

I The Old New Guinea

The 141st meridian cuts the large island of New Guinea into roughly equal halves. But the recently settled boundary between Papua New Guinea and Irian Jaya follows neither the island's geography nor traditional cultural patterns of its population. Geographical strata are vertical rather than longitudinal and the physical environment moulds patterns of human life: there are similarities in the swamps and swamp cultures on the two sides of the border, and also in the hill slopes and the high mountain valleys. Very different external influences have acted on the two sides of the border in recent years, but the dominant physical environment and prior cultural conditions exert a powerful influence on the pace and nature of change.

Irian Jaya, covering New Guinea west of the 141st meridian and many small, adjacent islands, is by far the largest province of Indonesia. Its 420 thousand square kilometres represent 22 per cent of the Republic's total land area. Papua New Guinea, in its last year of Australian administration and rapidly approaching Independence, is slightly larger, 460 thousand square kilometres. The offshore islands are larger in Papua New Guinea, with New Britain, New Ireland and Bougainville together covering 60 thousand square kilometres.

New Guinea lies between the continental land mass of Australia and the populous land mass and islands of Asia. In many respects it is quite different from both. Australia, New Guinea and the Pacific Islands were never linked by land bridges to the Asian continent even at lowest sea-levels of the Ice Age.¹ The native animals of Australia and New Guinea are marsupials, while Asia is a realm of placental animals. The Indonesian islands between Bali and New Guinea form a frontier zone between the two groups. The division between Asian and New Guinea flora is very much less clearly marked, and New Guinea contains a wide range of flora from each of the neighbouring continents.

¹ J. Golson, 'The Remarkable History of Indo-Pacific Man: missing chapters from every world prehistory', *Search*, 3 (1-2), Jan.-Feb. 1972, p. 14.

The Melanesian people who inhabit New Guinea, the string of islands stretching southeast into the Pacific as far as Fiji and the mountainous inland of some other islands in eastern Indonesia exhibit many physiological and cultural differences. However, the Melanesians are clearly distinguishable as a group from the Australians to the south, the Polynesians to the east and the Malays to the west.

Few parts of the earth's surface constrain man's movements as effectively as the swamps, jungles and mountains of New Guinea. One of the world's great cordilleras runs from the western extremity through the island's entire length to the Owen Stanley Ranges in eastern Papua (see Map). In Irian Jaya, the central mountain chain is commonly over 4000 metres and reaches over 5000 metres. The ranges fall to a few thousand metres west of Lake Paniai before rising again in the Bird's Head in the west. Extensive glaciers cover the highest peaks in the province. In Papua New Guinea, the slightly lower mountains (Mt Wilhelm rises to 4300 metres) do not reach the snowline.

The cordillera is a complex system of ranges and the broad upland valleys, varying in width from 200 kilometres to fewer than 10 kilometres in the neck of the Bird's Head. At its northern and southern margins, the cordillera falls away sharply to plains and lowlands. It is also mountainous within the cordillera, but some flat and gently sloping areas occur, especially in the river valleys of the eastern half. The Baliem Valley, draining south, is the most important of the flat-bottomed valleys piercing the higher, more rugged mountains of the west.

South of the cordillera, the mountains slope steeply into very extensive bogs, sago swamps, low-lying alluvial plains in a large area straddling the border, and parallel, low ranges in the vicinity of Port Moresby. To the north, a series of mountain chains run parallel to the coast, separated by valleys and tablelands. A giant fault-trough extends from Cenderawasih Bay in Irian Jaya to the Huon Gulf in Papua New Guinea. Four great rivers (the Mamberamo, the Sepik, the Ramu and the Markham) run part of their courses on the floor of the trough, which varies from a few to 80 kilometres in width. Along much of the north coast, alluvial plains and swamps merging into low beach ridges, mangrove swamps and coastal platforms make up a narrow coastal plain.

Lowland New Guinea is hot and humid, with slight seasonal variation in temperature. Biak and Port Moresby both have a mean annual maximum of 30.2°C. Mean temperature falls by about 1° for every 100 metres of altitude, until ground frosts occur at about 2600 metres. Between the hot lowlands

and the frost and snow areas, about 1200-2400 metres, moderate temperatures and low midday humidity produce an invigorating climate.²

Most of the island experiences unusually heavy rainfall, although there is considerable variation. Most parts receive over 2500 millimetres per annum. The southern flank of the central mountains and the southern side of New Britain receive over 6000 millimetres, while an area in the vicinity of Port Moresby receives less than 1000 per year. The heaviest falls occur between December and March, with the seasonality being especially pronounced around Port Moresby and the Fly-Digul border region. A second peak in August can be observed in the southern valleys of the cordillera, Manus Island and the islands of Cenderawasih Bay.

A varied geological history has produced a complex soil pattern. In most areas, a combination of steep slope and heavy rainfall has limited formation of topsoil. Leaching has reduced fertility over wide areas. Poor soils predominate except in areas of recent volcanic activity (the Gazelle Peninsula, parts of Bougainville and parts of Papua's Northern District) and of alluvial soils in a few coastal areas (the Markham Valley and levees of the Fly, Digul, Sepik and other large rivers). Most of these richer agricultural areas are found in the east.

Almost the whole land area is covered by dense forest or swamp. Extensive savannah woodland exists only between the Fly and Digul Rivers. Small areas of savannah are present in the northern coastal plain of Irian Jaya and in the vicinity of Port Moresby. There are man-made grasslands in heavily populated valleys of the central highlands. Extensive areas of mangroves are found on sheltered, muddy shores and tidal estuaries. In many areas, this backs on to stands of nipa and large areas of sago palms. Sago palms are most extensive in the middle of the south coast of both Irian Jaya and Papua. There are also extensive sago swamps behind the levees of the Mamberamo and Sepik Rivers and smaller stands in a few other inland locations. Above the swamps to an altitude of about 3000 metres, dense forest prevails.

Colonised by Melanesian man, New Guinea with its swamps and difficult terrain was a formidable barrier to the eastward expansion of the Malay civilisation of Southeast Asia. Even inquisitive, assertive European man was long held at bay by New Guineans and their environment. Many New Guinean communities maintained traditional patterns of economic life well into the twentieth century.

Human settlement of the New Guinea highlands dates back over 25,000

² H. C. Brookfield with D. Hart, *Melanesia*, London, Methuen, 1971, p. 18.

years, and horticulture 5000 years.³ The advent of horticulture was probably associated with the arrival of new colonists from the Indonesian archipelago, but it was enriched by addition of native plants like sugar cane and bananas. Taro and yams were the early agricultural staples, but in most highlands areas they have been replaced by the sweet potato, which is more productive at high altitudes.⁴

The history of human settlement in lowland and coastal New Guinea is difficult to unravel, because these areas were more accessible to external influence. The cordillera contains numerous highly differentiated Papuan languages, most belonging to a single stock. But Austronesian languages (a group which includes almost all Indonesian, Malaysian, Philippines, Malagasy, Pacific Islands and aboriginal Taiwanese languages) interrupt the distribution of Papuan languages across the north coast and completely replace them at the eastern end of the island. Social organisation in some coastal regions of Irian Jaya was influenced by contact in recent centuries with Malay seafarers.

Nevertheless, traditional patterns of economic life were substantially intact at the beginning of the colonial era. The island's population lived and worked in thousands of small villages, each having slight economic contact with other villages and none with the outside world.

The size and location of the New Guinea population have changed considerably this century under the influence of new diseases, modern health practices and underlying economic change. However, reliable population data are not available for the early years of western contact and the present distribution must be used as a starting point for discussion of traditional patterns.

One of the most striking features of population distribution in New Guinea is its irregularity. The most dense population (over 200 persons per square kilometre, and occasionally exceeding 1000) occurs in very small areas in middle to high altitude valleys of the central cordillera, on the volcanic islands (Buka, south Bougainville, the Gazelle Peninsula, Biak and Serui), on some foothill regions (the Huon Peninsula) and on part of the flood plain of the Sepik. The sago swamps commonly carry moderately heavy populations (the Gulf of Papua, Asmat, part of the Mamberamo and the remainder of the Sepik). There are very large areas with little or no population: between the

³ Golson, 'Remarkable History', pp. 17-18.

⁴ The sweet potato seems to have reached New Guinea from the eastern Indonesian islands where it was introduced by the Portuguese during the sixteenth century, *ibid.*

Digul and the Fly as far north as the central highlands; in Papua between the highlands and the coastal strip; in Irian Jaya between the cordillera and the northern coastal strip.

The population of Papua New Guinea is about three times that of Irian Jaya: 2,450,000 compared with 837,000 in 1971.⁵ Data on the inland populations of the west are estimates of uncertain reliability. Between about 35 and 40 per cent of the populations of both Papua New Guinea and Irian Jaya are in the central highlands. Offshore islands are densely settled in both territories but the bigger islands off Papua New Guinea carry larger populations.⁶

Although the highlands data are rough estimates, Table 1 conveys a general picture of the population distribution of Irian Jaya.

Table 1 Population of Irian Jaya by *kabupaten*, 1961 and 1971 (000 persons)

	Population		Persons per square kilometre 1971
	1961	1971	
Jayawijaya	193	167	3.0
Paniai	110	141	3.5
Teluk Cenderawasih	44	57	14.2
Yapen Waropen	38	43	2.3
Fak-Fak	33	45	1.6
Jayapura	64	95	2.0
Manokwari	54	56	1.1
Merauke	140	140	1.1
Sorong	70	93	2.3
Total	746	837	

Note: There were some changes in *kabupaten* boundaries over the period, so that the disaggregated figures are not strictly comparable.

Sources: Report on Netherlands New Guinea 1961 and Kantor Sensus dan Statistik, Propinsi Irian Barat, Sensus Penduduk 1971.

The 1961 population distribution and changes to 1971 were affected considerably by the growth of the towns, promoted by post-war Dutch and then Indonesian expenditures. The rapid growth of towns with very slender links with the more populous village sectors is discussed in chapters 2 and 7. Contact with Dutch administration had contradictory effects on population.

⁵ Kantor Sensus dan Statistik, Propinsi Irian Barat, Sensus Penduduk 1971.

⁶ In 1971 the island districts of New Britain, New Ireland and Bougainville of New Guinea were estimated to have a total population of approximately 322,000 with a density of 5 per square kilometre. The small islands of Biak and Serui in Irian Jaya's Cenderawasih Bay had a smaller total population of 88,000 with a slightly higher overall density of 12 per square kilometre.

Introduction of exotic diseases raised death rates in some areas, especially amongst the Marind people of the southeast.⁷ Later, the breakdown of traditional institutions such as post-natal sex taboos raised fertility. The cessation of warfare and, near major administrative and missionary centres, the improved medical services lowered mortality. In the last years of Dutch administration, rates of natural increase up to 4 per cent per annum were encountered in areas of most intense contact.⁸ Rates from 1.5 per cent to 2.5 per cent were more common in other administered areas, with much lower rates outside administration. We do not have satisfactory demographic data for recent years, but rates of natural increase may be as low as 0.5 per cent in coastal areas outside the main towns and close to zero along the south coast in some inland areas.⁹ In the towns, natural increase is swamped by immigration.

The indigenous populations have utilised a considerable variety of economic systems in adaptation to the highly differentiated physical environment. The gathering and processing of sago provides the staple for about one quarter of the population in Irian Jaya and one tenth in Papua New Guinea. Sago is important to all villages adjacent to the swamps on the southern side of the cordillera from the Bird's Head to near Port Moresby. It is the staple for northern Irian Jaya east of the Bird's Head and for vast inland regions adjacent to the Sepik and Mamberamo Rivers. Sweet potato is the staple of about half the population of both territories, including most villages of the central cordillera. Yams and taro provide the bulk food supplies on the slopes of the central mountains, on the major islands of Papua New Guinea and in coastal Papua New Guinea west of the Sepik in the north and west of the swamps in the south.

All villagers have supplemented the staple with some wild food and cultivation of minor crops. A range of ingenious techniques allows agriculture to supplement wild sago in some swamp villages. Away from the coast and swamps extensive agriculture is practised, depending on long periods of natural regeneration between periods of cultivation. Land is not scarce in these areas and the traditional agricultural technology does not limit its use. Relatively labour-intensive agriculture is the main source of food only in

⁷ Norma McArthur, *The Populations of the Pacific Islands*, Canberra, ANU, Department of Demography, 1956, pp. 566-86.

⁸ K. Groenewegen, 'Demographic Data for Selected Areas of Western New Guinea, 1960-1962', *Pacific Viewpoint*, 8(1), 1967, pp. 87-91.

⁹ Discussions with Health Department officials in Merauke and Jayapura and WHO officials in Jayapura provided some insights into mortality rates.

the valleys of the central highlands. There, segregation of crops and garden types is almost complete. Villagers of the Baliem Valley have brought large areas of swamp under cultivation by systems of regional drainage. A similar system was used in the Western Highlands of Papua New Guinea until last century, when the Wahgi people abandoned the valley floor.¹⁰

Food has not been scarce, although it is rarely available in a nutritionally ideal variety.¹¹ Abundant local materials have been adapted for house construction and fences. Commodities not available in all areas where there was demand for them, including salt, stone for axes, ornamental shells, plumes and ochres were diffused through extensive traditional trading networks,¹² but recent changes have lessened the importance of this type of inter-village trade.

Traditional agricultural implements were very simple, commonly comprising only wooden digging sticks and stone or shell axes or adzes. On parts of the south coast a hoe was made by fitting a shell blade into a wood-shaft, and the people of the Wahgi used wooden hoes for clearing weeds and breaking clods. Weaponry, ornaments, housing, containers and utensils were produced to many specifications from a wide range of materials. The art of manufacture was often highly developed, especially in the larger villages of the sago cultures in Asmat, the Gulf of Papua and the Sepik.

Simple technology in production and transport contributed to the extremely dispersed pattern of human settlement.¹³ Over most of the island, human settlements ranged in size from a few families to a few hundred persons. There were larger village populations in some coastal and river areas, ranging to over one thousand persons. The considerable human effort in foot transport discouraged the location of gardens away from the houses, and there were few traditional activities in which economies of scale were important to exert countervailing pressure towards development of larger communities. In the swamps, the sago palm provided dense concentrations of food supply and the canoe offered easy transport over longer distances: it is no accident that the sago economies developed more elaborate forms of social organisation and art, which then provided a reinforcing rationale for larger settlements.

¹⁰ Ian Hughes, personal communication, February 1973.

¹¹ See L. A. Malcolm, *Growth and Development in New Guinea*, Institute of Human Biology, Monograph Series No. 1, Madang, 1970. See also chapter 6 below.

¹² Ian Hughes, *Recent Neolithic Trade in New Guinea*, Ph.D. thesis, Australian National University, Canberra, 1971.

¹³ Brookfield and Hart, *Melanesia*, pp. 221-8; K. Groenewegen and D. J. van de Kaa, *Resultaten van het demografisch onderzoek Westelijk Nieuw-Guinea*, EEC Project, The Hague, 1964, Part I, pp. 97-105.

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There are economies of scale in many modern economic activities and in commercial trade, and the dispersal of population has contributed to the extremely high cost of colonial administration and to the slow growth of trade with the external world.

2 Netherlands New Guinea

Early administration and the war

A few coastal areas of Irian Jaya had a long history of contact with slave traders and other seafarers from the Malay Archipelago before European contact.¹ In the Radja Ampat group, the Vogelkop and parts of Cenderawasih Bay this led to limited use of metal implements. More fundamental and widespread change has been caused by twentieth century interaction with the complex, literate societies of Europe and Asia.

Colonial history began earlier in the west than in Papua New Guinea although colonial contact was very much more intense in the east.² Bone has described Netherlands New Guinea as 'the stepchild of the Indies, a neglected backwater useful only as a barrier against foreign intrusion, a place for tours of punishment duty by delinquent civil servants and . . . of exile for nationalist leaders'.³ Worried by the possibility that others might use New Guinea as a base from which to challenge them for the spice islands trade, the Dutch East India Company in 1660 recognised the sovereignty of the Sultan of Tidore over 'the Papuan islands in general'.⁴ This excluded other European powers while avoiding the expense of direct company administration of an area with little apparent commercial promise. In 1828 the government of Netherlands India formally took possession of the north coast west of the 141st meridian and a proclamation in July 1848 laid claim to the whole of what is now Irian Jaya in the name of the Sultan of Tidore.⁵ Tidore's fictional rule formed

¹ For a description of early contacts between coastal Irianese and Malay seafarers, see C. D. Rowley, *The New Guinea Villager*, Melbourne, Cheshire, 1965, chapter 3. For a history of contact between Irian and the Sriwijaya and Majapahit empires and later the Sultanate of Tidore, see Harsja W. Bachtiar, 'Sedjarah Irian Barat' in Koentjaraningrat and Harsja W. Bachtiar (eds.) *Penduduk Irian Barat*, Jakarta, P. T. Penerbitan, Universitas, 1963.

² We will return to a discussion of economic change in Papua New Guinea in chapter 10.

³ R. C. Bone, *The Dynamics of the Western New Guinea (Irian Barat) Problem*, Modern Indonesia Project, Southeast Asia Program, Ithaca, Cornell University, 1958, p. 22.

⁴ *Ibid.*, p. 11.

⁵ *Ibid.*, p. 16.