once more gave the matter careful consideration. Unwilling to increase imperial responsibilities and expenses, distrusting Queensland's attitude to the natives, and believing the danger of foreign annexation to be imaginary, they again refused to ratify a policy of annexation, but they subsequently offered to establish a coastal protectorate towards the expenses of which the colonies should contribute.[4]

At the Inter-Colonial Convention of 1883 the colonies approved the annexation of New Guinea, so that an agreement was quickly reached.[5] It was a question of the extent of the protectorate, and it appears that at the last meeting before the autumn recess the Cabinet had at one moment agreed to proclaim a protectorate over the whole of non-Dutch New Guinea,[6] or all save the stretch of northern coast between 141° and 145° east longitude. It was at this stage that the Government got its first definite inkling of the intentions of Germany. In

[1] A. & P. 1883, c. 3617, pp. 118 and 130.
[2] A. & P. 1883, c. 3691, p. 13.
[3] For Mr. Chester's account, A. & P. 1883, c. 3691, p. 16.
[4] Lord Derby's despatch, July 11, A. & P. 1883, c. 3691, p. 22.
[5] A. & P. 1884, c. 3863, p. 142.
[6] E. Fitzmaurice, *Life of Lord Granville*, II, p. 271.

August 1884 the German Government expressed the view that, while Great Britain's interests were paramount on the southern shore, there was room for German colonization on the northern, and suggested a friendly conversation between the two Governments.[1] Meanwhile, Lord Derby, in continuation of his negotiations with the Colonial Governments, gave orders for the proclamation of a British protectorate over southern New Guinea from longitude 141° east to East Cape,[2] and was surprised to learn shortly afterwards that, without further conversation on the matter, the German Government was annexing the New Britain Islands and northern New Guinea from the Dutch boundary to Huon Gulf.[3] In the circumstances, after consultation with the Colonial Government, he extended the British protectorate over the remainder of the north-eastern coast and the adjoining islands. In November 1884 the British flag was hoisted at Port Moresby for the fifth time on the soil of New Guinea;[4] and in January 1885 the German protectorate was proclaimed in Kaiser Wilhelm's Haven. An Anglo-German agreement[5] as to the interior boundary was made in 1885, and the boundary fixed approximately along the watershed. This arrangement gave to Germany 67,000 square miles, and to Great Britain about 90,500.[6]

Such in general outline was the sequence of events. The news of German action caused "surprise and agitation" and "great disappointment" in Australia. For years the Australians had complained that the Home Government did not promote British interests in the Pacific with the same energy as the

[1] A. & P. 1884-5, c. 4273, p. 4.

[2] A. & P. 1884-5, c. 4217, p. 49. Map of British Protectorate as first proclaimed.

[3] A. & P. 1884-5, c. 4273, p. 63.

[4] Chalmers, *Pioneering in New Guinea*, p. 119.

[5] A. & P. 1884-5, c. 4441, gives the Agreement.

[6] A fuller account of Lord Derby's negotiations about the Anglo-German boundary will be found in *German Colonization*, No. 42 of this Series.

Governments of France and Germany displayed on behalf of their subjects. Their strongest feeling was directed against the French criminal establishment, which caused the most immediate inconvenience. But, in the matter of New Guinea, they felt that political and commercial interests of great importance to the Empire and to themselves had been sacrificed, that their foresight had been in vain, that the Government had given in too easily to the demands of Germany, and that the whole business had been mismanaged. They did not allow sufficiently for the balancing of advantages, of gain here and loss there, which must take place in the policy of a world-wide empire. At the time Great Britain was a good deal troubled by events in Egypt, and, needing the goodwill of Germany there, was not in a strong position to resist her claims, however unexpected, elsewhere. British interests in North-East New Guinea were the price paid for "getting out of the way the bar to the Egyptian settlement."[1]

(2) The Protectorate

The Protected Territory of New Guinea, 1884-88

Some years elapsed before the Protectorate was converted into a crown colony; and during this time its affairs were entrusted to a Special Commissioner—an imperfect and provisional arrangement, since the commissioner, in the circumstances, could not be empowered to make laws binding on the subjects of foreign Powers. Other difficulties, too, confronted General Sir Peter Scratchley, the first Commissioner. Disagreement between the Colonial and Imperial Governments on the financial arrangements delayed his starting for the territory, and when he arrived he found that the abuses of the Queensland labour trade

[1] Gladstone to Granville (March 6, 1885) in Fitzmaurice, *Life of Lord Granville*, II, p. 431.

in 1883-84 had alienated the natives and rendered his preliminary inspection more troublesome. His short term of office was mainly devoted to a study of the conditions of the country with a view to recommending a scheme of administration, and was marked chiefly by the establishment of the seat of government at Port Moresby. Port Moresby was the one place where a permanent attempt at civilization had been made; it possessed, in addition, the advantages of a harbour, a central position with easy access to Cooktown, and a healthy climate. On Scratchley's death, in December 1885, the Hon. John Douglas was appointed Special Commissioner (February 1886), and held the office until, in September 1888, the Protectorate was formally annexed.

(3) The Crown Colony

British New Guinea, 1888-1905

Under the new constitution the Administrator was appointed by the Crown, but was subject to the instructions of the Government of Queensland.[1] He was assisted by an Executive and a Legislative Council, and was instructed to protect the natives in their persons and lands, and to promote religion, education, and civilization amongst them. The cost of the administration up to £15,000 per annum was guaranteed by the three colonies: New South Wales, Victoria, and Queensland. Sir William Macgregor was appointed the first Administrator, and held office until September 1898. The title was changed to Lieutenant-Governor in March 1895.

In a country such as New Guinea, where there were only twenty Europeans when the protectorate was first proclaimed, the future depended primarily on the attitude of the natives and on the success of the

[1] See A. & P. 1888, c. 5564, p. 651, for the particulars of the form of government.

Government in securing their confidence and furthering their moral and material progress. The chances were not unfavourable. New Guinea was relatively untouched by Western influences, and the Government could work out its policy in regard to such matters as land and labour, police and justice, education, and the relations of the races, deliberately and systematically, from the beginning, without the hampering effect of past mistakes. It was of the utmost importance, too, that Macgregor, who had gained experience under Sir Arthur Gordon in Fiji, had an uninterrupted period of ten years in which to attempt this. Proceeding with patience and tact, he established his authority in the coastal districts, organized the departments and the administration, and brought to the territory peace and order. His success is to be measured by the fact that the natives in general accepted the new arrangements quietly; and the murders of Europeans, which had been continuous since 1845, the vendetta, head-hunting, and cannibalism, common in the territory, virtually ceased as the authority of government was extended. For the maintenance of order he organized (1890) an armed native constabulary under European officers, and a system of village police. The latter acted under the local magistrates and served as a substitute for the tribal chiefs, who practically do not exist in Papua. These two forces have proved sufficient both for police and defence; for New Guinea has happily been free from any serious native rising. The Tugeri tribe, who were in the habit of raiding British territory from Dutch New Guinea, were checked by the constabulary in 1896; and with the Papuans themselves there was only once trouble, which arose in 1897 in the Mambare district near the German boundary. Externally, the most important political event was the final settlement in 1895 of the boundary with Dutch New Guinea.[1] The frontier was fixed $1\frac{1}{2}$ miles east of the 141st east meridian, as far as the Fly River, which

[1] A. & P. 1895, c. 7834, quoted in Appendix, Treaty II, p. 65.

it follows between the two points where the river crosses the meridian, so that divided jurisdiction over the river might be avoided; it then follows the meridian to the point of intersection of the German, Dutch and British possessions.

The new conditions favoured the missionaries, who in general worked harmoniously with, and were helpful to, the Government. In Macgregor's opinion, they and the constabulary were the finest institutions in the country.

III. SOCIAL AND POLITICAL CONDITIONS

(1) Religious

Before the coming of Christian missionaries none of the great historic religions appears to have penetrated Papua, where the religious beliefs of the various peoples have not passed beyond the stage of primitive mythology. In 1913 there were four missionary societies at work—the London Missionary Society, a Roman Catholic mission, an Anglican mission, and an Australian Methodist mission. The number of missionaries (adult males), not including native teachers from the South Sea islands, was 109, nearly one-eighth of the total (adult male) European population. The four societies have had marked out for them separate spheres of activity, to which they loyally confine their efforts; and they have been one of the chief influences in introducing Western civilization into Papua.

In all dealings with the natives the missionaries have played an important part. Before the advent of any form of Government they were the pioneers of European influence and authority. Part of their energy has been wasted through want of proper training and understanding of native ideas; but much of their work has been of great value. Scholastic and technical education, so far as it exists, is in their hands; and, though to-day the growth of Government influence is modifying their benevolent autocracy, their activities remain one of the main factors in the development of the territory.

What the total effect on the native mind has been one cannot tell. But Dr. Haddon has recently drawn attention to the rise of several new religious cults in Papua, and he connects this intellectual and emotional

activity with the disruption of the older social order that is going on, and regards it as to some extent a reaction against the incoming European and a sign of receptivity of new ideas.[1]

(2) Political

The formation of the Commonwealth led to further changes in the government of the territory. In March 1902 the general superintendence of the administration was transferred from the Governor of Queensland to the Governor-General of Australia; and by the Papua Act,[2] 1905, British New Guinea became, as the Territory of Papua, a possession, though not a part, of the Commonwealth, which had henceforth the undivided control of its affairs. The Act places the administration in the hands of a Lieutenant-Governor, holding office at the pleasure of the Governor-General, and assisted by an Executive Council of not more than six officials appointed by the Governor-General, and a Legislative Council composed of the Executive Council and three non-official members appointed by the Governor-General. The non-official members vacate their seats after six years, but may be reappointed, and their number is to be increased with the growth of the European population. The Legislative Council has full powers of legislation subject to the Governor-General's veto within six months; but ordinances relating to divorce, Crown lands, native lands, native labour, the supply of arms, liquor, and opium to natives, and the immigration of aboriginal natives of Australia, Africa, Asia, and the Pacific Islands are reserved for the Governor-General's pleasure. The Act provides for appeals from the Central Court of the territory to the High Court of Australia.

For the purposes of administration the territory is divided into ten districts, each under the charge of a

[1] *Hibbert Journal*, April 1917, *Five New Religious Cults in New Guinea*, by E. W. P. Chinnery and A. C. Haddon.

[2] *Handbook of Papua*, 3rd edn., 1912, p. 112.

resident magistrate. The greater part of the revenue is derived from the Customs receipts and an annual grant by the Commonwealth, the amount of which was at first £20,000, but which has been since increased to £30,000.

(3) Public Education

There are two small Government schools for European children at Port Moresby and Woodlark Island respectively. The education of the natives is in the hands of the missions, which at many stations have large and flourishing schools. In some of the mission schools English is taught, and in such cases the attendance of the native children is compulsory. The educational work of the missions is generally well spoken of in the reports of the divisional magistrates. The missions have also some schools for European children.

(4) Social

Progress of Natives.—It is too soon to attempt to measure the influence upon the natives of the changes that have taken place, or to judge of their possible future progress. It is clear that the Government has not attempted in any direct way to europeanize them, or to alter their moral and religious outlook, unless it be by the suppression of sorcery, a baleful influence on their life, against which it has always fought; and it has certainly protected them from much of the pressure of Western life, to which they would otherwise have been exposed. The slow extension of its authority has meant primarily the surer suppression of crime and the obligations of peace and law and order, which the natives appear to have accepted quietly and not ungratefully. This speaks to tactful handling and to the possibility of good relations between the races, on which the economic development of the territory depends. Apart from this, mission teaching and the experience of Government service and plantation employment seem to be

the chief influences which the new conditions have brought to bear on native life. Experience seems to show that the natives can profit by the European training and discipline which they get in the constabulary and other Government services. These are also, it may be observed, a means of spreading over the territory the Motuan language of the natives of Port Moresby. The natives make good labourers, and can be taught to be artisans; but the process of persuading them to cultivate habits of industry and to abandon their old warlike activities and leisurely life must be gradual, and they will only slowly be drawn into a higher economic organization.

IV. ECONOMIC CONDITIONS[1]

(A) MEANS OF COMMUNICATION

(1) Internal

(*a*) *Roads and Tracks*

The natural features of Papua are in a marked degree inimical to communication by land, and "the difficulties of inland travel . . . . can hardly be realized by those who do not know them."[2] Tropical forest and jungle, penetrable only at the rate at which a man can hack his way through the interlaced growths; extensive swamps, full of thorned bushes and "lawyer cane," where the water is often over a man's head; rivers, streams, and mountain torrents, seldom spanned by bridges; in the west, plains half submerged in the wet season, and parched and waterless in the dry; in the centre and east, a mountainous country, seamed with deep gorges, and bristling with precipitous, razor-backed hills; such are some of the obstacles to locomotion. To provide facilities for communication and transport in such a country is a laborious and costly process, and scanty progress has so far been made with it. Special grants have, however, been allocated to public works since the territory passed under Commonwealth control, and an effort has been made by the Government, sometimes with the aid

[1] Papua is not yet entirely explored, and of the portion which is known much still awaits complete and scientific description.

[2] Annual Report, 1914-15. The latest Annual Report on Papua accessible when this Handbook was prepared was that for 1915-16. The figures throughout should therefore be compared with those in the Report for 1916-17, published by the Government of the Commonwealth of Australia in 1918.

of private companies and individuals, to keep road construction in some sort of relation to mineral and agricultural development. Nevertheless, the only roads in the European sense of the term which the territory possesses are the road which connects Port Moresby with the Astrolabe copper-field district, a total distance of some 50 miles, and the road from the coast to the Kemp-Welch river. Occasional roads for vehicular traffic have been made in connection with plantations; there is a cart road three miles in length in the mining area on Woodlark Island; in the Trobriand Islands, in the neighbourhood of Losuia, there are about 60 miles of improved track, some of which is "a good buggy road . . . . from 15 to 25 feet wide . . . . with an excellent cycling surface"; and on parts of the Buna-Yodda track in the Kumusi Division a bicycle could be used under favourable weather conditions. About 600 miles of track in the central and east-central divisions are practicable for horses and mules, and rather over 100 miles in the Eastern Division.

Beyond these limits communication is by Government or native track, the former usually consisting of a primitive path, and the latter sometimes being invisible to the European eye. These tracks the natives are required by the Government to keep clear, each village being responsible for the portion passing through its boundaries, and the duty is performed with tolerable efficiency within the sphere of Government influence. That it is not a light duty is due to the prodigious vigour of tropical vegetation: in the rainy season even grass will grow with astonishing rapidity to a height of 7 or 8 feet. The maintenance of roads and tracks is, indeed, a problem inferior in difficulty only to their construction, for rivers in flood often do much damage to bridges and their approaches, and in the swamps the constant moisture rots the piles on which the roads and tracks are carried. Noxious insects and reptiles, and, at first, in the less accessible regions, treacherous natives, add to the difficulties of travel and transport.

(*b*) *Rivers*

What the land lacks in facilities for communication the rivers supply only in part. The country has been generously, even lavishly, endowed with rivers; there are some 25 streams which are more or less navigable; and in proportion to its size Papua is one of the best-watered countries in the world. But the rivers have drawbacks as means of communication. Nearly all have bars across their mouths, with little water over them at the highest tide. Some, in the west, where the breakers roll in over the shallow shore, are difficult or impossible of access, especially during the south-easterly season. Up a few of them there runs a bore dangerous to boats. Many have strong currents, with perilous rapids. Nearly all are subject to frequent and violent changes and disturbances resulting from the nature of a mountainous country in the tropics, and considerable rises or falls in a few hours are not uncommon. Further, the rivers best fitted for navigation flow through districts which are at present of little commercial value. The Fly, which is navigable for 535 miles by steam launch and for over 600 miles by boat; the Morehead and the Purari, which are navigable for 120 miles; the Oriomo, Bamu, and Kikori, navigable for 40 miles; the Pahotiuri and Turama, navigable for distances not yet ascertained—all these rivers traverse country the development of which is at best a vision of the distant future. The Angabunga, Bioto, and Vanapa are swift-flowing streams, with few possibilities beyond the transport of timber.

The rivers which offer commercial advantages are thus reduced to six in number. The Vailala, which serves a district rich in promise with its oil, its timber, and its rich, alluvial land, is a magnificent river with a good depth of water, and is navigable for 80 miles by light-draught vessels; but the channel over its bar is a shifting one, and the bar is dangerous for boats during the south-east season. The Lakekamu is navigable for 90 miles, and could be rendered navigable for a greater distance. In the Laloki, which,

with its tributaries, the Goldie and the Brown, serves a fertile district where development has already begun, there is a good depth of water for vessels of moderate draught, but the river is not wide enough, at all events in its upper reaches, to permit a boat over 100 feet in length to turn. The Musa is 100 yards broad and two or three fathoms deep at 36 miles from its mouth, and is navigable for many miles by boat. The Kumusi, navigable for 55 miles by steam launch, is wide in the lower reaches, but with varying depths, and the bar is very shallow; near the upper reaches are fine alluvial plateaux, covered by forest, which promise great agricultural wealth. The Mambare, navigable for 40 miles by launch, has on its upper reaches alluvial flats suitable for agriculture; and at all seasons launches can reach Tamaṭa, the depot for the Gira gold-field.

(*c*) *Transport*

Transport consists of carts, horses, and mules, where the use of them is practicable, of native carriers, and of the available means of carriage by water, such as the steamers of shipping lines, the luggers and cutters which trade along the coast, fishing and pearling boats, Government and mission vessels and launches, and, in the rivers, launches, boats, canoes, and rafts. Mules, which can readily be fed on plantation produce, are found to be an economical means of transport, the extended use of which seems likely to provide a partial solution of the problem of carriage. The native carrier is liable to attacks of sickness, home-sickness, and indolence; he may desert, or shirk, or sulk; but, taken at his best, he is a remarkable beast of burden. Two men will sling a load of from 50 to 70 lbs. on a pole resting on their shoulders; the single carrier will strap a burden of 35 or 45 lbs. on his back; and thus laden they will do a long day's march through swamp and jungle, over nearly inaccessible mountains, and up and down precipitous hills, where the unencumbered European runs some risk of a fatal slip. One of

the few things the native carrier cannot do is to carry burdens barefooted over proper roads. Water transport, so far as it proceeds by river, is limited by the capacity of the available river craft. So far as it proceeds by sea, it is limited by the opportunities that offer in the shape of vessels proceeding in the right direction and possessing the requisite space, so that a man or a cargo may wait for a considerable time for an opportunity of shipment.

The transport problem is, indeed, a governing factor in the economic development of the country. The export of sandalwood has almost ceased, because the coastal regions are worked out. Some of the richest agricultural land lies fallow, because it is remote from civilization and difficult of access. Great tracts of valuable timber are practically untouched, because they are distant from a river, or because the felled trunks cannot be hauled to its banks, or because, when floated down, they cannot be shipped. Before the Vailala petroleum field can become commercially profitable, the problem of handling the oil will have to be solved. Transport difficulties have also been the bane of some of the inland gold-fields; machinery cannot be carried to them over 70 miles of track practicable only for the native carrier; and the price of bare necessities so carried has become well-nigh prohibitive. Even on the Astrolabe copper-field, which is comparatively close to Port Moresby, it does not pay to work any but the richest ore, because with ordinary ores carriage by pack mule to the wharf absorbs the prospective profit.

(*d*) *Proposed Railway*

The postponement, by reason of the war, of the construction of an already surveyed railway to Sapphire Creek, and of the erection of improved wharf[1] accommodation at Port Moresby, is a grave misfortune for the Astrolabe copper-field and

[1] The new wharf was begun in 1916. In 1917 the length completed was 777 feet.

a disappointment to the adjoining agricultural districts, as it would have been of material assistance to the development of both. This line was to have started on Elà Beach, with a branch connection to the projected new wharf, and to have terminated at Sapphire Creek, at a point near the township of Rouna. It would have followed in the main the direction of the existing road, with some necessary deviations to obtain a suitable gradient. The maximum gradient laid down was 1 in 40, and the minimum radius for curves $2\frac{1}{2}$ chains; and under these conditions suitable engines should have experienced no difficulty in drawing loads of about 100 tons at a fair average rate of speed.

(*e*) *Posts, Telegraphs, and Telephones*

Post and Money Order Offices are to be found at the Government Stations in the several Divisions, but the maintenance of connection between them is difficult. A regular and fairly frequent service is maintained by mail steamers between the chief centres, such as Port Moresby, Samarai, and Woodlark Island, and a small vessel, subsidized by the Commonwealth Government, makes monthly journeys round the coasts and islands, calling at the chief places of settlement, whence the mail is distributed as occasion serves. Government, mission, and private vessels supplement the subsidized service. The Mambare Division has a fortnightly service overland by Kokoda, the mail being carried by armed police, who travel night and day, and do the journey in about eleven days. From the commercial point of view the postal service must be regarded as infrequent, irregular, and unsatisfactory.[1]

[1] A seaplane service for the delivery of letters and telegrams would, perhaps, form a method of communication as cheap, as expeditious, and generally as suitable to the conditions of the country as any that could be devised. All points of settlement on the sea coasts and river banks—and there are few others—could be reached by seaplane; and the seaplane could always come down in safety on the rivers when surf on the bars or rollers in the bays rendered them inaccessible to vessels. It is true that a seaplane

Port Moresby has a telephone service, which has now been extended to some of the nearer plantations, and the rudiments of a telephone service, at present confined to Government offices, exist on Woodlark Island.

(2) External

The ocean communications of the country do not present so many drawbacks as the internal ones. Within the Barrier Reef, which protects part of the southern shores of New Guinea, is a great waterway, where navigation is comparatively simple. Elsewhere, however, navigation presents some difficulties. The definition of coastal reefs and harbour entrances by beacons, buoys, and lights is inadequate; off the eastern coast the lead seldom gives any warning of danger; and either the dark colour of the coral misleads as to depths, or, as in the Gulf of Papua and to the west, where navigation is chiefly dependent on the lead, and sandbanks and foul ground run far out from land, the sea is discoloured by the many rivers which flow into it. The winds are of the monsoon type, blowing alternately from the south-east during the period from April or May to October or November, and from the north-west for the rest of the year. Though the wind may attain to hurricane strength at certain seasons, cyclonic storms are unknown. During heavy gales strong currents are encountered, especially off the south-east coast and among the islands. Natural harbours and anchorages are fairly numerous, except in the Gulf and the west.

(*a*) *Ports*

There are four "ports of entry"—Port Moresby, Samarai, Bonagai, and Daru.

Of these Port Moresby alone can be reckoned as a port in the ordinary sense of the term. It is a spacious

service might suffer occasional interruption by high winds; but at its worst it should be less slow and irregular than the present system, whilst at its best it would be incomparably superior.

indentation with a water frontage of about 19 miles, protected by a reef and islands; and, though strong winds throw a sea into it, there is in the eastern bay a sheltered anchorage for all classes of vessel in 6 to 8 fathoms, whilst Fairfax Harbour, its north-western portion, provides a secure though unhealthy anchorage, tranquil during the heaviest gales, for vessels of moderate draught. Spring tides rise 9 feet, neap tides about 6 feet. The old Government wharf is 638 feet long; the first section (148 feet) is of stone, and the last section (60 feet) forms an L-shaped elbow. At dead low tide the depth of water at the extremity is 24 feet, decreasing to 12 feet at a point some 220 feet further in. There are truck roads to facilitate the handling of cargo. Another pier, privately owned, is about 260 feet long, with a rail for trucks; and there is a Government jetty 168 feet in length, built for the use of small craft and boats. The present wharf accommodation is not inadequate, but it is apt to be severely taxed, and could not meet the demands of any substantial development. A considerable sum was allocated for wharf improvement in the year 1914-1915, and new wharf construction, capable of berthing steamers up to 25 feet draught, and possessing railway connections, formed part of the projected railway scheme (see above, p. 30). Small quantities of coal are stocked here and at Samarai. The nearest dock accommodation is in Australia.

Samarai is a roadstead of limited extent. The anchorage has an uneven bottom of sand and coral, causing not infrequent difficulties in the recovery of anchors. Spring tides rise 6 feet, neap tides $3\frac{3}{4}$. The tide runs with a maximum velocity of from 3 to 4 knots, and there is scarcely any slack water. There is a privately owned pier 52 feet in length, with a depth of 25 feet at its extremity at low water.

Daru Island—where the roads have an anchorage in from 4 to 7 fathoms—and Bonagai, on Woodlark Island, are anchorages with Government jetties.

Government jetties also exist at Kikori, Kerema

Bay, Abau, Baniara, Cape Nelson, Buna Bay, and Losuia in the Trobriand Islands. At Baniara there is a good anchorage, and a wharf 40 feet long, which has a stone tail, terminating in a decked T-piece, with depths of 22 feet at high water and 16 feet at low. Buna Bay possesses a substantial wharf 120 feet long, which allows of a vessel of 300 tons tying up alongside.

Anchorages are fairly numerous round the coast and among the islands, though scarcer in the Gulf and to the west. Port Romilly, the mouth of the River Kapaina, at the head of the Gulf of Papua, is a good roomy anchorage available for vessels of 12 feet draught in the south-east trades and of 17 feet draught at other seasons. It is, however, inadequately surveyed. Other inlets in the neighbourhood offer fairly good accommodation. Mention may also be made of Hall Sound, McFarlane Harbour, Millport Harbour, and Port Glasgow. Mullens Harbour, though partly obstructed by sandbanks, is said to afford sheltered anchorage. All these lie between Port Romilly and South Cape.

No modern tonnage statistics are available for the several ports, and recent trade returns are incomplete. It is reasonably clear, however, that Samarai no longer holds the unquestioned supremacy as a commercial centre which it once enjoyed.

In the period 1894-1907 72 per cent. of the total trade of the territory passed through Samarai, and only 24 per cent. through Port Moresby.[1] For the period 1913-1915 Port Moresby took 47 per cent. of the total trade, and Samarai only 36 per cent. The decline in the relative importance of Samarai is attributable to several causes. In the earlier period this port, by reason of its geographical situation in relation to trade routes and to the islands and coasts

[1] On the average of the years 1901 to 1904 93 foreign-going vessels, of 35,659 tons, and 701 coast-wise vessels, of 22,347 tons, were entered and cleared annually at Samarai, as against 48 foreign-going vessels, of 27,950 tons, and 190 coast-wise vessels, of 4,823 tons, at Port Moresby.

of the mainland, acted as a distributing depot for the existing centres of mining, fishing, and agricultural activity. It has now lost part of its trade to the new port of entry at Bonagai, which serves a mining area and by 1913-1915 was already handling 14 per cent. of the total trade. Samarai has also suffered from the declining importance of the wild products of the country without gaining proportionately by the expansion of its cultivated resources, or by the growing needs of the districts where those resources are being developed. Further, Port Moresby can offer greater facilities for shipping, is a centre of distribution to mining and agricultural districts of growing importance, and tends generally to assert its consequence as a capital. Daru is, and in the absence of agricultural development in the west seems likely to remain, dependent on small vessels engaged in the fishing industry and in local trade. Its trade in 1913-1915 amounted to only 2 per cent. of the whole.

In the period 1904-1912 2,188 vessels of 1,566,915 tons were entered and cleared at the ports of the territory, the percentages being: British, number, 88 per cent., tonnage, 55 per cent.; German, number, 6 per cent., tonnage, 27 per cent.; and Dutch, number, 6 per cent., tonnage, 18 per cent. In the period 1912-1916 3,563 vessels of 1,275,497 tons were recorded; the percentages were: British, number, 94 per cent., tonnage, 55 per cent.; foreign, number, 6 per cent., tonnage, 45 per cent.

(*b*) *Shipping Lines*

The war has restricted shipping in Papuan waters, but normally the position is as follows: Messrs. Burns, Philp & Co., Ltd., run a three-weekly steam service by vessels of 1,600 to 2,000 tons, under subsidy from the Commonwealth Government for the carriage of mails, from Australian ports to Port Moresby, Samarai, and Bonagai, returning by the same route, and calling at Yule Island on alternate trips. In connection with

the same Company's Sydney to Singapore service their ss. *Misima*, of 300 tons, ran monthly round the coasts of the mainland and the islands; it was wrecked in February, 1917. The Royal Dutch Packet Steam Navigation Co. have a monthly service from Australian ports *via* Port Moresby and Thursday Island to Java, returning the same way. The Norddeutscher Lloyd steamers from Sydney for Hongkong *via* Friedrich Wilhelm Hafen used to call at Port Moresby, Samarai, and Bonagai, if sufficient inducement offered.

In addition to the vessels of the regular shipping lines, the casual tramp steamer is to be met with, but it is an infrequent visitor. Apart, therefore, from Port Moresby, which alone has direct communication with Australia and Asia by vessels of any considerable tonnage, Papuan ports offer few or no freight facilities by ocean-going vessels; and in the absence of an improved service a company engaged in large commercial operations would find it advantageous, if not actually necessary, to run cargo boats of its own. It would seem that commercial development requires an improved shipping service, but that, in the absence of State intervention, an improved shipping service could be created only by commercial development.

(*c*) *Wireless Communication*

A radio-telegraph station, of 7 kilowatts power, is established at Port Moresby, with ranges of 500 miles by day and up to 1,500 miles at night. Regular communication is kept up with Thursday Island, Cooktown, and Townsville, and communication is possible under favourable conditions with Brisbane and Sydney, German New Guinea, Java, and Timor. A land telegraph line connects the station with the Port Moresby Post Office. The rate of charge is 2*d*. a word between Papua and Thursday Island, with additions for land and cable charges to the office of destination. There is now also a wireless telegraph station on Woodlark Island.

(B) INDUSTRY

(1) Labour

Although the apprehended scarcity of native labour which haunted the pioneers of Papuan industries has never yet been seriously felt, nevertheless the question of the adequacy of future supplies in the event of substantial economic development is of paramount importance. Climatic conditions preclude prolonged manual labour by the white man, and the importation of coloured labour is prohibited. The rights of the Papuan in the disposal of his labour, as of his land, are jealously safeguarded, and the Native Labour Ordinances impose stringent conditions as to recruitment, pay, housing, rations, &c. Opinions differ profoundly as to the respective merits of "boys" from different localities, the inference being that there is not much to choose between them, and that results depend, not so much upon the material, as upon the way in which it is handled. The native is usually of good physique, light of heart, and amenable to discipline; and apart from statutory requirements the employer takes care to be on good terms with his boys, since news travels mysteriously fast and far through Papuan villages, and a bad reputation is a serious obstacle to securing labour supplies. An agriculturist, by instinct and necessity, the Papuan is a fair plantation hand, and, if he does not yet compare very favourably with Chinese or Javanese labourers, it must be remembered that he has not been trained for generations in skilled work. He is a splendid carrier and an excellent boatman, and he has also done fair work on the gold-fields.

The future supply of indentured native labour depends upon the size of the population and its response to recruiting appeals. The population is variously estimated at from 200,000 to 350,000 souls. At one time it was generally believed to be declining under the adverse influences of frequent famine and

incessant inter-tribal war, but in the settled districts, where records have lately been kept, it has of late been increasing. Not more than a quarter of the population is composed of able-bodied men; of these enough must be left to hunt, fish, and cultivate gardens; and it is thought that not more than 10 per cent. of the total population could continuously indenture without detriment to the social life of the villages and the continuity of the race. There is thus an available maximum of from 20,000 to 60,000 men on the basis of the existing population. This is an insufficient supply for the development of the country, except by very slow degrees, and the policy which prohibits the importation of labour may some day have to be reconsidered. The immigration restrictions resemble those which proceed from the "White Australia" doctrine, but they are prompted by different motives; and the policy which underlies the restrictions might best be described as "Papua for the Papuans." The Government, which in enforcing peace has deprived the native of his main interest in life, is bound to supply him with another motive for existence, and this motive must be an industrial ideal; but no such ideal could be attained if the uneducated Papuan were exposed to the unrestricted competition of trained Eastern labour. Legislation now holds an even balance between the needs of development and the interests of the native; but when the Papuan is imbued with the industrial ideal, and is employed up to the limit of his economic capacity, different considerations will seemingly apply; for then, so far as can be seen, the maintenance of existing restrictions would frustrate development without promoting the welfare of the native.

For the present there is no likelihood that any shortage will be felt. The figures of indentured labour (see Table VI) have never yet touched 10,000; recruiting methods become more effective; and the native, though peace makes him lazy, and the stimulus of individual interest is largely destroyed by the communistic system in force in the villages, is yet

becoming accustomed to earning money and obtaining what money can buy, and is coming to regard labour for Europeans as a normal feature of his existence. Compulsory coconut-planting, track clearing, and carrying for Government officials also have some effect in familiarizing him with the idea of labour; and it is reported that a hut tax is to be imposed, which is calculated to produce the same effect.

There is, however, even now a danger of partial or local failures in supply. The native is master of the situation, and can choose his locality and his occupation. Thus, being by nature an agriculturist, he has never taken kindly to work on the mineral fields; and an extension of mining activities might encounter a deficiency in the supply of miners' boys. He discriminates also between different regions: recurrent epidemics of dysentery, for instance, have depressed the Port Moresby district in native favour. He is also free to pick and choose among employers, and makes his decision for reasons which are often obscure. Should occasion arise, he might exercise discrimination on a basis of nationality, and in this connection it is noteworthy that the German has not achieved popularity in Papua. The Lieutenant-Governor reported at the outbreak of war that a German landing was commonly regarded as an event of much more dire import than an ordinary cannibal raid. "There were certainly no pro-Germans among the natives," he stated;[1] adding that "there seemed to be absolute unanimity among them that the Germans were, as they expressed it, 'no . . . . . good.'"

(2) Agriculture

Of the industries of the country, agriculture, fisheries, and mining, the first is rapidly becoming the most important, and, subject to the unknown possibilities of petroleum (see p. 52), it is to agriculture that Papua looks for her future development. Agricultural

[1] Annual Report, 1914-15.

land may be had at any altitude from sea-level to 12,000 feet and under very various conditions as regards temperature and rainfall: on the Kemp-Welch River in 1911-1912, for instance, only 30 inches of rain were recorded, and at Port Moresby in 1914-1915 only 26; whereas the fall on the Lakekamu field in 1912-1913 amounted to 272 inches. Unlike Australia, Papua is rarely subject to prolonged droughts; and, unlike many South Sea islands, it is immune from cyclonic storms. Insect pests are rare. Streams abound, and possess the advantage, unusual in the tropics, of furnishing a pure and fresh supply of water. The luxuriant growth of vegetation, which is a curse in relation to communications, is, except as regards weeds, a blessing in relation to agriculture. Almost every tropical plant, and many European ones, will grow, even under adverse conditions of cultivation; most will thrive with reasonable care; and they reach productivity with unusual speed. A salient feature of Papuan agriculture is the preponderance of long-lived economic trees over annual crops, the value of which depends on the unstable and often incalculable conditions of the markets: hemp, tobacco, and cotton are grown in the dry belt near Port Moresby, but coconuts and rubber are the mainstay of the plantation industry. No plantation failures have been recorded so far, and experience seems to the Lieutenant-Governor to justify the boast that "there is no longer any doubt as to Papuan agriculture; . . . . its success is already considered as assured"; and, although the total volume of agricultural exports is still negligible, "there is, I think, among those who . . . . know Papua, a feeling amounting almost to certitude that, with reasonably good management, the plantations will pay, and pay well."[1]

It is, indeed, impossible to study the Annual Reports without forming a conviction that the territory possesses many thousands of acres of agricultural land as fertile as any in the tropics, much of it in regions

[1] Annual Report, 1914-15.

of reasonable accessibility. There are immense flats of alluvial soil, suitable for the cultivation of coconuts, rubber, and sugar; in higher altitudes there are lands admirably fitted for coffee and tea; and almost all tropical products can be grown in one part of the country or another. Sugar cane is indigenous in many varieties; and it has been officially declared that the sugar lands "cannot be equalled or excelled in Queensland or Fiji." The cane grows splendidly in native gardens; and with the construction of tramways and mills a profitable industry might be set on foot. Coffee and cocoa are both consumed in large quantities in Australia; and, if a preference were given to Papua, she could supply the greater part of the Australian demand. Even in the despised districts of the west good agricultural lands are to be found; vast industries might be established there in the cultivation of rice and the manufacture of sago; and one administrator thought it safe to predict that the western flats would become "one of the richest producing areas on the world's surface." It has been estimated that the present volume of export trade will be quadrupled by the produce of existing plantations alone.

(*a*) *Products of Commercial Value*

Copra.—Coconuts, "the consols of the tropics," will grow in most parts of the territory, but they thrive best on the rivers and coasts, and the eastern and western portions of the southern coast-line perhaps contain the choicest coconut land. The palm is attractive and reliable for planters, but a certain amount of care in planting is required; and the palms take time to come into full bearing, even in Papua, where, however, they will produce nuts in four years or even less, and, in favourable circumstances, will bear a crop fit for copra-making in five years. But, once

[1] Annual Report, 1911.

well-chosen trees are planted, their ultimate success is virtually assured; no skilled labour or expensive machinery is necessary for keeping the ground cleared, gathering the crop, and preparing it for sale; and there is always a ready market for the produce in Australia and elsewhere. It has been authoritatively estimated that a copra plantation of 500 acres should cost £4,000 to clear and plant, and £5,750 to maintain to the end of the sixth year, and that from the eighth year it should yield 250 tons of copra, in which event, with copra at £20 a ton, the plantation would, after the ninth year, pay 100 per cent. on the original capital invested.

Native palms are numerous. "The coconut," it has been said, "is all in all to the Papuan, gives him food and drink with its fruit, yields him wood for house and canoe, covers his roof with its leaves, clothes him with its bark, and with its leaf-fibres provides a sieve." Realizing its importance, especially as an article of food, and with a view also to the encouragement of an easily grown and marketable commodity, Sir William Macgregor in 1894 issued a regulation requiring the planting of coconuts by natives. The regulation has not been easy to enforce even within the limits of Government influence, and outside them it has been a dead letter. But as Government control has spread to new districts, and become more effective within the old ones, so compulsory coconut planting has progressed. Incomplete returns show that more than a quarter of a million nuts were planted by natives during the years 1913-1916. In the western division an elaborate co-operative scheme has been instituted by the resident magistrate, and it is certain that at least 350,000 palms in all have been planted under the requirements of Sir William Macgregor's ordinance. This means that in addition to plantation nuts there is scattered over the territory the equivalent of some 7,000 acres of coconuts, capable at maturity of an annual yield of from 3,000 to 3,500 tons of copra.

As plantation figures give 34,000 acres of nuts, it

follows that in all over 40,000 acres of palms are now progressing towards maturity, and this acreage should give an annual yield of 20,000 tons of copra. Present exports vary between 800 and 1,200 tons, the bulk of which is derived from native trading, and is independent alike of plantation trees and of those planted under Sir William Macgregor's regulation. It would seem not unduly optimistic to suppose that the next few years should see an addition to the copra exports of approximately double the value of the entire export trade of to-day.

Rubber.—Rubber is indigenous to Papua, and the yield of native trees, crudely gathered, has been favourably reported on in London. Planters, however, prefer to cultivate the Para (*Hevea brasiliensis*) or Ceara (*Manihot Glaziovii*) varieties. The soil requisite for the rubber tree is superior to that needed for the coconut, and the tree is less independent of climate. It has been tried without success in the Western Division, and the Ceara variety has been grubbed up to make way for coconuts on plantations in the east of the Central Division, where it has proved a failure by reason of unsuitable rainfall, destructive winds, or disease. The best rubber land is, perhaps, to be found in the Sogeri district, but the plant grows well in other places, and it is believed that there are thousands of acres in the territory where it could be cultivated under favourable conditions. A difficulty with regard to Para rubber is, in the opinion of experts, "the undoubted eccentricity of yield which is a feature of the tree in alien lands." In Papua, however, its growth and vigour are above the average, and the present results of tapping point to a good record alike in the quality and in the quantity of the yield. Para rubber of Papuan growth has been certified to be equal to the best plantation rubber produced in the East, and to command the current prices of the highest grades. Like copra, rubber is a crop which involves the possession of capital by the planter, as the trees give no return for five or six years, and do not

reach full productivity till they are ten years old. A difficulty was at one time anticipated with regard to the supply of trained labour for tapping, should any considerable expansion of the industry occur, but the apprehension seems to have been groundless, as Papuan labour for tapping is said to compare very favourably with that employed in the Malay Peninsula. Trustworthy authorities estimate the cost of a rubber plantation of 500 acres at £4,760 for the first year and at a total of £8,500 for the five succeeding years.

Existing plantations are young, and, as with copra, the exports of rubber have been derived in the past from native trading. The value of exported rubber has usually been under £1,000 a year, though it reached £2,000 in 1910-1911, and stood at £1,500 in 1913-1914 and 1914-1915. In 1915-1916, however, when the first plantation crops were harvested, the export significantly jumped to £14,846. At the present time 7,671 acres are under rubber, the annual yield of which should, at the most conservative estimate, approximate to 1,000,000 lbs., equal in value to one and a half times the entire export trade of the present time.

Hemp.—Sisal hemp likes a dry climate and a poorish soil, such as are found in the dry belt near Port Moresby, though it will apparently grow in Papua under varied conditions of soil and climate. It "grows like a weed," is not liable to injury by animals or diseases, costs little to produce, comes quickly to maturity, is easily handled and stored, and finds a ready market all over the world. A plantation of 500 acres should cost £10,225 up to the end of its sixth year, when it will reach maturity, and produce huge quantities of marketable fibre. In 1916 there were 4,812 acres under hemp. Papuan hemp has been certified to be clean, lustrous, and very strong, to compare very favourably with the product of East Africa, and to be saleable in large quantities in London, where it should fetch about £1 a ton less than the best Mexican hemp.

Apart from sisal hemp, the country is naturally rich in fibrous materials, and plants such as the *pandanus*

are widely used by the natives in net-making. There are numerous varieties of bananas and plantains, and banana fibre should sell in large quantities.

Tobacco.—A very fine variety is domesticated, if not indigenous. The considerable local trade in twist tobacco for native consumption has led to experimental growing in Papua, and good pipe tobacco and cigar leaves have been produced. Two hundred acres were under this crop in 1916. Climatic difficulties have been encountered in the process of manufacture, the tobacco "moulding," as it did in Australia when first manufactured there; but the mould danger seems to have been scotched, the Government has granted a protective tariff, and the whole of the rapidly expanding output appears to find a willing market locally. The expansion of the industry may be gauged by the fact that excise dues imposed as from August 24, 1914, produced £6 in 1914-1915 and £906 in 1915-1916. There seems to be some doubt, however, whether the production of tobacco locally will be commercially profitable.

Cotton.—At least one kind of cotton is indigenous. That cotton-growing in Papua is commercially justifiable has been demonstrated during the last few years by the experience of several plantations, which have placed their products on the London market at fair or good prices. The upland sorts have been certified in Australia to be "up to the standard of the best American qualities," the samples appearing to show that Papua is eminently adapted to the production of cotton. Cotton will do well as a catch crop between lines of palms. Like tea and coffee, however, which have also been grown successfully on a small scale, the crop requires not only suitable soil and climate, but also expert management and an assurance that a large supply of suitable trained labour will be available at certain periods every year.

(*b*) *Plantation Statistics*

The acreage under plantation cultivation shows a rapid expansion (see Appendix, Tables I and II); it was 1,467

acres in 1907, 10,053 in 1910, and 47,506 in 1916. That the increase of the area under cultivation is accompanied by a decline in the area under lease (Table I) is due, not to any tendency to abandon agricultural enterprise, but to the forfeiture, for non-compliance with improvement conditions, of leases rashly or speculatively taken up under the generous terms formerly in force. It is, however, probable that Papua is approaching a period when there will be a temporary cessation in the expansion of cultivated areas. Once improvement conditions have been complied with, many lessees will be tempted or constrained to call a halt to development until the profit-winning stage is reached. Moreover, a given amount of labour, which can at first be devoted exclusively to bringing new land under cultivation, becomes increasingly absorbed in plantation routine as time goes on. But when the paying period arrives, it will certainly be accompanied by a further increase in the area under plantations. It was estimated in 1915 that £1,000,000 had been invested in Papuan plantations, practically the entire sum being subscribed locally or in Australia, except for the investments of two English companies.

(*c*) *Stock-Raising*

Pastoral lands may be had at low rents, with conditions as to the number of animals which must be on the leased area. At present there is practically no stock-raising, but there is no reason why Papua should not become, to some extent, a pastoral country, for suitable lands exist, and cattle thrive. There should be a future for the breeding of mules, since there is certain to be an extension of mule transport; and it has been suggested that the territory, which has a smooth water passage to Asia, might supply India with polo ponies and remounts. At present the chief animal of the country is the pig, which dominates Papuan existence. When wild, it is an intolerable nuisance to Papuan gardens

and plantations. When domesticated, it plays a part in every circumstance of the native's life.

(*d*) *Methods of Cultivation*

Without entering into the technicalities of plantation management, it may be said generally that the problems which the planter has to solve are the clearing of the virgin forest and the subsequent elimination of weeds. In the first stage the usual procedure is to fell the timber, leave it to dry, and then fire it and let the fire run through, afterwards going over the ground, and clearing up and burning the remains. As soon as this is done, a catch crop is put in, to keep down weeds. The growth of weeds is terrific, and, if left in undisturbed possession, they become an impenetrable jungle thrice as difficult to clear as the original forest. It is often argued in Papua that maintenance work is not essential for coconuts after they are two years old; but, while it is true that on suitable soil palms will survive and bear crops even when left quite untended, there is no doubt that they are more productive when kept clear of weeds and scrub.

(*e*) *Forestry*

Hitherto sandalwood has been the most important timber export; but most of the trees in accessible regions have been felled, and in recent years the trade has shrunk to a tenth of its former dimensions. Little has yet been done to exploit the other forest resources of the country. The Government has power to proclaim timber reserves and to grant exclusive licences to work therein, the licensee paying a rent of £1 per 100 acres, with a royalty on timber felled, and being under liability to erect a saw-mill of power proportionate to the area. A company started operations in the Buna Bay district in 1914-1915, and in 1915-1916 there were seven subsisting leases on the Vanapa and Vailala Rivers and at Galley Reach.

The timber resources of the territory are less extensive than the agricultural, but they are consider-

able, a great part of Papua and the neighbouring islands being covered with forest. It is an objection to the best timber lands that they lie in comparatively high and inaccessible regions, but great and valuable forests are to be found in proximity to the rivers and coasts; and it has been estimated that there are 4,000,000,000 superficial feet of commercially valuable timber on the Vailala River alone. In the low-lying forests tropical trees abound; sandalwood and ebony being among the most important. On the higher ground the vegetation resembles that of the Temperate Zone, and at 11,000 to 12,500 ft. the cypress is particularly conspicuous. The species of timber found are, however, numerous, and 120 have already been catalogued. One hundred and fourteen are described as being useful; for girders, beams, railway wagons, and work involving heavy strains there are 16 varieties; for joinery, lining, and flooring, 15; for cabinet work and furniture-making, 15; for butter boxes, 14; for railway carriage and coach building, 10; for boat building, 5; and for piles, 4. Up till now the transport problem has hampered development to such an extent that Papua is an importer of timber. The difficulty is to get the timber to the rivers, and to ship it after it has been rafted down. Timber is more easily and cheaply carried when sawn, and the erection of saw-mills in the forest areas, with tramway connections, would provide a partial solution, if capital were available. As regards foreign markets, Australia is too rich in woods to be a customer for some time to come; but it is believed that profitable markets might be found in India, Manila, and China.

(*f*) *Land Tenure*

Of lands in Papua amounting in 1915 to 57,945,640 acres the natives held 56,479,109 acres; 1,208,374 acres were Crown lands; 235,072 acres were held on lease; and 23,085 acres were freehold. No European is allowed to purchase lands from the natives, as it has been a maxim of the Government that native ownership

should be respected, and that no exploitation of native rights by immigrants should be permitted. When a white man desires to acquire land held by natives, he must approach the Government, which effects a purchase and subsequently leases it to him, if satisfied that the owners are willing vendors, and that the land is not necessary, or likely to become necessary, to the welfare of the local native community. This scrupulous regard for native rights has done much in the past to promote peaceful settlement; but the native is now growing sophisticated by contact with civilization; armed with his charter, and innately avaricious, he thinks himself master of the situation, and the horizon of land purchase is overcast.

As regards Crown lands, the broad principles of policy are that no estates should be conveyed in fee simple—existing freeholds being a legacy from earlier times—and that the rent of leaseholds should be assessed on the value of the unimproved land, subject to reassessment at intervals of 20 years. The rent is 5 per cent. on the unimproved value, which for agricultural lands is assessed at 5*s*. an acre, making a rent of 3*d*. an acre; and on a demise of less than 1,000 acres for a term of 30 years or upwards no rent is payable during the first ten years. The improvement conditions, with a penalty of forfeiture for non-compliance, are that one-fifth of the area suitable for cultivation should be planted within the first 5 years, two-fifths in 10 years, and three-quarters in 20 years.

(*g*) *Government Assistance to Agriculture*

The terms of Government leases may be regarded as generous, and within the limits of its slender resources the Government has tried in other ways to promote agricultural development. A Department of Agriculture was created in 1906. It has established at a cost of about £20,000 six nurseries and experimental stations where the suitability of plants to local conditions is tested, experiments in their cultivation

are conducted, and seeds and plants are issued to planters. Samples of soil are also analysed at these stations, measures to prevent pests and diseases are studied, and meteorological observations are taken. A handbook, revised from time to time, is published. An economic and agricultural museum and library have been set up. A stud farm has also been started for the production of a good strain of animals.

(3) Fisheries

The fishing industry is concerned with pearls, shell, and *bêche-de-mer*, or the sea slug, which, when used in gelatinous soups, is prized as a food luxury in the East. Beds and reefs show signs of exhaustion, and the fishery yield fluctuates, with a tendency to diminution (see Appendix, Table IV); but, as Queensland waters run up to the western coast, some of the produce of Papuan fisheries is credited to the Australian State. Competition has inflated the prices paid to native divers, and the profits of the licensed pearl-buyer are usually small. The *bêche-de-mer* fishery might be made a profitable industry for coastal natives, some of whom own vessels bought out of the wages of indentured labour; but the native will not take pains when not under supervision, and his ill-cured fish realizes a poor price.

(4) Minerals

Numerous minerals are found in the territory, but except in the case of gold, copper, coal, and petroleum nothing has been done to ascertain the value of the fields, partly because of the ordinary miner's ignorance of minerals outside his own experience, and partly because of the difficulty, danger, and expense of prospecting. The mining laws of Queensland have been applied, *mutatis mutandis*, to Papua. The Government has appointed a geologist and has established a mineral laboratory and museum. Mining results show fluctuations (see Appendix, Table I); and by contrast with the early days of the British

occupation, when it was the chief industry, mining has suffered a great decline in comparative importance.

Gold.—Gold has been more exploited than any other mineral. In 1916 the total yield of the gold-fields was estimated at 398,617 ounces, valued at £1,436,249. The Louisiade field, which is the oldest, and the Murua (Woodlark Island) field, which is the richest, are the most permanent in character. The other five producing fields are alluvial and largely worked out. They are the Gira field, in the valley of the river of that name and its tributary the Aikora; the Yodda field, extending from that river (a tributary of the Mambare) to the Kumusi River; the Milne Bay field, at the eastern end of the territory; the Keveri field, from Cloudy Bay to the headwaters of the River Musa; and the Lakekamu field, 90 miles up that river. The Sideia field, in the Eastern Division, was proclaimed on July 5, 1915, and in 1916 a field was discovered on the Imili River, twenty miles west of the Keveri Field, but neither of these new fields has been much worked. Gold used to be worked on Sudest Island, but the deposits are practically exhausted. Rossel Island is reported to have gold, but it has not been found in sufficient quantities to repay exploitation.

The methods of extracting ore from the permanent formations are much the same as in Australia. Alluvial gold is won in several ways, varying with the conditions which prevail. The most usual is "ground sluicing," or bringing from above a head of water down a river which has changed its course, and so sluicing away accumulations of surface soil, &c., until the shingle of the old bed is laid bare; the stones are then forked away, while the soil and gravel are thrown into the race, and borne by it over gold-saving appliances. When the present river bed has to be dealt with, "wing dam sluicing" is adopted: under this system a dam of logs, stones, and earth is built out into the stream, sometimes for half its breadth, thus enabling the alluvial soil to be sluiced off. The danger of this method is that a sudden flood may sweep the whole

structure away. The third plan, known as "blind stabbing," is used where recourse cannot be had to the other methods. The miner, standing in the water, shovels the wash on to the bank for subsequent treatment. Dredging is also practised in the beds of the larger rivers. There were nine dredging claims subsisting in 1915.

No one who knows the country would be surprised if rich auriferous reefs were one day to be discovered. The geological formations occur which in Australia are associated with the precious metals; gold is found with a wide geographical distribution, and nearly all the rivers show "colours" of it. It is commonly believed that it exists in the central mountain ranges. It is, however, by no means certain that rich reefs, even if found, will be sufficiently accessible to be profitably worked.

Copper.—Copper occurs between the Main Range and Port Moresby. In this region lies the Astrolabe field, with an area of 30 square miles, where mines have been worked since 1906, and have furnished 5,398 tons of ore, valued at £85,731. The industry would be capable of profitable development if difficulties of transport could be overcome. Its future depends largely on the fate of the proposed railway (see p. 30). There is also copper in Woodlark and Sideia Islands.

Coal.—Coal has been found on the Fly, Purari, and Kikori rivers, but all of it (except that on the Purari, which has only 3 per cent. of ash) has been of the lignite variety, with a high percentage of contained moisture, resembling the brown coal of Sumatra. Owing to its inaccessibility, its character, and the condition of the seams, it could not at present be profitably worked. In view of the plentifulness of wood-fuel, Papua is not greatly dependent on coal; but it will probably come more into demand as development progresses, and the discovery of good coal might help to attract shipping.

Petroleum.—The recent discovery of petroleum on the Vailala River may deeply affect the future of

Papua. The field, which is undergoing experimental boring, is believed to be both rich and extensive; local indications compare favourably with those of the nearest commercial oil-fields in the Malay Archipelago; and the Commonwealth Government has thought well enough of the field to subject it to a State monopoly. As usual, however, in Papua the problem of accessibility presents itself. Owing to the bars across their mouths the nearest rivers give no access to any but light-draught vessels; and of the nearest harbours Hall Sound is cut off from the field by rugged country, and Era Bay is separated from it by a network of waterways in the Delta, which would make it difficult or impossible to run a pipe line to that part of the coast. It will therefore be necessary either to send the oil down the Delta waterways by light-draught, Diesel-engined barges, such as are in use on the Thames and in America, or to make use of Orokolo Bay, which is near the most promising oil-bearing districts. The objection to this bay is that south-easterly winds throw a surf into it; but tank steamers could use the bay in safety if the Mexican plan were adopted of letting them lie out to sea and feeding them there by a submerged pipe-line with a flexible coupling attached to its end. Owing, on the one hand, to the dangerous explosiveness of crude oil, and on the other to the cheapness of local wood-fuel and labour, the erection of a refinery near the place of shipment has been suggested.

Of minerals which have been neither worked nor prospected, galena and zincblende have been found in small quantities on Woodlark Island, and osmiridium on the Mambare and Gira rivers; cinnabar occurs on the Mambare river, at Merami, near Cloudy Bay, on the Brown River, north of Port Moresby, and on Normanby Island; a little sulphur is found on Normanby and Fergusson Islands; and there is graphite in many parts. Iron, manganese, and gypsum are also reported to exist in the territory.

(C) COMMERCE

(1) Domestic

Trade within the territory is white, mixed, and native; that is, trade by Europeans for the supply of the white population; trade between whites and blacks, or the barter of axes, knives, beads, calico, tobacco, musical instruments, &c., against copra, rubber, *bêche-de-mer*, &c.; and native trade, carried on by the natives among themselves. The two first call for little remark beyond what is said below in connection with imports and exports. The third is of no great economic importance; but it is interesting to find an organized commercial system existing alongside of primitive barbarism and the civilization of the stone age. The Papuan manufactures pottery, canoes, fishing nets, mats, shell ornaments, stone implements, decorated gourds, and various kinds of "money" (see p. 58); and his canoes, weapons, and door-posts—often elaborately ornamented—the suspension bridges which he throws over rivers, and the canals and aqueducts of his garden irrigation system, bear striking witness to his ingenuity and patience. Fish is exchanged for agricultural produce, pottery for sago, native "money" for pots and parrots, mats and dresses for vegetables, and so forth. The adult population of the Laughlan Islands go on annual expeditions to the neighbouring islands in quest of the foodstuffs which they cannot grow themselves; and the departure of the fleet of "lakatois," or craft made of dug-out canoes lashed together and decked over, which carries Hanuabada earthenware to the west to exchange it for sago, is one of the events of the Papuan year.

(2) Foreign

The total volume of foreign trade (see Appendix, Table III) shows rapid expansion from £17,951 in 1888 to £121,277 in 1900 and £348,468 in 1916, and from £47,335 on the average of the years 1888-1898 to

£326,740 on the average of 1910-1914. As development is passing through the stage of expenditure without having reached that of productivity, the imports largely exceed the exports in value. Trade for 1914-1916 has been affected by the war, which has raised the price of imports and in some cases depressed the price of exports; while in general it has caused scarcity and dearness of freights and checked the flow of capital.

(*a*) *Exports*

Apart from minerals, exports fall into two classes. The first includes those which are due primarily to the bounty of nature unaided by man, such as sandalwood, native copra and rubber, *bêche-de-mer*, turtle shell, pearls, and pearl-shell; these are for the most part stationary or declining, only pearls and pearl-shell showing an increase (see Appendix, Table IV). The second consists of those derived from a partnership between nature and man, or plantation products, such as copra, rubber, hemp, cotton, &c., and these are increasing, in some cases with marked rapidity.

(*b*) *Imports*

The chief imports are foodstuffs (32 per cent.), drapery and clothing (12 per cent.), hardware and ironmongery (10 per cent.), tobacco and cigars (7 per cent.), building materials and machinery (each about 5 per cent.). The demand is governed by industrial progress, the amount and consequent consumption of indentured labour, and the volume of internal trade with the natives. The local industry in tobacco and cigars, if successful, will affect the imports of those articles; and it should be possible to reduce the heavy importation of foodstuffs by increasing local supplies. The Vailala oil-field will check the importation of oils and kerosene, which has shown a marked rise during recent years. For figures of the import trade see Appendix, Table IV.

(*c*) *Countries of Destination and Origin*

The official statistics of Papua do not indicate the ultimate destination of exports or the countries of origin of imports, and for various reasons it appears impossible to obtain the information from other sources. It is commonly said that Papuan trade is almost entirely with Australia. In fact, it seems that Australia receives about 67 per cent. of the exports and supplies about 62 per cent. of the imports, that the United Kingdom handles about 7 per cent. and 11 per cent. respectively, and that the remainder of the trade is accounted for, at least in part, by the fact that exports are frequently sent through Singapore, and, as regards imports, by purchases, principally of foodstuffs and tobacco from America, and of gunny bags, rice, and other goods from India, Siam, and elsewhere in Asia. Of the imports from Australia, rather less than one-half is produce of Australian origin. The country of origin of the rest and the ultimate destination of exports to Australia, so far as these are not consumed locally, cannot be ascertained; but since both classes are dealt with in Commonwealth markets, the entire trade may be regarded as Australian from the Papuan point of view.

(*d*) *Customs*

There are heavy import duties on tobacco, alcoholic liquors, and articles of luxury; duties of 1*d*. or 2*d*. a lb. on manufactured foodstuffs; of 10 per cent. *ad valorem* on certain specified articles, including boots, shoes, clothing, crockery and glass, cutlery, tinware, leather, and matches; and of 5 per cent. *ad valorem* on all other goods except those on the "free list." The "free list" comprises, amongst other things, agricultural and mining machinery and tools; vessels and boats; engines, waggons, and rails; seeds, plants, and manures; iron and steel, house-building materials, and furniture; corn, meat, fruit, &c.; coal and coke; and

unmanufactured cotton. Port dues and wharfage rates are levied, but no export dues are payable.

(D) FINANCE

(*a*) *Public Finance*

On the average of the years 1906-1907 to 1915-1916 the annual revenue of the colony has been £68,477, and the annual expenditure £69,281. The revenue is made up in the main of grants from the Commonwealth of Australia and of customs receipts, the average of these two items being respectively £26,900 and £28,706; other items are postal receipts, £2,123; native labour fees, £1,359; mining receipts, £1,281; receipts from Crown lands, £787; and miscellaneous, £7,321. The average annual expenditure has been as follows: Government Secretary's Department (including the magistracy, the armed constabulary, and the gaols), £29,455; Department of Public Works, £10,399; Department of Lands, £8,649; Department of the Treasury (including customs and the post office), £7,549; the Medical Department, £4,786; the Civil List and the Lieutenant-Governor, £2,652; and miscellaneous, £5,791. The revenue has practically doubled in the period mentioned; standing at £41,813 in 1906-1907, it had risen to £86,335 in 1912-1913, and averaged £81,669 for the period 1911-1912 to 1915-1916. The expenditure has also increased, but not to the same extent, and the tendency which it exhibits to exceed the revenue has not been so marked in recent years as it was in the past. Besides its grant to the general cost of administration, the Commonwealth makes grants or advances loans for specific purposes, such as the development of Government plantations, wharf and road construction, and the erection of Government stations.

(*b*) *Currency*

The European currency is the same as in the United Kingdom, with the addition that Commonwealth notes

are legal tender. Native "money" of various kinds is to be met with. By its makers it is bartered for other articles, just as pottery is exchanged for sago, mats for vegetables, &c. (see above, p. 54); and by those who do not make it, it is now valued chiefly as an ornament or a curiosity. In consequence, no doubt, of the requirement of the Native Labour Ordinances that he should be paid for his work in cash, the native is becoming fully alive to the value of coin, and now on the sale of his goods he frequently demands payment in cash instead of accepting the various articles known as "trade," which used invariably to be the medium of exchange in all dealings with natives.

(c) *Banking*

The Bank of New South Wales has branches at Port Moresby and Samarai. A branch of the Union Bank of Australia, which used to exist at Port Moresby, seems to have been given up.

(E) FUTURE POSSIBILITIES

Papua is a land of promise rather than of present value; and, while statistics afford little clue to future possibilities, it appears that the development of agriculture and the exploitation of minerals and forests should be attended with speedy and great success. Granted the existence of the resources and the sufficiency of the labour supply, it remains only to attract capital and to promote settlement; and for these purposes the inadequacy of communications must be remedied. "Papua," wrote a planter in 1911, "has many good things, latent and undeveloped. I want some, and am going to do all I know to get them. Papua says 'No,' and organizes her defences—mosquitoes, fever, thick forest, impenetrable swamp, indolent natives—and the game is simply one of attack and defence." But the individual planter can carry on only a guerrilla warfare with the aid of the mosquito net and the quinine bottle, the single axe, and

the occasional drainpipe; even the limited company is confined to local operations; and what is wanted is a strategical plan such as the State alone can execute. More numerous roads; an occasional railway or tramway; the draining of swamps; a scheme for rendering the rivers navigable by light-draught but capacious craft, such as are in use on the Nile; a method of quick transit across the mainland; an extension and improvement of postal, telegraphic, and telephonic communication: these are all matters in which the initiative must rest with the State. The Government might also effect much in the improvement of ocean communications. Harbours have to be created or improved; a dangerous coast has to be thoroughly surveyed, and then to be beaconed, buoyed, and lighted; and shipping has to be attracted. The geographical situation of Papua is favourable to the creation of an efficient service, and the planter has too long suffered from dearness and scarcity of freights. If Papua is less fortunate than Dutch New Guinea with its safe coasts, good harbours, and proximity to the large centres of civilization in the East, its nearness to Australia makes it more fortunate than German New Guinea, which is remote from civilization, and, moreover, it lies directly on the trade routes between Australia and the commercial centres of China and Japan. Of the shipping entered and cleared at the ports of the Commonwealth in 1914-1915 a total of over 2,000,000 tons, or nearly a quarter of the whole, was engaged in trade with Asiatic countries and Pacific Islands. In these circumstances it should not be impossible to devise a plan for attracting shipping to Papua.

If it be objected that the line of Government policy here sketched will involve a great expenditure of money, it may be replied that the outlay will prove ultimately to be not unremunerative. Millions have been spent in opening up Australia, and the need of Papua is greater. Great sums have been devoted to the development of Java, a country which closely resembles Papua, and the expenditure has been justi-

fied by the result. Sir William Macgregor saw in Papua another Ceylon; and there can be no reasonable doubt that it is as rich an uncut jewel as any that is set in the Imperial Crown.

APPENDIX

TREATY I.—ARRANGEMENT BETWEEN GREAT BRITAIN AND GERMANY RELATIVE TO THEIR RESPECTIVE SPHERES OF ACTION IN PORTIONS OF NEW GUINEA

(A. & P. 1885, c. 4441.)

(1) Letter from Earl Granville to Count Münster:—

Foreign Office, April 25, 1885.

Proposes boundary between British and German Protectorate as follows:—

"Starting from the coast near Mitre Rock on the 8th parallel of south latitude, it would follow that parallel until it is intersected by the meridian of 147° east longitude: would proceed thence in a straight line in a north-westerly direction to the point of intersection of the 6th parallel of south latitude, with the 144th meridian of east longitude, and would continue thence in a west-north-westerly direction until it meets the point of intersection of the 5th parallel of south latitude with the 141st meridian of east longitude."

(2) Letter from Count Münster to Earl Granville:—

German Embassy, London, April 29, 1885.

Accepts proposed boundary.

TREATY II.—CONVENTION BETWEEN GREAT BRITAIN AND THE NETHERLANDS DEFINING THE BOUNDARIES BETWEEN THE BRITISH AND NETHERLANDS POSSESSIONS IN THE ISLAND OF NEW GUINEA

Signed at The Hague, May 16, 1895.

(A. & P. 1895, c. 7834.)

Art. I.—The boundary between the British and Netherlands possessions in New Guinea starts from the southern coast of the said island at the middle of the mouth of the Bensbach River, situated at about 141° 1′ 47·9″ of east longitude (meridian of Greenwich).

Art. II.—The boundary proceeds to the north, following the meridian which passes through the said mouth, up to the point where that meridian meets the Fly River.

Art. III.—From that point the waterway (" thalweg ") of the Fly River forms the boundary up to the 141st degree of east longitude.

Art. IV.—The 141st degree of east longitude after this forms the boundary up to the point of intersection of the boundaries of the British, Netherlands, and German possessions.

Art. V.—Navigation on the Fly River is free for the subjects of both Contracting Powers, excepting as regards the carriage of warlike stores, and no duty shall be imposed on other goods conveyed by that river.

TABLE I.[1]—GENERAL COMPARATIVE STATISTICS

—	1906-07.	1909-10.	1911-12.	1913-14.	1915-16.
	No.	No.	No.	No.	No.
White population ..	690	879	1,064	1,186	992
	£	£	£	£	£
Value of imports ..	87,776	120,177	235,369	212,134	223,040
Value of exports ..	63,756	100,599	99,990	123,140	125,428
Total volume of trade	151,532	220,776	335,359	335,274	348,468
Customs and excise ..	15,924	24,901	37,751	37,341	33,931
Estimated gold yield	58,886	60,181	60,628	50,110	43,248
	No.	No.	No.	No.	No.
Ocean-going ships, entered and cleared	233	276	355	929	214
	Tons.	Tons.	Tons.	Tons.	Tons.
	159,177	256,286	275,803	358,506	247,887
	Acres.	Acres.	Acres.	Acres.	Acres.
Area under lease ..	48,002	363,425	332,422	230,879	226,783
Area under cultivation	1,467	10,053	24,707	42,921	47,506
		No.	No.	No.	
Number of labourers..	..	7,532	10,000	11,383	..

TABLE II.[2]—AGRICULTURAL DISTRIBUTION, 1916

(*Quantities in Acres*)

—	Coconuts.	Rubber.	Hemp.	Cotton.	Tobacco.	Other Cultures.	Total.
Central division ..	9,046	5,614	4,746	8	200	517	20,131
Eastern division ..	17,406	1,748	66	..	..	168	19,388
South-eastern division	4,393	2	..	..	..	14	4,409
Western division ..	851	92	.	5	..	34	982
Gulf division ..	926	..	..	..	..	45	971
North-eastern division	690	210	..	..	..	2	902
Kumusi division ..	357	5	..	..	..	6	368
Delta division ..	347	..	..	..	..	8	355
Totals ..	34,016	7,671	4,812	13	200	794	47,506

[1] Authority: Annual Reports.
[2] Authority: Annual Report, 1915-16.

TABLE III.[1]—IMPORTS, EXPORTS, AND TOTAL VOLUME OF TRADE

——	1900–01.	1901–02.	1902–03.	1903–04.	1904–05.
	£	£	£	£	£
Imports ..	71,618	70,817	62,367	77,631	67,188
Exports ..	49,659	68,300	62,881	75,506	76,435
Total ..	121,277	139,117	125,248	153,137	143,623

——	1905–06.	1906–07.	1907–08.	1908–09.	1909–10.
	£	£	£	£	£
Imports ..	79,761	87,776	94,061	94,680	120,177
Exports ..	80,290	63,756	80,616	79,692	105,599
Total ..	160,051	151,532	174,677	174,372	225,776

——	1910–11.	1911–12.	1912–13.	1913–14.	1914–15.
	£	£	£	£	£
Imports ..	202,910	235,369	218,323	212,134	202,055
Exports ..	117,410	99,990	128,016	123,140	94,354
Total ..	320,320	335,359	346,339	335,274	296,409

——	1915–16.	Average Annual Value.			Mean.
		1900–01 to 1904–05.	1905–06 to 1909–10.	1910–11 to 1914–15.	
	£	£	£	£	£
Imports ..	223,040	69,924	95,291	214,158	126,458
Exports ..	125,428	66,556	81,991	112,582	87,043
Total ..	348,468	136,480	177,282	326,740	213,501

[1] Authority: Annual Reports.

TABLE IV[1].—PRINCIPAL ARTICLES OF EXPORT AND IMPORT.

Exports.						Imports.					
	Annual Average.			Mean.	Percentage.		Annual Average.			Mean.	Percentage.
—	1900-1 to 1904-5.	1905-6 to 1909-10.	1910-11 to 1914-15.			—	1900-1 to 1904-5.	1905-6 to 1909-10.	1910-11 to 1914-15.		
	£	£	£	£			£	£	£	£	
Gold	45,663	53,088	55,695	51,482	59·15	Foodstuffs	24,865	31,265	66,314	40,814	32·27
Copra	4,109	13,434	18,575	12,039	13·94	Drapery and clothing ..	7,583	10,567	27,209	15,119	11·95
Copper	—	1,871	13,281	5,051	5·80	Hardware and ironmongery	6,637	10,755	22,502	13,299	10·51
Pearls	851	2,661	7,448	3,653	4·20						
Sandalwood	6,412	4,026	394	3,611	4·15	Tobacco and cigars ..	5,816	8,436	13,412	9,221	7·29
Pearl and trocas shell ..	2,579	703	5,514	2,932	3·37	Building material ..	3,801	3,999	13,079	6,960	5·50
Bêche-de-mer	3,057	1,303	2,023	2,128	2·44	Machinery	2,755	2,462	11,998	5,738	4·53
Rubber[2]	676	806	1,309	930	1·07	Wines, spirits, and beers	4,052	3,060	6,808	4,640	3·66
Natural History specimens	1,022	1,131	315	823	·95	Oil and kerosene ..	1,296	1,971	5,642	2,970	2·34
						Boats and launches ..	1,174	2,057	4,034	2,422	1·91
Turtle shell	773	810	445	676	·78	Drugs and chemicals ..	871	1,429	3,198	1,832	1·45
Hemp[3]	—	8	1,800	603	·69	Livestock..	—	426	4,532	1,653	1·30
Timber	61	153	939	384	·44	Coal	600	1,343	2,070	1,338	1·13
Coffee	212	613	290	372	·40	Fire-arms and ammunition	615	963	1,362	980	·77
Cotton	4	11	1,006	340	·39						
Other articles	1,137	1,373	3,548	2,019	2·23	Other articles .. .	9,859	16,558	31,998	19,472	15·39
Total exports ..	66,556	81,991	112,582	87,043	100·00	Total imports	69,924	95,291	214,158	126,458	100·00

[1] This table is compiled from the Annual Reports and Government Gazette.
[2] The export of rubber in 1915–16 amounted to £14,846.
[3] The export of hemp in 1915–16 amounted to £11,999.

TABLE V.[1]—TOTAL ESTIMATED OUTPUT FROM EACH GOLD FIELD, 1915.

Name of Gold-field.	Division.	Date Proclaimed.	Gold Yield.	Value.	Percentage of Total.
			Ounces.	£	
Murua ..	South-Eastern	6.11.95	178,507	619.055	46·00
Yodda ..	Kumusi ..	31. 7.00	72,683	271,544	18·80
Gira ..	Mambare ..	5.11.98	65,638	247,357	17·00
Lakekamu	Central ..	13.12.09	29,500	110,675	7·60
Louisiade ..	South-Eastern	28. 5.89	23,359	80,271	6·00
Milne Bay	Eastern ..	6.12.99	14,230	49,987	3·70
Keveri ..	East Central..	6. 8.04	3,770	14,112	·90
Totals ..	.. ..	..	387,687	1,393,001	100·00

TABLE VI.[2] INDENTURED NATIVE LABOUR

——	1909–10.	1912–13.	1915–16.
ENGAGED—			
Agricultural and pastoral	2,407	3,674	2,721
Mining	1,588	832	819
Timber-getters ..	38	—	—
Seamen and boatmen ..	331	415	266
Carriers	—	11	—
Storeboys	73	146	157
Household servants ..	280	453	496
Pearl shell and *bêche-de-mer* fishers	512	189	296
General labourers ..	299	1,205	1,889
Other occupations ..	57	50	42
Totals	5,585	6,975	6,686
Approximate number employed not under contract of service	1,947	2,945	Not stated
General Total ..	7,532	9,920	—
PAID OFF—			
Total	3,801	6,909	5,880

[1] Authority: Annual Report, 1914-15.
[2] Authority: Annual Reports.

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