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DEMOGRAPHIC INSTABILITY IN THE
PACIFIC ISLAND TERRITORIES

Thesis submitted to the Faculty of Social Sciences,
University of Durham, for the degree of M.A.

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ABSTRACT

The main purpose of this thesis is to show that demographic instability is a feature of the populations of the Pacific island territories. Fluctuations in mortality, fertility and migration are expected to produce fluctuations in population numbers and growth rates, as well as changes in the age-sex structures and ethnic compositions. Moreover, because the populations are small instability could easily be the result of random fluctuations.

The first chapter seeks to describe the characteristics of island populations, and here it is conjectured that instability could have been a feature of the pre-contact populations owing to migrations and probably alternating periods of growth and decimation once population growth reached an optimum. European contact was characterised by population decline at varying rates between and within island territories. The main cause of this decline was high mortality which was primarily the result of epidemics and diseases although wars, blackbirding, labour recruiting and infanticide contributed. Probably the unsettling effects of contact between two different cultures had something to do with this decline but it is often exaggerated as the main cause. In some islands out-migration was the main cause of population decline. The cessation of population decline also varied between and within the island territories but by the late 1940's all were showing population growth which accelerated in the 1950's and 1960's, except where emigration was significant. Growth has been due to the reduction of mortality to very low levels and a rise in fertility. European contact also stimulated population movements which led to the disappearance of the dispersed form of settlement and the emergence of today's nucleated villages. Urban areas grew up mostly around the focal

points of initial contact and trade. Population growth and decline have also affected population distribution, although population densities are still very much higher in the atolls. The ethnic composition of the area of study has also changed since western penetration and a visible sign is the rapid increase of the mixed-blood population in Polynesia.

In chapters two and three the trends and the variations in the levels of mortality and fertility between and within territories are discussed. Through the miracles of public health and the cheap methods of mass immunization the incidence of the common debilitating diseases has been either reduced considerably or completely eradicated. Within a short space of time mortality has been reduced to very low levels comparable to those in developed countries, and life expectancy has risen rapidly. High fertility necessary for survival persisted and within 30 years explosive population growth has become the main welfare problem. To reduce rapid population growth family planning has been initiated, but generally it is still a long way from being very effective in reducing high fertility.

The trends in migration are studied in chapter four and it is found that the nature and character of migration into, within and out of the island territories have changed since European contact. Asian immigration has virtually ceased since the 1930's and although immigrants of European origin are increasing they are mostly temporary migrants. Inter-territorial migration has been partly revived in the 1960's but it is unlikely to be significant. Emigration from the island territories to metropolitan countries is increasing, although it is significant for certain territories only. Within island territories, in-migration to the port towns and main islands is

increasing, and it is producing social problems as well as being detrimental to well-planned economic development. Emigration is no solution to rapid population growth and only the very small territories would be able to get relief from it. Neither will population redistribution within and between island territories be feasible.

Finally, in chapter five the fluctuations in population growth and numbers, and the changes in the age-sex structures and ethnic compositions effected by the changing trends in mortality, fertility and migrations are discussed. Within the area considered in this study are different types of population structures and processes which are the products of complex interrelations of milieu, culture and political and economic structures with human reproduction, survival and migration. Because the populations are small demographic changes are rapid and have deep impact and repercussions. It is possible that the rapid decline of fertility in Fiji in the 1960's could presage the beginning of similar trends in other territories which will produce, in addition to migration where significant, further changes in population growth, age-sex structures and ethnic compositions. In view of the growing population pressure on limited resources it is hoped that the transition to low fertility will not only come soon through family limitation but also as rapidly as the transition from high to low mortality.

PREFACE

In preparing this thesis I have become very much indebted to my supervisor, Professor J.M. Clarke, who not only suggested the topic but also gave freely of his time and advice, as well as correcting many faults of expression. Moreover, his unstinted moral support made the completion of this study possible. I would also like to thank Professor W.B. Fisher and the Staff of the Geography Department who have helped in various ways. On innumerable occasions, generous help was invariably received from the advice and assistance of other research students, especially K.M. Elahi, C.A. Palmer, A. Hameed and P. Balasundarampillai.

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'O.A. Matoto.

Durham City, September, 1971.

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INTRODUCTION

There are thousands of islands subsumed under the genus "Pacific Islands", but for this study the area considered is roughly that covered by the South Pacific Commission, except that Papua - New Guinea is excluded while Guam and Easter Island are included. The region extends from Guam and the United States Trust Territory of the Pacific Islands in the north, through the British Solomon Islands Protectorate and the New Hebrides Condominium to New Caledonia, and eastward to include Nauru, Fiji, the Gilbert and Ellice Islands Colony, Tokelau, the two Samoas, Norfolk, Tonga, Niue, the Cook Islands, French Polynesia, Pitcairn and Easter Island. Hawaii has been left out because it is a part of the United States and it could be considered to belong to the so-called 'developed' countries. Furthermore, the status of demographic data and research on the populations of Hawaii are similar to those of continental United States. The trust territories of Papua-New Guinea and West Irian are excluded because of their physical size, although the lack of data on their populations is comparable to most of the island territories considered.

Within this area are found some of the world's smallest territorial units, measured by either area or population. Although the area encompassing these islands is about 12 million sq. miles of the Pacific, the islands (about 3,150) that are strewn across this vast tract of ocean totalled only about 36,000 sq. miles of land, of which about 20 islands account for almost 70 per cent of the land area and about 60 per cent of the populations. The islands, therefore differ greatly, not only in size and physical geography, but also in ethnic composition, social structure, resources, economic advancement, political status and population characteristics.

This study is concerned with the populations of the Pacific island territories mentioned above. To a large extent it has been limited by the unavailability of both quantitative and qualitative data, either because they are non-existent or because the writer was not able to have access to them if they existed. The data on island populations are dominated by non-censal estimates, and population growth, distribution, structure and characteristics are mostly conjectural. In some areas where censuses have been reported, they are either remote in date; published incompletely if at all, or limited to segments of the populations. The registration of vital statistics and the recording of migrations have the same general pattern as the enumerative censuses. In fact, availability, completeness, and accuracy of the censuses and vital statistics are related either to the economic development and the educational level of the territory itself or to the policies and plans of the administration. In the more advanced territories, simple censuses have been taken in each decade, particularly since 1900. However, since the late 1950's the censuses have become more sophisticated but the tabulations of statistical data in the census reports are still incomplete and one still faces the insuperable barriers of an absence of adequate quantitative data for most of the area. For researchers relying on such data the sense of frustration is often hard to conceal.

There has been research in many fields in the Pacific islands but demography remains almost an exception. Population figures and descriptions of the institutions and behaviour related to marriage, birth and death are abundant for the island peoples. Demographic research, however, is limited since official data tend to be inadequate for technical manipulation. Anthropologists have studied many of the cultures intensively, though, and demographic structure and trends were often considered. Anthropology has been furthered as an academic discipline and administrative

guide, since anthropological research is relevant to the fulfilment of the responsibilities of the great powers who were concerned with the welfare of the peoples of the individual island territories under their protection and administration.

To the anthropologists and the administrators, the spectacular process of population decline since the time of contact was recognized as a symptom of social disorganization and cultural ill-health. Therefore much attention was focused on its prevalence, its causes, and its possible cures. The missions and doctors alike opposed practices that had reduced fertility in the indigenous cultures; acculturation involved the passing of the old practices.

The initial result of Western contact was increased mortality. The consequent phase for the survivors seems to have involved substantially increased fertility and, particularly, increasingly reduced mortality. Then the miracles of public health were brought to the islands, and death rates were eventually reduced to very low levels. The transition to growth was first regarded simply as a cessation of population decline, as well as a sign of successful demographic-adjustments brought about by the activities of the administrators, missions and health authorities. However, by the late 1950's population increase replaced population decline as the main welfare problem for the administrations. Rapid population growth in the current period is responsible for an increasing interest in population research among scholars, administrators, native leaders and international organizations.

Despite the growing interest in population research the approach has been mainly marginal or in connection with other academic disciplines. The analysis of the population trends in Tikopia¹ presaged a type of anthropological-demographic cooperation which has contributed substantially to the fund of knowledge of individual island populations. More recently

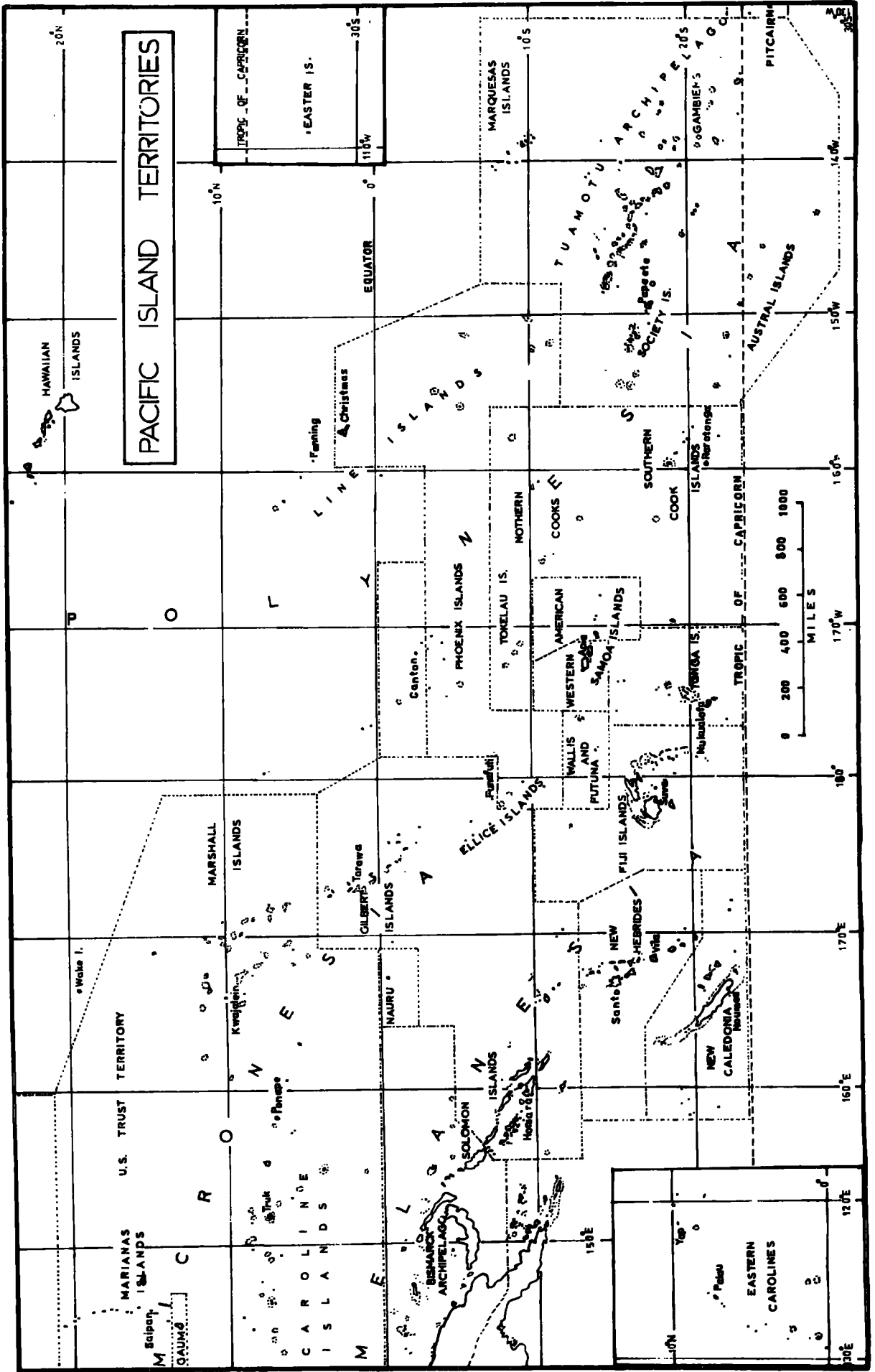
in the 1960's geographical studies have also included the demographic aspects of island populations, such as the studies of the man/land relationships and population problems² and urbanization and the problems of population drift to the port towns and main islands.³ In addition, others have studied certain demographic aspects such as emigration from the Cook Islands and Western Samoa to New Zealand⁴ and the pre-marital fertility in certain islands.⁵ Thus most of the researches which partly dealt with the study of the populations involve the study in depth of local man-environment systems.

The demography of most of the individual island territories of Polynesia have been studied by McArthur,⁶ and Pirie has done research on the 'Population Geography of Western Samoa'.⁷ No attempt has yet been made to study the populations of the Pacific island territories as a whole. This study, therefore, not only seeks to look at the populations of the island territories as a whole, but it also attempts to demonstrate that demographic instability is an inherent feature of these island populations. Because this study relies on generalizations many aspects of the island populations are presented in less detailed forms than might have been desirable. The extreme fragmentation of the area has resulted in no attempt to present information in the form of maps.

The first chapter considers some of the characteristics of island populations since European contact, beginning with the conjecture that pre-contact island populations were, perhaps, basically unstable with alternating periods of growth and decimation or migration, and disappearance the fate of those whose fertility were either inadequate or superabundant for the fragile economic development permitted by the islands. The second chapter discusses the trends in mortality as well as the differentials in mortality. Chapter three deals with the trends in fertility and chapter four is concerned with migration. In the final chapter the effects of these three components on population growth, age-sex structure and ethnic composition are considered.

REFERENCES

1. Borrie, W.D., R. Firth & J. Spillius, "The population of Tikopia, 1929 and 1952", Population Studies, Vol.10, 1957, pp.229-52.
2. H.C. Brookfield and P. Brown, "Struggle for land", Oxford Univ. Press, Melbourne, 1963; Lea, D.A.M., "Abelam : Land and Sustenance", Unpub. Ph.D. Thesis, A.N.U., Canberra, 1964, (not seen); Frazer, R.M., "Land and population in Ra Province, Fiji", Ph.D. Thesis (unpub.), A.N.U., Canberra, 1961; Ward, R.G., "Land Use and Population in Fiji", H.M.S.O., London, 1965; Fox, J.W. and K.B. Cumberland, (edr.) "Western Samoa", Whitecombe & Tombs, Christchurch, 1962; and Maude, A., "Population, Land and Livelihood in Tonga", Unpub. Ph.D. Thesis, A.N.U., Canberra, 1965.
3. Walsh, A.C., "Nukualofa, Tonga : A preliminary study of urbanization and in-migration", Unpub. M.A. Thesis, Victoria Univ., Wellington, 1964; and Whitelaw, J.S., "People, Land and Government in Suva, Fiji", Unpub. Ph.D. Thesis, A.N.U., Canberra, 1966.
4. Douglas, E.M.K., "Migration of Cook Islanders to New Zealand", Unpub. M.A. Thesis, Victoria Univ., Wellington, 1965; Curson, P.H. "Some demographic aspects of Cook Islanders in Auckland", Proc. 5th N.Z. Geog. Soc. Conf., Christchurch, 1968, pp.67-74; Fairbairn, I.J. "Samoa migration to New Zealand...." Journ. Poly. Soc., Vol.70, No.1, 1961, pp.18-30; Hooper, A., "The Migration of Cook Islanders to New Zealand", Journ. Poly. Soc., Vol.70, No.1, 1961, pp.11-17; McArthur, N. "Contemporary Polynesian emigration from Samoa and the Cook Islands", Journ. Poly. Soc., Vol.73, No.3, 1964; pp.336-39; and Ward, R.G., "A note on population movements in the Cook Islands", Journ. Poly. Soc., Vol.70, No.1, 1961, pp.1-10.
5. Curson, P.H., "Births and illegitimacy in Rarotonga", Journ. Poly. Soc., Vol.78, No.1, 1969, pp.112-22; and Schmitt, R.C., "Unmarried parenthood in French Polynesia", Journ. Poly. Soc., Vol.74, No.3, 1965, pp.356-9.
6. McArthur, N., "The Populations of the Pacific Islands", Parts I-VIII, A.N.U., Canberra, 1955; "Introducing Population Statistics", Oxford Univ. Press, Melbourne, 1961; and "Island Populations of the Pacific", A.N.U., Canberra, 1967.
7. Pirie, P.N.D., "Geography of population in Western Samoa", Unpub. Ph.D. Thesis, A.N.U., Canberra, 1964.



CHAPTER ONE

CHARACTERISTICS OF ISLAND POPULATIONS

Although there is no ethnic, cultural, political, economic and demographic homogeneity among the inhabitants of the Pacific island territories and for many purposes, such as economic development, it is more valid to regard the Pacific as a region containing a spatter of tiny separate political units; nevertheless general demographic trends are still recognizable throughout the area. The area of study more or less falls within the boundaries of the South Pacific Commission except the Trust Territory of Papua-New Guinea which is excluded while Easter Island is included (see Map).

By world standards, the populations of the Pacific islands are very small indeed; carrying only 0.5 per cent of the world's total population if the populations of Australia, New Zealand and the Trust Territories of New Guinea are included, and very much less than 0.1 per cent if the populations of these countries are excluded. Also, the total land area of these islands is very small indeed. Some atolls have very high densities of population, sometimes exceeding 1,000 persons per square mile. Population growth at extremely fast rates is pervasive today although this was not the case at the turn of the century when the populations were still declining. It is clear that this depopulation began after the penetration of the Europeans into the island realm of the Pacific. Population decline continued well into the first half of this century in some islands. However, the situation is completely reversed today and the island territories have taken on a new tempo of an upward swing in population growth which is likely to continue well into the future. The changes in population numbers and economic activities have brought about changes in the distribution and composition of the populations, besides other repercussions in the island life. The purpose of this chapter is to outline the changes and the general characteristics of the island populations, particularly since European contact.

1. PRE-EUROPEAN POPULATIONS

Any attempt to discuss the state, size, growth, structure and the reproductive pattern of the populations of these islands which have no written records¹ before the advent of the white men is most difficult and can only be superficial. To get some idea of the size of the populations on the eve of European contact we must make do with various early estimates, none of which is really satisfactory. Judging from the population figures estimated by early voyagers, traders and missionaries the inhabited islands seem to have been fairly densely populated. Captain Cook estimated the population of Tahiti during his visit of 1769 to be about 204,000 and this is very much larger than the population of all the island groups of French Polynesia at present, about 98,000². Fiji's population was probably somewhere between 200,000 and 300,000 and Tonga's is estimated to have been around 50,000. By such estimates, mostly wild guesses, the population of the Pacific islands was probably somewhere between 2.5 and 3 million people. More than half, probably somewhere between 1.5 and 2 million would be in Melanesia. About 1 million would be in Polynesia and the remainder, something like 200,000 would be in Micronesia³. The population was growing very slowly for the last two or three centuries before the arrival of the white men. This is to be expected in a population that had not entered the expansive stage of the demographic transition and was most likely to have been in the 'high fluctuating' stage with high birth and death rates.

Some scholars have developed a 'theory that the South Sea peoples were in a state of numerical decline or degeneration just prior to the time of contact'⁴. This theory arises from the notions as to the effects of inbreeding, polygamy, infanticide, decline of the spirit of adventure and other native customs and practices. However, findings seem to point to the existence, before the arrival of the white men, in well-integrated societies of populations whose numbers were kept, by natural and to some extent artificial checks, around an optimum shaped by the available resources and the level of living⁵. If anything, they were increasing slightly. Fertility was probably as high as it is today, between 35 and 45 live births per 1000 population. This high fertility is quite credible when we consider

the permissiveness of the island communities in sexual relations and the social mores demanding large families, in spite of some social pressures which acted as forms of population control. It was not unnatural to have children at early ages, shortly after puberty, whether through marriage or temporary alliances. Thus women were exposed to the risk of conception for a long period and women with 10 or 11 children were not uncommon⁶. However, with abortion being practised as well as infanticide, besides other causes of infant mortality, only half of the children born to most women survived to the age of 10 or over. Infant mortality was therefore very high indeed and the average life expectancy at birth was probably around 30 to 35 years.

Irene B. Taëuber has postulated that the present demographic processes in most of the island ecosystems are inherently unstable. If this is the case today, then 'it seems likely that this situation also existed in the pre-European era and there is evidence that overpopulation caused frequent emigration from small islands'⁷. The legends of the islands also contain numerous references to movements between the islands for the purpose of trade, invasion or finding new homes. It is fairly well established that series of migrations took place throughout many centuries of expansion until almost every habitable island came to be occupied. These migrations were probably not a constant stream but rather somewhat erratic in nature. By accident many on fishing trips may have been blown off-course and never managed to find their way back. Some may have left the islands for the love of adventure and failed to return because they have settled down in another island community or have been swallowed by the deep or died of starvation at sea. Members of an invasion party may have settled down among other people and have taken wives from these people. This was not uncommon, and many Tongan warriors who served as mercenaries, hired by Fijian chiefs during their inter-tribal wars, never returned to Tonga. These forms of migration usually involved males in the adult age-groups⁸. In the type of migration where people were looking for homes because of overpopulation or because of defeat in wars movement was usually in family groups.

During the last two centuries before contact with the white men it seems that there were fewer migrations that involved family groups looking for more genial homes. By this time the peopling of the Pacific, according to archaeological evidences, was completed with Hawaii and New Zealand settled by Polynesians during the fourteenth century. The last few group movements included the group, probably from Easter Island, who occupied Pitcairn Island in the seventeenth century before abandoning it again, and a group of about 300 Tongans, according to Rotuman traditions, who arrived in their island in the sixteenth century. Any recent movement in large numbers probably consisted mainly of warriors who were either mercenaries or invaders.

During the last two decades of the eighteenth century, information shows that nearly every island known to the Europeans was in a state of war. Intermittent fighting in most islands continued well into the nineteenth century. In the Marquesas early visitors speak of hilltops bristling with fortifications and in Easter Island Captain Cook mentioned that the 'ahu' were in bad repair as it was customary to start a war by pushing over the stone statue from its platform, thereby insulting the tribe which would seek revenge⁹. If Suggs' suggestion, that 'warfare, a given quantity in all Pacific Societies, would tend to increase in frequency along with any rise in the population curve'¹⁰, is considered in the light of native warfare by the time of European arrival then the islands were densely populated and carried larger populations than some early estimates would show. However, this is a moot point, and no great importance should be attached to it.

Migrations would produce fluctuations in the size of the populations of islands where emigrants would be looking for a new home. But since such migrations seem to involve movements in family groups the age-sex structure may not have been greatly affected. However, from early accounts there seemed to be more males than females in the island communities. This was probably the result of preference for male children, and infanticide may account for fewer females allowed to live during infancy. Records from Fiji, if accurate, show that female infants were of

'the least account' therefore many would just die from neglect, particularly during times of famines. So in spite of the wars that may be responsible for more male deaths among adults, there still remained a preponderance of males.

Further fluctuations in population numbers may have resulted from natural disasters such as hurricanes and famines. It may be assumed that famines usually follow the wake of hurricanes and wars because hurricanes would destroy the crops and wars would lead to the burning of villages and gardens that often caused the remnants of the defeated party to move. In such incidences children and old people, who would probably be very few, would suffer more than adults since they would be least able to fend for themselves¹⁰. Again mortality among the children would tend to be higher among female infants if they were of 'the least account'. This would distort the age-sex structure and subsequently produce fluctuations in the number of births and deaths, as well as in the rate of population growth.

In addition, the small islands in the Pacific may exhibit features of demographic instability, for the small size of the populations themselves leave them open to the risk of marked annual variations in births and deaths. For instance, within Polynesia there are 180 inhabited islands, each with a population of under 1,000, and 140 of these islands each have fewer than 500 people whose age-sex structures are typically irregular¹². This means that fluctuations in numbers and the irregularity in the population structure may be the outcome of chance variations in births and deaths. To illustrate this point we may look at Norfolk Island's births and deaths recorded for the period 1st July 1965 to 30th June 1969. The total population on 30th June 1966 was 1152 and on 30th June 1969 was 1,377 which included visitors. During this period 73 births and 54 deaths were recorded. Of all those born during this period 31 were males and 42 were females which is far from producing a sex ratio along the expected biological level. Of the deaths recorded 32 were males and 22 were females. Assuming that there were more deaths among infants than adults and old people, then more male infant deaths would increase the difference in the sex ratio of all those born during this period. If there is no change for both sexes in the mortality rate

then many females will not find any partner by the time they reach reproductive and marriageable age, and this will reduce the reproductive capacity of the population (See Table 1.1).

Table 1.1. The Number of Births and Deaths in Norfolk Island During The Period 1st July 1965 to 30th June 1969

Date		Male	Female	Total
1 July 1965 - 30th June 1966	Births	5	9	14
	Deaths	10	4	14
1 July 1966 - 30 June 1967	Births	9	8	17
	Deaths	8	7	15
1 July 1967 - 30 June 1968	Births	11	11	22
	Deaths	9	7	16
1 July 1968 - 30 June 1969	Births	6	14	20
	Deaths	5	4	9

Source: 'Reports for the Territory of Norfolk Island: 1 July 1965 - 30 June 1969' Commonwealth of Australia, Canberra, Government Printing Office.

Considering the size of most of the Pacific islands, the native wars, the migrations, natural cataclysms and the customs of the people, it is most probable that the populations were unstable. In the favourable environment of a new island home the population would grow rapidly until it reached an optimum when growth would be slight and for most of the time fluctuating. By the time the white men came mortality was high as well as fertility although the age structure was probably weighted with children. The intrusion of the white men, as in so many other frontiers of contact between two totally different levels of civilization was characterized by depopulation of island communities¹³.

2. DECLINE OF POPULATION

The islanders' experiences had varied from place to place since 1522¹⁴, but generally after the early European contacts the populations became more vulnerable and more liable to rapid fluctuations in size. Whatever the time of contact with each individually inhabited island, a marked decline in the indigenous population

began. For the Pacific islands as a whole the population decreased from the estimated total of between 2.5 and 3 million during the sixteenth century to under 2 million in 1939 but by the end of the 1960's it has risen to over 3.5 million.

Although the first white men arrived in the Mariannas in 1522, few explorers came after them and it was not until the last decade of the eighteenth century that the exploitation of the Pacific islands began which resulted in increasing numbers of white men coming to the Pacific. First, came the whalers, then the traders who were followed closely by the missionaries. The first two came to exploit whatever there was in the Pacific in the hope of making a quick fortune but most found only disappointment. As for the missionaries they came to save the heathen souls from hell and damnation. By the 1860's the 'blackbirders',¹⁵ and the planters came and in the last two decades of the nineteenth century the administrators became fairly well established. Whether for selfish ambitions or selfless dedication to help the islanders, early white men in the Pacific intentionally and unintentionally contributed to the decline of the indigenous population.

Population decline came first amongst the Chamorros of Micronesia who came under Spanish influence in the second half of the seventeenth century. The Chamorros were reduced to only a fraction of their former size. Although they had recovered by 1901 in Guam, the Chamorros^{sif} numbered about 9,000 but today they are over 42,000. The lowest point of depopulation in Polynesia was reached variously from 1890 to 1910 by which time, according to official figures, the population had fallen away to about 180,000 from the former size of perhaps 1 million. In Micronesia the total in pre-European days is quite obscure, as it is impossible to get estimates by early visitors, (in any case, always dubious), for anything like all the tiny islands of the area. A rough estimate of about 200,000 however, based on available figures together with a consideration of the area and the methods of economic utilization, has been given earlier. The lowest point in the number of Micronesians fell to perhaps 83,000 by the turn of the century¹⁶. For Melanesia the lowest point reached is hard to estimate because even today little is known

about some inland communities in New Guinea and the British Solomons. Moreover, the decline continued well into the first half of this century and although the various political units are increasing at present, some individual islands such as the Marquesas in French Polynesia and the Carolines in the Trust Territory of the Pacific Islands have not shown any clear sign of recovery. Even in 1927 Professor Roberts, summing up the situation, 'concluded that of the total estimated population of the Pacific islands 34.04 per cent were increasing, 39.31 per cent stationary, and 25.48 per cent were still decreasing. The remaining 0.16 per cent was faced with annihilation'¹⁷.

For the greater part of the nineteenth century reliable census records are mostly lacking, but available information then and later shows that in most islands there was usually a heavy decline of population. At first the decline was very rapid then it slowed down until the depopulation reached a quasi-stagnant level. A number of the small native communities were reduced to only a fraction of their former strength and some were practically wiped out. In the southern New Hebrides the mean population of Aneityum in 1865-67 was about 1,700 though it may have declined before then, and by 1905-10 it had fallen to about an average of 400. In 1960-67 it fluctuated around 300. Erromango's population was about 2,000 in 1890-95; by 1915-20 it had fallen to 575¹⁸. Of the 3 small islands off Espiritu Santo, in the northern New Hebrides, in 1905 one island had about 70 inhabitants, another 20 or 30 and the third 12; by 1925 without recruiting or emigration, the first had only recent immigrants and the third had no population at all¹⁹.

In the Solomon Islands the population of Vanikoro, estimated at about 3,000 in 1882, had fallen to 82 by 1922; that of Ongtong Java, estimated at about 5,500 in 1907, had been reduced to 558 in 1939²⁰. In the Marquesas, valleys which had populations of several thousands at the beginning of the nineteenth century had only a dozen or so inhabitants at the end of the century and some were completely deserted. As a result the total population of the Marquesas was reduced from about 20,000 in 1842 to 11,900 in 1856, 6012 in 1874, 3,562 by 1902 and 2,260 in 1926

In 1842 the islands of the Ua-Pu had a population of 2,000, Ua-Uka about 2,000 and Nukuhiva 8,000; by 1902 there were only 272, 184 and 682 people left in each island respectively²¹. Early estimate for Easter Island at or before discovery vary considerably, but it is probable that there was a population of 3,000 to 4,000 at the time of discovery; by 1877 the lowest ever recorded for the population was 111²².

The population of Fiji, before the cession to Britain in 1874, was variously estimated at between 100,000 and 300,000. In 1856, the missionary Thomas Williams estimated the population to be 150,000 but 'the Fijians were probably right in assuring him that there had been more of them fifty years previously. By 1879 there were 108,924 Fijians. In 1881 the Fijian population had declined to 114,748, and the numbers of the Fijians continued to drop to 105,800 in 1891, 94,397 in 1901, 87,096 in 1911 and 84,475 in 1921, the lowest mark ever reached²³. Thus in 50 years the indigeneous population of Fiji, if we accept the estimate of 300,000 at the turn of the eighteenth century, was reduced to one-half its former size. Between 1881 and 1911 the population is figured to have been reduced by about 9,000 persons in each decade, and only by 2,600 between 1911 and 1921.

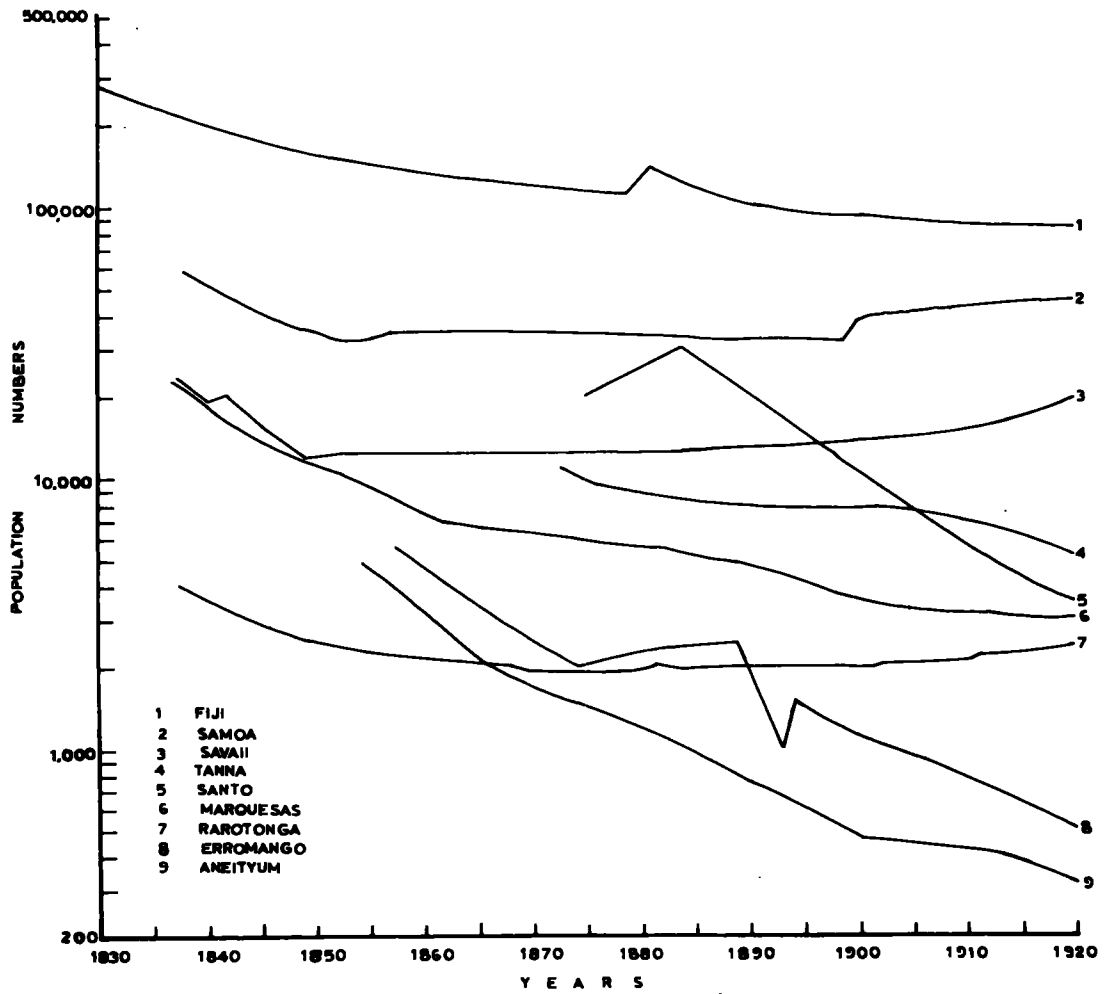
The extent of the population decline varied from one island to another and from island group to island group (See Figure 1.1). Tonga seems to have suffered very lightly from the main causes of depopulation, apart from two lethal epidemics in 1893 and 1918. According to Wilkes (1840), the population of Tonga was about 18,500. This is too low for Lawry's estimate of 50,000 in 1847²⁴. Probably both were wrong and Lawry overestimated the population while Wilkes, whose estimate is more plausible, slightly underestimated it. However, in 1852 when the civil war finally ended the population was probably slightly over 20,000. In the first official census^{of} the kingdom in 1891, 19,196 people were enumerated, and in 1900 there were about 20,019 people in Tonga. The population has since continued to increase throughout the present century. Like Tonga, Samoa also suffered less and for most of the nineteenth century her population fluctuated between 30,000 and 40,000. Early estimates give Samoa a population of something like 56,000. In 1849 there were about 37,000 Samoans and the lowest was reached

Fig.1.1 Semi-Logrithmic graph showing the decline of populations in selected Pacific islands, 1830-1920.

Sources: Mainly based on figures cited in:

- (1) Keesing, F.M., 1941, "The South Seas in the Modern World", John Day, New York.
- (2) McArthur, N., 1967, "Island Populations of the Pacific", A.N.U. Press, Canberra.
- (3) McArthur, N., 1957, "Populations of the Pacific Islands", Parts I-V, A.N.U., Canberra. (Cyclo).
- (4) McArthur, N. and J.F. Yaxley, 1968, "A Report on the First Census of the Population, 1967". Govt. Printer, N.S.Wales.

POPULATION DECLINE, 1830 - 1920



in 1887 when the population was about 33,000²⁵.

For Tahiti the population must have declined rapidly to about 8,674 in 1829 and then fluctuated with the lowest population figures of 7,169 recorded in 1863. Between 1770 and 1800 the initial population of Tahiti, about 50,000 if estimates were near correct, was probably reduced by over 50 per cent. McArthur calculated that the 3 epidemics - two influenza and one dysentery - during this period accounted for 27 per cent if none took more than 10 per cent of the population, and in non-epidemic years the rate of decrease would be at ^{an} average of just under 1 per cent²⁶. This decline is comparable to that of Rarotonga where the well-documented early nineteenth century population, about 8,000, was halved within the first 16 years of missionary rule. In Moorea the population was estimated to be 1,372 in 1848 and it fell to 1,114 in 1860. Afterwards the population fluctuated but the tendency was to increase slightly and in 1902 there were 1,558 estimated in Moorea²⁷. Uvea did not suffer very severely from the causes of depopulation; the population was probably no more than 5,000 at the time of contact and for most of the nineteenth century the population fluctuated between 4,000 and 3,000²⁸.

It was this decline in the island populations since the time of contact with the white men that led to the idea that European civilization was fatal to the natives, and that extinction must be their ultimate end. The decline in the Marquesas reached the point where an anonymous French official reported, in the late nineteenth century, that thirty years would see the complete extinction of the race, barring any unforeseen natural catastrophes that might bring it about sooner²⁹. In the Solomon Islands periodic dysentery epidemics sweeping through the bush villages led Fox to judge in 1924 that in time there would be no living people in the interior³⁰. Such lamenting for the dying races of the Pacific was not unusual even in the first 3 decades of the present century.

3. CAUSES OF POPULATION DECLINE

Higher death rates from one-sided wars against whites, inter-tribal feuding made more sanguine by aliens' weapons, natural cataclysms and catastrophic new diseases accounted for much of this decline. Lower birth rates which resulted from disease-induced sterility and insecurity^d, enforced labour away from home, late marriages and possibly family instability were also factors. Other contributory factors were blackbirding, migrations and perhaps a persistent application of infanticide and abortion in a population that was already declining³¹. To say that any one of these causes was responsible for the population decline in any island or island group is to over-simplify because the process of depopulation was more complex. However, some causes had more direct influence than others.

More than any other cause, diseases and epidemics were responsible for the largest numbers of deaths. At the time of contact the natives were living under conditions that were far from being sanitary or hygienic. Also, they had their own indigenous diseases such as malaria (in^{the} Solomons and New Hebrides), filaria, leprosy, ringworm and yaws. The mortality rate was already high even before Europeans arrived although the people may have developed some sort of immunity as a result of long association with such diseases. When the white men arrived they brought new diseases such as dysentery, scarlet fever, whooping cough, measles, venereal diseases, influenza, tuberculosis, mumps, etc. against which the islanders had not acquired any resistance. Native medicines and witchcraft were unable to cure, let alone prevent, sickness and death from the new diseases. The arrival of the white men in their 'tall ships' was a novelty in those days and curiosity brought many people from nearby islands and districts to the landing place. Long periods at sea and poor nutrition meant that many sailors were suffering from diseases and their association with the islanders in their feasts and gatherings would result in the spread of the diseases which consequently, on many occasions, led to the outbreak of epidemics after they had left. The return of villagers to their villages and islands would further spread the diseases, and

insanitary and unhygienic living conditions made the contagious diseases spread faster³². Moreover, it was not unusual for ships to put ashore sick persons from whom islanders, in their efforts to look after them, contacted diseases. Smaller islands, during times of epidemics, would suffer more severely than larger islands where the incidence of the epidemics would diminish as the distance from the source increased. Furthermore, some districts in the large islands may prevent contact with villages where epidemics had broken out, though this may have been rare. On the other hand, small islands may escape epidemics as a result of their isolation. The extent of the spread of epidemics and their severity varied from island to island.

Precisely, what was the contribution of diseases and epidemics to the depopulation of island communities? Undoubtedly, epidemics and diseases were the main causes of depopulation although this cannot be statistically ascertained. In order to be exact in determining the proportion of depopulation caused by diseases and epidemics we must know the number of deaths and the number of epidemics that broke out as well as those who died from diseases. We also need to know the number of deaths from other causes and people lost through emigration, labour recruiting and blackbirding. However, there are no such statistics and we are left with the speculation with which we began. Estimates for total populations and deaths from epidemics, wars and other cataclysms show some discrepancy (See Tables I and II in the Appendix).

Missionaries, who were mostly responsible for early estimates in the islands sometimes left for another island during the outbreak of an epidemic or were killed for the simple belief that they were responsible for the outbreak. Thus some epidemics may have been missed out from the records or unreliably estimated, as most were. Some islands had no resident missionaries and estimates made during short visits were often secondhand information. Islands that showed continued hostility to missionaries and other white men suffer from lack of estimates for their early populations. Errors in the estimates of deaths and

total population numbers often led to understating or overstating the effects of epidemics and diseases in causing population decline. There is hardly any correlation between the number of known occurrences and the types of epidemics and the rate of depopulation in the islands. This is expected since the severity of epidemics is not uniform. It would be unfounded to argue that the islands which were exposed for a longer duration and more intensive European influence and exploitation would necessarily experience greater depopulation as a result of greater possibility of epidemic outbreaks and wars with the white men. Such a premise may seem to apply to Hawaii, Fiji, the Chamorros of Guam and some other islands but not in the case of Tonga and Samoa where depopulation was less severe. Heavy depopulation experienced by the Marquesas and Easter Island seem quite baffling when there was no long continued contact with the white men³³. All in all, depopulation of the island populations is more complex than it is usually taken for granted.

Epidemics and Diseases

Thirteen epidemics of varying severity are known to have occurred in Fiji in the period between 1791 and 1918. About 40,000 of the existing native population of about 150,000 perished in the measles epidemic of 1875. A further 3,000 deaths resulted from the whooping cough of 1884 and about 1,500 were carried away by the influenza and whooping cough epidemics of 1891. Apart from measles against which immunity is acquired by certain sections of the population after one outbreak, immunity against other new diseases takes time and the whole population is exposed during any outbreak.

In Samoa 12 epidemics broke out between 1830 and 1900, but these were not as severe as the epidemics in Fiji or the fatal influenza epidemic of 1918. The comparatively mild nature of the epidemics in Samoa resulted in no great reduction of her population, a contrast to what happened in Fiji. Tonga, like Samoa, suffered very lightly from the known 4 epidemics which broke out between 1812 and 1918. In the Cook Islands, Rarotonga experienced about 10 outbreaks, as

far as the records of the missionaries indicate, between 1829 and 1863; the outbreak of 1829 to 1830 took about 1,600 lives. Mangaia, Aitutaki and the remaining inhabited islands of the Northern and Lower Groups are believed to have suffered from fewer epidemics of less severe nature in the same period.

Tahiti and Moorea witnessed the outbreak of 14 epidemics between 1772 and 1918; the measles epidemic of 1854 carried off about 7,000 to 8,000 people. Something like 10 epidemics are known to have broken out in the Leeward Islands between 1818 and 1890 but all were not very fatal. For the Marquesas Islands where depopulation was extremely severe little is known about epidemics that may have broken out, except the smallpox epidemic of 1864 which laid prostrate the population of Nukuhiva and Ua-Pu and carried off 1,560 people³⁴.

In the Southern New Hebrides the islands of Futuna and Erromango experienced a number of epidemics, all more or less severe. Early accounts show that about one-third of the population of Erromango died in the measles epidemic of 1861, and about one-quarter of Futuna's population died in 1893 from a dysentery epidemic. An outbreak of a dysentery epidemic in Aneityum in 1861 carried away 1,200 natives³⁵. Whether the epidemics of exotic diseases were exogenous or endogenous in origin every island group was affected. Moreover, in non-epidemic years mortality from various diseases was still high which almost equalled or exceeded the number of births.

Wars

Wars also account for the decline of the island populations. Earlier it was mentioned that when the white men came the inhabitants of the Pacific islands were engaged in intermittent warfare which continued until effective strong governments were established. Violence, feuds and insecurity were perhaps an accepted part of the daily lives of peoples in these communities. In Fiji wars prevailed throughout the first half of the nineteenth century. The civil war in Tonga did not end until 1852 with the ascendancy of Siaosi Tupou I and the acceptance of Christianity throughout the newly unified Kingdom. Intermittent

wars in Tahiti and the Leeward Islands continued throughout the first half of the last century until the French finally took a firm grip over the affairs of the islands. Early in 1805 Bicknell and Henry toured Moorea and 'they saw in many places round the island the ruins of houses that had been burnt down in the late war, and several houses waste whose inhabitants (they) were informed had fled to Otaheite for refuge'³⁶.

When the missionary John Williams visited Rarotonga in the Cook Islands in 1823 he was told that a 'disastrous war had taken place' and the two smaller villages of Avarua and Aorangi had been defeated by the third village of Takitumu³⁷. The war had lasted seven years since it started shortly after Goodenough's visit to search for sandalwood in 1816 and ended about 6 months before Williams' visit. Williams was told by the chiefs of the defeated side that 'four score and ten were slain' on the side of the conquerors and 'five score' on that of the conquered. Maretu, one of the first Rarotongans converted to Christianity, wrote a history of the Cook Islands in his old age in which he asserted that 730 people had been killed in that war³³. Perhaps Williams was only told of the casualties in the final battle.

In Samoa wars broke out on several occasions in the nineteenth century but there were no serious death tolls. The interior of the Solomon Islands is claimed to have been depopulated as a result of the head-hunting of the coastal people who also tended to trade these people to the blackbirders. When the early Europeans came to Nauru they found the tribes engaged in almost ceaseless inter-tribal feuds. The arrival of the Europeans with their inestimably valuable gift of firearms made these tribal wars and family vendettas more deadly.

Sometimes the white men came into conflict with the natives and they, being superiorly armed, inevitably came out on top. The blackbirders, once they had loaded their human cargoes, would fire upon the villagers killing many in an attempt to keep other blackbirders away by provoking the hostility towards other white men. Very often the colonizers were forced to use troops to put down uprisings and establish peace and the white men's justice. The Chamorros of Guam

were killed in large numbers by the Spaniards in a war of extermination which lasted, with some peaceful intervals, for 23 years³⁹. This war of extermination is claimed to have resulted in ferocious massacres of the natives and when they were finally subdued there were more women than men; consequently Chamorro women turned to the Spaniards and Filipinos for husbands. In the central Carolines, the Ponapeans' attempted uprising in 1911 was easily suppressed by the Germans who executed the leaders and exiled others who took part in it.

In the early years of French colonialism in New Caledonia, they were continually harassed by native uprisings. Intermittent native revolts were normally followed by savage reprisals, the bloodiest of them being in 1878 and the last only in 1917⁴⁰. The civil war that broke out in Samoa between two rival claimants to the throne, when Malietoa who was made King under the Samoa Act of 1889 died, resulted in the shelling and killing of many in a village that supported one of the claimants when the United States' warship was trying to enforce their appointment of the other claimant whom the majority of the natives did not accept.

When the French took over Tahiti as a protectorate in 1842 and the French Commissioner deposed King Pomare and provisionally annexed Tahiti to France, the British Consul encouraged the Tahitians to rebel, and the rebellion led to the formal restoration of the protectorate in 1845 but the insurrection did not end until 1847. By December 1844 the Tahitians had 'lost about 100, the French upwards of 300' in the fighting but many Tahitians who fought for the French were also killed⁴¹. Despite outbreaks of influenza and dysentery the war dragged on and with the pillaging and burning of gardens which were neglected many more probably died from diseases and starvation than those who died in the battles.

Conflict between colonizers and the indigenous people is a story often repeated in history but the Pacific peoples suffered more lightly than other frontiers of such contact because few Europeans came to stay as colonists, with the exception of the French in New Caledonia and Americans in Hawaii. Moreover, in most Pacific islands wars ended by mid-nineteenth century but population decline continued.

Blackbirding and Labour Recruiting

Another factor which contributed to the depopulation of some islands, particularly during the 1860's was blackbirding. The need for cheap labour to exploit the guano islands off the Peruvian coast and to work the plantations and copper mines in South America led to the emergence of labour traffic in the Pacific. Peruvian ships would tour the islands and fill their holds with islanders before heading home to sell them in the labour markets. This labour traffic did not last very long but by the time it came to an end as a result of the protestations of the French and British Governments, some islands had been greatly depopulated as a result.

From Nukulaelae in the Ellice Group labour raiders soon took about 300 people from a population estimated at 400 after 1860⁴². If this really was the case then practically every adult was taken. To Nukulaelae on this occasion none of those taken returned, but even when labourers did return to their islands they often introduced diseases which further depleted the population. Easter Islanders were friendly but the kidnapping of 12 men and 10 women in 1804 by the American schooner 'Nancy' to help in their seal hunting was the beginning of the practice of blackbirding which seriously depopulated the island and made the people hostile to landings by other vessels. From Easter Island the slave raiders took about 1,000 and the largest of these raids was in 1862 when some 200 people were carried off, all of whom died in Peru. As a result of representations by Britain and France those taken in earlier raids who still survived were returned. Only 15 of the 100 returned reached the island alive and these carried with them smallpox which raged through the island killing large numbers in a horrible epidemic that was followed by a famine⁴³.

From Pukapuka, in the northern Cook Islands, two Peruvian ships took 140 people in 1863 from a population estimated to be 600 at the time. Manihiki, which also belongs to the northern Cooks, became famous for its beautiful women since about 1860 and their numbers were very speedily reduced, by the extensive traffic in women which sprang up Tahitians, Peruvians and

other strolling mariners who chanced to visit them bought, enticed or kidnapped them until they became scarce upon their own land'⁴⁴. About 200 natives of the island were carried off by a Peruvian slaving vessel in 1862 but most of them died of diseases on Sunday Island. In 1868 the notorious blackbirder 'Bully' Hayes kidnapped 60 men and 30 women from Niue and sold them in Tahiti, few ever returned⁴⁵. Other popular slave raiding grounds were the Gilbert and Ellice Islands, Tokelau Islands, the New Hebrides and the Solomons. On the whole the volume of slave trade in the Pacific is not comparable to the African slave trade but its effects on population decline in some islands may be just as great as in some areas on the African West Coast.

The end of blackbirding brought about a much more humane form of labour recruiting which in some cases still continues to the present day. The American Civil War led to the growth of plantations, cotton first for a few years, in the larger islands of Fiji, Tahiti, Samoa and New Caledonia. Cheap labour was vital for the success of the plantations. The failure of the natives of those islands led to the importation of islanders from other areas, especially the Solomon Islands, New Hebrides and the Gilbert and Ellice Islands. The recruiting of the Solomon Islanders began in 1865 when they were induced to work in the cotton and coconut plantations in Fiji. Ten years later they were being sent in shiploads to Queensland and to Samoa as well. Probably one-quarter of all islanders recruited died of diseases in the plantations. When recruiting for Queensland ceased, about 60,000 Solomon Islanders is estimated to have been sent there. However, this estimate is probably dubious because according to records in Queensland only a total of about 61,160 were ever recruited there from the islands and the majority were New Hebrideans. Labour recruiting from the Pacific islands to Queensland ended in 1903 and that to Fiji 7 years later.

Like the Solomon Islands, the New Hebrides was one of the most important earliest recruiting grounds for labourers in the plantations. By 1870, probably 3,000 or 4,000 New Hebrideans were abroad as labourers under contract. Three

years later it was estimated that from a population of about 2,000 male adults on Tanna, in the southern New Hebrides, at least 1,200 were abroad, although this was probably an exceptional situation. By 1876, the New Hebrides had provided over 7,200 labourers for Queensland; about 4,500 went to Fiji between 1868 and 1878; and about 2,000 were taken to New Caledonia around the same time. According to McArthur and Yaxley, 'if it is assumed that the New Hebrides contributed as much to the Queensland traffic in all years between 1863 and 1904 as in the years for which the numbers of New Hebrideans recruited are known, then probably fewer than 40,000 people left the New Hebrides at least once for Queensland, and how many fewer depends on how many were recruited more than once'⁴⁶.

Gilbert and Ellice Islanders were also recruited for works in New Caledonia, Fiji and Samoa. When the phosphate mining began in Nauru and Ocean Island, early labourers were recruited from the Colony. Other islanders moved out from their home islands of their own free will to work in trading vessels, dive for pearls or merely for adventure and be close to the hub of all new influences⁴⁷. Population decline in some islands such as Mangaia, Rotuma and Niue was mostly due to free out-migration of young men to the growing port towns of larger islands. These movements, whether as labourers under contract or as free migrants, were certainly not one-way movements as often imagined. Of those who left many returned to their home islands and others kept moving on to other places. For those who were recruited many died of diseases but the majority who completed their term of contract were repatriated. For instance, an estimate of perhaps 10,000 or fewer of those recruited from the New Hebrides either died in the plantations or stayed in Queensland and only about three-quarters of the estimated 40,000 were repatriated. Similar situations occurred in other places like Fiji, New Caledonia and Samoa where labourers were recruited.

Psychological Factors and Traditional Population Control Practices

Psychological factors, poor nutrition, venereal diseases and the continuation of primitive methods of population control contributed indirectly

to the decline of island populations. Native ways of life were disrupted by the missionaries, blackbirders, traders, whalers and the introduction of alcohol, tobacco and other alien influences. Several witnesses to the 1893 Commission, which tried to find the causes of the decline of the Fijian population, deplored the changes that had occurred since European contact, pointing to the lack of restraint on young girls before marriage, their disinclination for the restraints of lawful marriage, and their reluctance to bear children⁴⁸. None of these allegations can be clearly substantiated but as the missionaries had frowned upon polygamy, both polyandry and polygyny, infanticide, abortion and child marriages, suppressing them wherever possible, some upheaval in the attitudes of men and women to having children would be a natural enough corollary. One doubts, however, that this alone would have caused the comparatively sharp decline that occurred in the numbers of births in the 1890's in the Fijian population.

Labour recruiting may have led to the disintegration of social life and the postponement of marriages. However, perhaps labour recruiting, since almost every island had a preponderance of males, would have given those males left behind better chances of getting partners. Anyhow, if this was the case it did little to combat the population decline. In the Solomon Islands young men tend to marry between the ages of 18 and 20 years but in Malaita, where many of this age-groups are away working on plantations, the usual marrying age is 25 to 30 years⁴⁹. Nevertheless, the postponement of marriage among men has less effect on the reproductive capacity of the population as the postponement of marriage among women. It is also argued that women suffer more miscarriages as their burden of work increases when men are away as labourers; but it should be also remembered that they receive a lot of help from relatives in view of the extended family system, and in Melanesia where recruiting was heaviest women customarily do a lot of heavy work. Therefore any decline in the birth rate during the time of population decline may be due to the lowering of resistance to diseases among

women, which may have increased the maternal mortality rate, in addition to the unsettling effects of the introduction of the white men's civilization on the reproductive behaviour.

Among women venereal diseases and chronic malnutrition probably contribute to the decline in fertility. In the Marquesas, Suggs found in his studies in 1957-58 that in numerous cases complete barrenness was traceable to an early venereal infection at the age of 14 to 16 years⁵⁰. Burrows' and Spiro's research in Ifaluk in the Central Carolines in 1952-53 brought them to the conclusion that poor nutrition, especially when vitamin E is lacking, lead to low fertility as well as low survival rates⁵¹. Food shortages during famines also increase the number of miscarriages and stillbirths. Furthermore, during times of mass sickness, wars and hunger sex activity probably slackens and therefore results in some reduction in the rate of conception. Abortions, infanticide and other methods of population control practised when the population was increasing were still continued by habit in spite of the decline in population.

Not 'all these changes and their attendant losses in group morale necessarily led directly to mass hypochondria and a general will to die, as some anthropological Cassandras like to report, but the weakening of traditional ties did create bewildering and unsettling conditions until a new social equilibrium was established'⁵². The depopulation of the interior of Espiritu Santo in the New Hebrides by almost 90 per cent between 1895 and 1925 seems not the result of the disruption of native life that made the natives lose their hold on life as they found little to strive for under the new conditions because few Europeans had ever penetrated into the interior during that time. Hogbin, for ~~example~~^{example}, found in his studies in the Solomons, that ~~numerical~~ decline was underway in communities where apparently there was no loss of 'joie de vivre' or attempt to limit childbearing⁵³. Ubiquitous inferiority complex inspired by runaway sailors and convicts and unscrupulous planters and traders or even some missionaries is an unlikely explanation to the situation of population decline. Peoples whose traditional forms of life have been radically altered still manage to maintain or increase their numbers; others who still largely

retain their institutions and who cannot be said to suffer from any notable lack of interest in life or in having children continue to decline numerically.

Among all these factors advanced it is difficult to find any which could be held responsible in all cases. Even when warfare and recruiting had ceased, where health conditions had apparently been improved, where the initial virulence of epidemic diseases had died down and where polygamy and other traditional forms of the old native social organization had been largely swept away, populations in single islands or groups of islands continued to decrease. Normally after a temporary setback the numbers should increase again. The more likely explanation for the extent of population decline lies in the shattering epidemics of unfamiliar diseases supported by the other factors, which not only killed or removed a large proportion of the population but, through age-selective mortality, migration and blackbirding, left the age-sex structure distorted. If enough were known about these populations at various times in their history, there would be no need to invoke and exaggerate the psychological reasons which are often believed responsible for the supposedly universal decline in island populations in the Pacific when they were brought into contact with the materially superior white civilization and culture.

4. DEMOGRAPHIC EFFECT OF THE DECLINE OF POPULATION

A 'stable' population will eventually result from a long-time continuation of any mortality schedule or any rate of increase because the proportions of each age-group will not change with time, though the size of the population may increase or decrease. Moreover, if mortality, emigration and blackbirding were not age-sex selective the population structure would remain intact and after a temporary setback the population would soon be increasing again at the same rate before that temporary setback, provided fertility remains unchanged. If the age-sex pyramid of the island population had a broad base, and it is reasonable to assume that it was so before the period of contact, and mortality from epidemics and losses through emigration and blackbirding were not age-sex selective, then a succession of these incidences would merely reduce the size of

the population but not its reproductive capacity. Once resistance had been acquired and mortality from diseases and epidemics declined, blackbirding ceased, and labour recruiting reduced the population would start to rise again and it would keep on rising with no further need to decline. However, this was not the case, for the population continued to decline when mortality from epidemics was reduced and long after blackbirding and wars had been terminated. The rate of growth fluctuated with some years having an excess^{of} births and many years having an excess of deaths over births.

Although the reasons are still partly obscure, it appeared in many cases among the island populations that a process of progressive masculinity was at work with the proportion of females in the population becoming less and less, thus leading to a decrease in the general capacity of the population to reproduce itself⁵⁴. Statistically, a progressive increase of males in a population must in the end lead to its extinction, and in some Pacific islands the balance appears to have redressed itself since the population began to grow through natural increase. The preponderance of males seems to indicate that mortality may have been higher among females during the outbreak of epidemics. Mortality rate among female infants was probably higher than among males if there was less concern for their survival. The need for the continuation of the male line may lead to a greater desire for male offsprings, particularly if the survival of one or two sons is to be ensured during a period of high infant mortality⁵⁵.

The excess of males was witnessed in Tahiti in 1829 when a partial census found that in the south-western districts there were 1,162 males and 758 females who were described as adults; and 660 boys and 480 girls classified as children⁵⁶. This high sex-ratio probably reflected the selective infanticide practised few years previously. Whatever the criteria used for the classification of adults and children may have been, there were in these populations 1.5 children per woman, and this ratio would be higher if women beyond the reproductive ages could be excluded from the total. Another partial enumeration in Moorea in 1848 found an excess of males. There were 238 boys

as compared with 188 girls and 558 adult males compared with 388 adult females⁵⁷. The situation of male preponderance was not found everywhere in the islands, but this was the general rule rather than the exception.

Island populations where decline was most conspicuous suffered from the frequent recurrences of epidemics and other causes of depopulation. The populations were growing slowly and the frequent occurrence of population checks never gave these populations a chance to recover until mortality had been greatly reduced. McArthur's analysis of the population structures for Fiji, Cook Islands and French Polynesia during the period of population decline seem to confirm the hypothesis that epidemics and other causes of depopulation reduced certain birth cohorts who consequently produced fewer births when they reach their reproductive ages⁵⁸. Periodic excessive epidemic mortality would have altered the age structure and even under favourable conditions the recovery of the population would be slow or even retarded. For example, the 1873 measles epidemic in Fiji may have been age-selective. Though the age pattern of the decline of mortality among the various age-groups is not known it appears that the risks of deaths were higher for adults than for any other age-group except perhaps the youngest children. This would reduce the number of married couples surviving. The commensurate reduction in subsequent years, coupled with the probably higher than average mortality risks for unweaned female children born before the epidemic would yield a cohort very much smaller than any born for about 15 years after the epidemic. If the mortality risk had been more or less uniform throughout all ages, the contrast in size between the pre- and post-epidemic cohorts would have been less marked, but given the probable level of mortality in this epidemic, the 1873-7 cohort in Fiji was almost certainly smaller than the cohort 5 years older⁵⁹.

The impact of this depleted cohort on births reported in later years was apparent in the numbers registered in the 1890's. By then there had been several other, but comparatively minor, epidemics which may also have

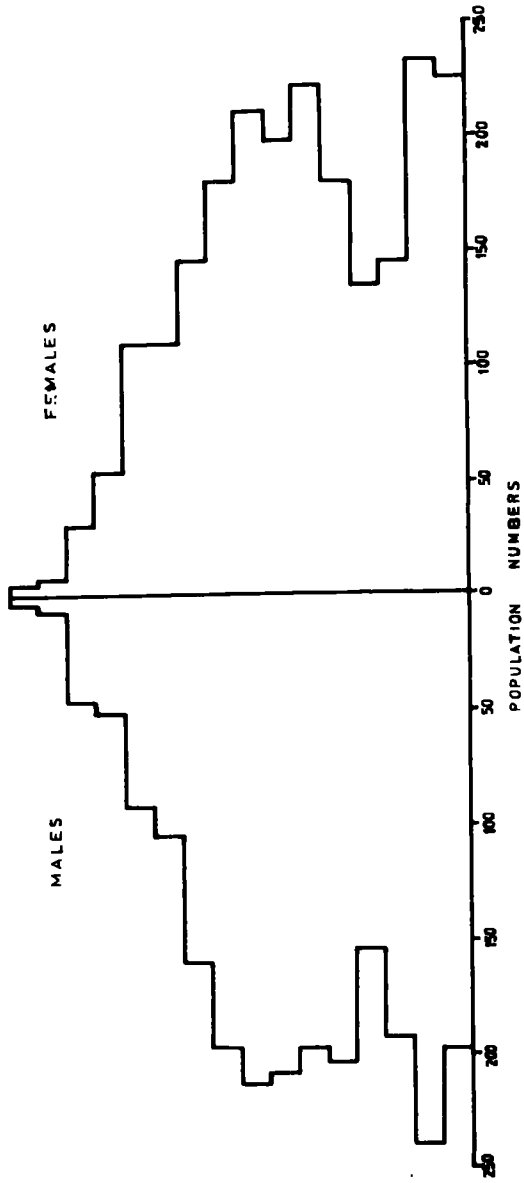
Fig.1.2 The Age-Sex Pyramid of the population of the Marquesas Islands, 1889.

Source: McArthur, N., 1967, op.cit., p.292 (after Marestang, 1892, p.361).

POPULATION PYRAMID: MARQUESAS ISLANDS, 1889.

AGE - GROUPS

- 75+
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4



contributed to the declining numbers of births each year. The small cohorts meant lower birth rates each year until 1930 when the numbers of births began to increase slowly. The increase was further slowed down between 1935 and 1944 by the entry of the small cohorts born during the pre- and post-influenza epidemic of 1918.

In Figure 1.2, the age-sex pyramid for the Marquesas in 1889 shows the distortion of the population structure by epidemics, famines and other events in the islands. It reflects the past death and birth rates, emigration, historic events and, to some extent, the government policies. During the period of population decline the islands probably had distorted age structures similar to that of the Marquesas.

5. POPULATION RECOVERY AND GROWTH

The time of population recovery and growth varied from island to island and from territory to territory. Population recovery began in the islands of Polynesia by the turn of this century and it reached most of Micronesia and Melanesia by the 1930's and 1940's. While 'many people were bewailing the demise and predicting the disappearance of the Pacific island races',⁶⁰ the population began to recover and soon growth became very rapid. The sharp rise in population increase appeared immediately after World War II and instead of the former threat of extinction, most of the islands are now threatened with overpopulation. In small populations such as those of the Pacific islands the decline can be very rapid but once this is reversed growth can be just as fast. As a result the future of the Pacific islands 'is bound up above all with the growth of population in physically confined and precisely-bounded island areas',⁶¹.

Reasons for Recovery and Subsequent Growth

Recovery from population decline first appeared in Polynesia, particularly in Tonga and Samoa by the turn of the century. Polynesia showed signs of

recovery first because the Polynesians were less hostile to the missionaries and other early Europeans. Thus in spite of the damage done by other white men many did a lot of good work by trying to improve the health of the people and establish schools for education. The first sign of recovery was probably due to growing immunity against the introduced diseases which was soon reinforced by the introduction and expansion of health programmes.

On the whole, white men were more attracted to Polynesia than Melanesia or Micronesia, and the policies of the colonising powers in Polynesia were generally more humane. The efforts of the white men to improve health were usually easily accepted by the islanders, especially the Polynesians upon whom early European contact had greater impact. On the other hand, there were many Frenchmen in New Caledonia since the 1840's but the hostility and the unwillingness of the natives to cooperate led to their neglect by the French who did not do much to improve their health until recently. Head-hunting, murders of early missionaries, traders and administrators, cannibalism and a less comfortable climate distracted Europeans from the Solomons and the New Hebrides until the first decade of this century. Moreover, the New Hebrides, being a Condominium of France and Britain, was neglected since little positive action was taken by either country to improve the health of the natives. In Micronesia the Spanish did very little indeed for the indigenous people before they sold the islands under their possession to the United States and Germany after their defeat in the Spanish-American War of 1898. The Americans, who bought Guam, improved the conditions in the island and soon the Chamorros were increasing rapidly. The Marshalls, Carolines and the Marianas were partly improved healthwise by the Germans who bought these islands. Later the Japanese tried to eliminate the main causes of poor health and diseases with limited success, and after World War II the Americans became responsible for the health programmes. Population recovery and the health programmes in the various territories reflect the differences in the health policies of the administrations. Population growth in the territories tended to appear first in islands and districts where medical attention was more readily dispensed, as

Table 1.2 NUMBER OF BIRTHS AND DEATHS REGISTERED FOR EACH OF THE TWO MAJOR COMPONENT POPULATIONS OF FIJI FROM 16 September, 1956 to 15 September, 1966

Period	FIJIAN				Indian			
	Births		Deaths ^a		Births		Deaths ^a	
	M	F	M	F	M	F	M	F
16 Sep-15 Sep								
1965-66	3,887	3,560	56	47	4,257	4,152	111	98
1964-65	3,596	3,267	95	63	4,445	4,227	156	136
1963-64	3,612	3,266	128	110	4,673	4,503	181	158
1962-63	3,556	3,229	154	136	4,205	4,197	150	150
1961-62	3,441	3,041	186	160	4,740	4,382	173	147
1961-66	18,092	16,363	619	516	22,320	21,461	771	689
1960-61	3,424	2,989	183	159	4,536	4,450	213	177
1959-60	3,131	2,884	197	163	4,402	4,353	247	217
1958-59	3,183	2,834	214	167	4,473	4,208	262	200
1957-58	2,940	2,659	204	177	4,204	3,993	224	165
1956-57	2,885	2,633	214	201	3,833	3,782	209	176
1956-61	15,563	13,999	1,012	867	21,448	20,786	1,155	935

Source: Zwart, F.H.A.G. 'Report on the Census of the Population 1966'
Council Paper No. 9 of 1968, Govt. Press, Suva, Fiji: pp 12,
Table C.

^aDeaths in each birth cohort at successive ages

well as being concentrated there.

Declining mortality - particularly infant mortality - a slight increase in fertility (see Table 1.2) and a less distorted age structure resulted in the continuing growth of the population today. Whereas population growth in developed countries was accompanied by rapid industrialization this is not so for the Pacific islands. With hardly any resource for industrialization and no capital accumulated, any hope of industrialization is a mirage. More than anything else, the reduction of mortality has been due to medical and health services. Medical care in the islands is free and this means that no one could not receive medical attention and treatment because of lack of money. Medical staff who are nearly all trained in the Suva Medical School may not be fully qualified, however they can cope with most of the cases brought before them. Although the hospitals are not generally up to the standard and extent of specialization in developed countries, the cases dealt with are not usually as complicated as those in developed lands where the growing tensions and stresses of urban, industrialized societies have created new diseases when cures and preventive medicines have been discovered for the more common ones. Few people in the islands ever die from cardio-vascular diseases, cancer or accidents while the majority of deaths are caused by tuberculosis, typhoid, pneumonia, measles, dysentery, diphtheria, malaria (in ^{the} Solomon Islands and New Hebrides only) and influenza.

In recent years infant mortality has dropped remarkably, especially among females (see Tables 1.3 and 1.4). This decline is mainly the result of the work of those who are concerned with maternity and child welfare. Maternal mortality has been reduced and the proportion of infants now surviving to reach their first birthday is increasing. The reduction of mortality has resulted in an increase of life expectancy at birth for both sexes from around 30 to 35 years by the turn of this century to over 50 years in the 1960's. In the New Hebrides the life expectancy at birth in 1967 was about 51 years⁶²

Table 1.3 ESTIMATED INFANT MORTALITY PER 1,000 LIVE BIRTHS IN THE POPULATIONS OF THE COOK ISLANDS IN THE YEARS 1944-6; 1950-2 AND 1955-7

POPULATION	YEARS	MALE RATE	FEMALE RATE	ALL INFANTS RATE
Rarotonga	1944-46	116	101	108
	1950-52	112	120	116
	1955-57	87	96	91
Lower Group excluding Rarotonga	1944-46	127	104	116
	1950-52	117	92	105
	1955-57	143	111	127
Lower Group including Rarotonga	1944-46	123	103	112
	1950-52	115	105	110
	1955-57	115	104	109
Northern Group	1944-46	238	85	164
	1950-52	144	148	146
	1955-57	162	167	164
Cook Islands	1944-46	138	100	119
	1950-52	119	112	115
	1955-57	124	114	119

Source: McArthur, N., 1967 'Island Populations of the Pacific', Australian National Univ. Press, Canberra. p.219 Table 45.

Note: Significant decline in infant mortality in Rarotonga is due to readier access to medical facilities than in the other islands where there have not been any significant decline but rather infant mortality has fluctuated. Improved registration may also have contributed to the higher rates in the other islands. During 1958 Child Welfare services were expanded and the infant mortality rate from January 1958 to December 1960 averaged 50 deaths per 1,000 births each year.

Table 1.4 AVERAGE ANNUAL INFANT MORTALITY RATES COMPUTED FROM THE BIRTHS AND DEATHS REGISTERED IN EACH ADMINISTRATIVE DISTRICT OF FRENCH POLYNESIA IN THE YEARS 1950-2, 1950 and 1952 only and 1955-57

Administrative District	Years	Male	Female	All infants
		Rate	Rate	Rate
Tahiti and Dependencies	1950-52	143	108	126
	1950, 1952	106	86	97
	1955-57	90	77	84
Leeward Islands	1950-52	159	111	136
	1950, 1952	119	63	91
	1955-57	132	85	109
Marquesas Islands	1950-52	155	142	148
	1950, 1952	151	102	123
	1955-57	74	55	65
Austral Islands	1950-52	176	218	194
	1950, 1952	142	197	167
	1955-57	150	118	134
Tuamotu and Gambier Islands	1950-52	200	121	161
	1950, 1952	157	97	127
	1955-57	134	104	120
French Polynesia	1950-52	156	120	139
	1950, 1952	119	92	106
	1955-57	106	82	95

Source: McArthur, N., 1967 op.cit. p.334

Note: The inflation of the three-year average for 1950-52 is due to the measles epidemic of 1951. Readier accessibility to medical facilities is shown by the lower infant mortality for Tahiti and Dependencies in comparison with other Administrative areas.

which is probably the lowest whereas in most of Polynesia and Fiji the life expectancy for both sexes was over 64 years in the late 1960's⁶³.

Campaigns to improve the health and environmental conditions have been going on since the interwar years. Immunization vaccinations against typhoid, TB, yaws, measles, tetanus, poliomyelitis and other killer diseases have been conducted under the auspices of the Rockefeller Foundation, World Health Organization and other similar organizations. Furthermore, after a century of exposure to the introduced diseases that caused so many deaths in the last century the islanders began to build up some resistance and immunity. Today islanders have a lot of faith in the hospitals than previously when local medicine men and women were preferred to the white men's medicine. Education has brought more hygienic and better sanitary conditions to the homes. Diets, waste disposal, water supply and personal hygiene have been greatly improved.

The establishment of more effective administrations in the islands finally brought violence and insecurity of inter-tribal wars and family feuds, head-hunting, cannibalism and human sacrifices to an end. No longer do the natives have to flee to fortified villages and leave their gardens to be destroyed and burnt by invaders. The gardens are no longer neglected because of wars and if they are neglected today it is because of the attraction of wage labour and the towns. Though famines still occur occasionally after periods of prolonged drought, heavy rain and hurricane, hardly any one dies from starvation or from diseases. No longer do epidemics follow in the wake of hurricanes and famines as in the past. Better transport has meant that stricken areas can rely on some other islands and districts for a time for food supply; more important is the modern world phenomenon of international aid during such disasters. Effective government also means the enforcement of regulations that control the movements of the people outside the territorial boundary as well as the quarantine of ships which call at the main ports only.

The inability to return to their former ways of life has forced the islanders to adjust themselves, in spite of the difficulties, to the changing

conditions. Under the changing conditions Western influence has become less disruptive, instead it has become more acceptable. Early influences of fundamentalist Christianity, strongly adhered to by the islanders, support the large family ideal of the early societies. Further, the end of the practice of former methods of population control such as voluntary bachelorhood for younger brothers, voluntary suicide, infanticide and abortions while maternal care and midwifery are being improved ~~to~~ help ~~to~~ give every conception a better chance of being born alive and surviving to the age of at least 1 year. The life expectancy of women is increasing and it has lengthened their exposure to the risks of pregnancy. Better and more balanced diets have reduced the possibilities of still births and miscarriages. Sexual taboos which regulated sexual intercourse with wives and also acted as means of spacing childbirths have been undermined and ignored as the present reproductive sector of the population feel less bound by them⁶⁴. In fact, fertility has slightly increased in many islands after World War II. Progressively more and more children survive to reach the reproductive ages and most end up having large families whether married or not⁶⁵. This has resulted in more regular age structures, with sex ratios lowered. The bases of the population pyramids of the indigenous populations are weighted with about an average of 46 per cent under 15 years of age ensuring continued rapid growth, at least for the next decade or two after the 1960's.

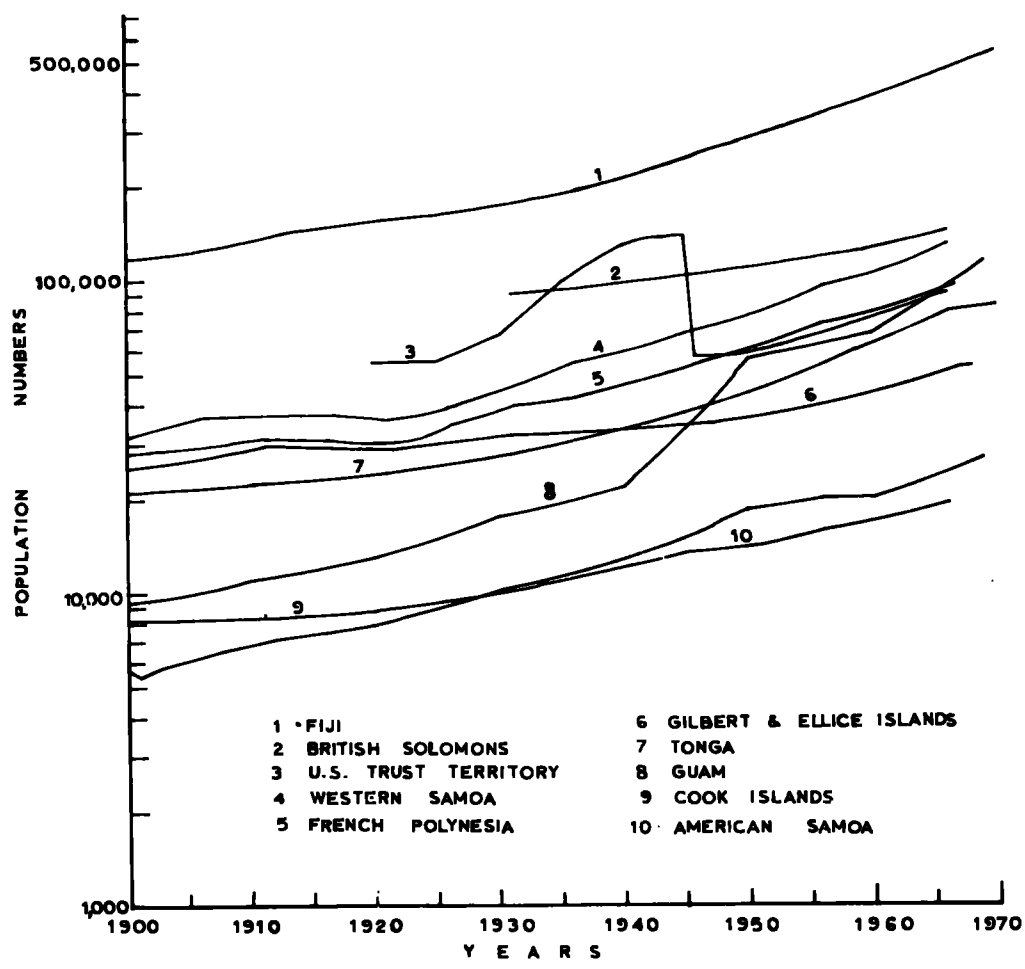
Current Population Growth

The current rates of population growth in the island territories are shown in Table 1.5. The average rates of natural increase, if registrations were complete, during the 1960's range from just over 2.0 per cent to almost 4.0 per cent which, in most cases, are far higher than the natural increase in the developed countries during the time of their rapid population growth when mortality was reduced⁶⁶. Therefore, like other developing countries, the Pacific island territories are growing at an accelerating rate, except those

Fig.1.3 Semi-logrithmic graph showing Population Growth in selected island territories, 1900-70.

- Sources:
- (1) McArthur, N., 1967 & 1957, op.cit.
 - (2) Keesing, F.M., op.cit.
 - (3) 'Demographic Year Books 1948-69', Dept. of Economic and Social Affairs, U.N., New York.
 - (4) Tonga, Censuses 1911-66.
 - (5) Fiji, Censuses 1956 and 1966.
 - (6) Tudor, J., (ed.), 1968, "Pacific Islands Yearbook 1967", Pacific Publications, Sydney.

POPULATION GROWTH, 1900-70



- | | |
|------------------------|----------------------------|
| 1 FIJI | 6 GILBERT & ELLICE ISLANDS |
| 2 BRITISH SOLOMONS | 7 TONGA |
| 3 U.S. TRUST TERRITORY | 8 GUAM |
| 4 WESTERN SAMOA | 9 COOK ISLANDS |
| 5 FRENCH POLYNESIA | 10 AMERICAN SAMOA |

where emigration is a significant palliative (see Figure 1.4).

Table 1.5 THE POPULATIONS AND RATES OF GROWTH OF ISLAND TERRITORIES DURING THE 1960's

Island Territory	Year of Latest Census	Populations at Last Census	Mid-Year Estimates 1969	Ave.Nat. Increase (per 1000) 1960's	Annual Rate of Increase (%)	
					Last Census	1963-1969
American Samoa	1960	20,051	32,000	33.2	0.1	6.5
British Solomons	1959*	124,076	150,000	21.0	2.0	2.1
Cook Islands	1966	19,251	20,000	35.2	1.0	0.9
Fiji	1966	476,727	519,000	30.8	3.6	3.0
French Polynesia	1962	84,551	103,000	34.9	2.2	3.1
Gilbert & Ellice Is.	1968	53,517	54,000	21.2	2.07	1.7
Guam	1960	67,044	102,000	28.6	1.4	6.9
New Caledonia	1963	86,519	98,000	25.8	4.26	2.0
New Hebrides	1967	76,582 ^a	80,000	25.0	-	2.5 ^b
Nauru	1966	6,056	6,000	30.9	4.92	5.2
Niue Island	1966	5,194	5,000	31.3	0.82	0.9
Trust Territory of the Pacific Islands	1967	91,448	98,000	29.0	3.08	2.2
Tonga	1966	77,429	83,000	29.7	3.62	3.3
Western Samoa	1966	131,377	141,000	26.2	3.52	2.7

Source: U.N., 'Demographic Yearbooks 1967-69' pp.113-115, 121

* Latest census in 1970 but results not yet available. 1959 Census was based on a partial enumeration.

^a About 1,406 New Hebrideans refused to be enumerated and therefore were not included.

^b First census ever taken in the New Hebrides for all the population was in 1967 and the rate of growth between 1963-69 is based on the estimate given in the Census report. The Annual Rate of increase, in percentage, at the time of the last census has been worked out by taking the average rate between the last two censuses taken in 5 year interval for American Samoa and the GEIC, and 10 year interval for most of the other territories.

The low rates of increase for the Cook Islands, Niue and the decline in American Samoa between the last two censuses are due to the effects of emigration. Rates of increase above 4.0 per cent per annum for American Samoa between 1963-69, Guam, Nauru and New Caledonia is the result of immigration of American personnel and recruited labour force, respectively. The rate of natural increase reflects the low levels of mortality of about 9 per 1,000 for the territories and the high crude birth rates of over 30 per 1,000 population for all except Norfolk Island where it is similar to those of developed countries. In the island territories the natural growth is more than double those for the developed nations where natural growth is usually less than 15 per 1000. Generally, the natural increase also reflects the time when growth began. Therefore it is higher in the territories of Polynesia and Fiji where growth has been longer than in Micronesia and Melanesia where growth is more recent, especially after World War II.

In spite of the inherent fluctuations in the growth rates of the island territories, all have generally shown recent acceleration in the rates of growth except the territories where emigration is on a large scale. The family sizes are still typically large with average children per woman of completed fertility for the various territories and ethnic groups, except Europeans, falling within the range of 5.5 and 7.5 children. Only a small proportion of women in any birth cohort fail to marry, usually around 5 per cent, by the time they reach the age of 29 years. Of those who marry between 5 and 8 per cent fail to have children but this is compensated for by those who have children from illicit alliances without entering into matrimony. Two factors are mainly responsible for the high rate of women ever married. First, the unbalanced sex structure of the populations (see Table 1.6) with more men and fewer women has put pressure upon women to marry. Very often they marry when they are between the ages of 17 and 21 years. Secondly, the attitude of the society is that marriage is primarily for the purpose of procreation and once a marriage is contracted the couple are expected to have as many

children as possible and as soon as possible⁶⁷. Moreover, sexual intercourse and childbearing is normally expected to take place only within marriage. So for the average woman in the islands, in view of the higher life expectancy and marriage at ages less than 21 years, the exposure to the risks of conception is usually for as many as 25 years or more.

Table 1.6 THE SEX RATIOS FOR ISLAND TERRITORIES AT THE TIME OF THE LATEST CENSUSES

Island Territory	Year of Latest Census	Both Sexes	Males	Females	Males per 1000 Females
American Samoa	1960	20,051	10,164	9,887	1028
British Solomon Is.*	1959	124,076	65,532	58,544	1119
Fiji	1966	476,727	242,747	233,980	1037
French Polynesia	1962	84,551	43,370	41,181	1053
Gilbert & Ellice Is.	1968	53,517	25,404	27,113	914
Guam	1960	67,044	39,211	27,833	1409
Nauru	1966	6,056	3,696	2,360	1566
New Caledonia	1963	86,519	45,640	40,879	1116
New Hebrides [†]	1967	76,582	40,626	35,956	1130
Niue	1966	5,194	2,533	2,661	952
Norfolk	1966	1,147	563	584	964
Trust Territory of the Pacific Is. [‡]	1967	91,448	46,845	44,603	1050
Tokelau	1966	1,900	892	1,008	885
Tonga	1966	77,429	39,837	37,592	1028
Western Samoa	1966	131,377	67,842	63,535	1068

Source: Same as for Table 1.5

* Based on the 1959 Sample Survey

[†] Does not include the 1,406 persons who refused to be enumerated

[‡] Excludes the United States personnel and contractors with their dependents

The high rate of fertility reflects the stage of demographic transition in the island territories, which is not uniform (see Table 1.7). This means that some islands are more advanced than others reflecting the effectiveness, the time of improvement and the extent of availability of the medical facilities. Nonetheless, all the island territories, except Norfolk, are now entering the stage of 'early expanding' and leaving behind the stage of

'high fluctuating'. It seems that it will be some time before they enter at different times the next phases of 'late expanding' and 'low fluctuating'. How long will it take is a matter of grave significance to the islanders who are becoming more conscious of the increasing crowdedness of their circumscribed insular habitat.

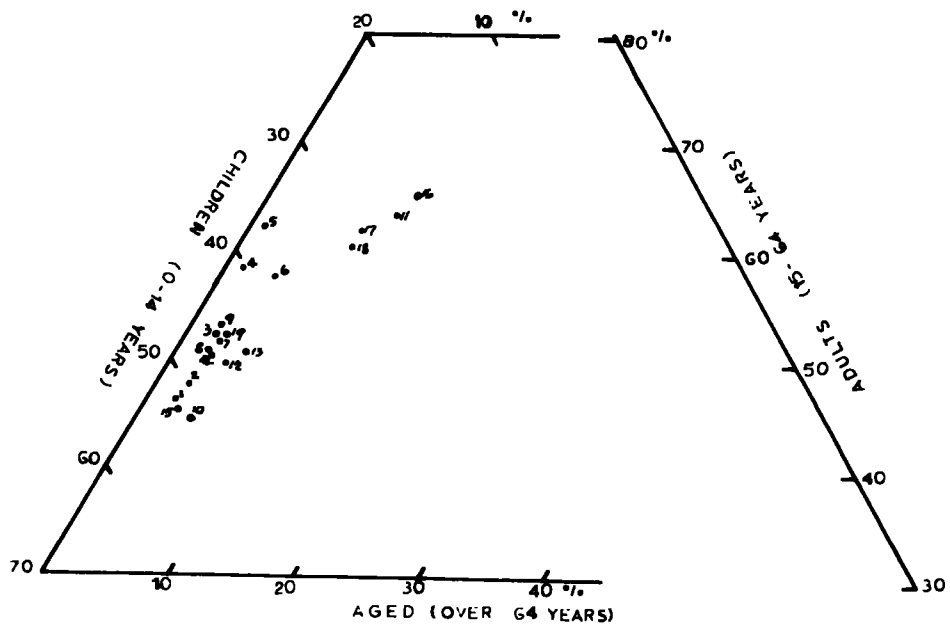
At the present rates of growth and the high fertility, where the crude birth rates for the islands in almost all cases exceed 30 and sometimes 40 live births per 1000 population (see Table 1.7), the potential for future growth is very great. The island populations are either growing very rapidly or at 'explosive' rates. Territories which are likely to double their populations within 18 to 20 years of their last census, if the rates of growth do not change, are Western Samoa, Tonga, Fiji, New Caledonia, Guam and Nauru. However, it must be remembered that the phenomenal increase in the last two territories arises from immigration. In 20 to 30 years time the Solomon Islands, French Polynesia, Gilbert and Ellice Islands Colony, the New Hebrides and the Trust Territory of the Pacific Islands could well double their populations⁶⁸. Nevertheless these projections are nothing more than a conjecture for if emigration is stopped in the Cook Islands and American Samoa the growth rate would suddenly rise up to over 3 per cent per annum just as it has abruptly dropped down to 1 per cent and less than 1 per cent respectively.

Population growth (see Figure 1.3) has also brought about changes in the age structure of the populations. Because of more children born having better chances of survival the dependency ratio has been increased which, consequently, has led to a broadening of the base of the age pyramid. The heavy youthful dependency ratio is seen in Figure 1.4 which shows that the proportion under 15 years of age is mostly over 44 per cent, and in Niue, Western Samoa and the Cook Islands it is over 50 per cent. The median ages are mainly within the range of 14 to 20 years of age. Islands which are affected by emigration have shown some decline in the young adult age-groups

Fig.1.4 Triangular graph of three broad age-groups in the island territories in the 1960's compared with those for New Zealand, Australia and England and Wales.

Sources: 'Demographic Year Books 1960-69', Department of Economic and Social Affairs, U.N., New York.

TRIANGULAR GRAPH OF THE THREE MAIN AGE-GROUPS.



- | | |
|----------------------------------|-------------------------------|
| 1 COOK ISLANDS, 1966 | 11 NORFOLK, 1966 |
| 2 AMERICAN SAMOA, 1960 | 12 TOKELAU, 1961 |
| 3 GILBERT & ELLICE ISLANDS, 1968 | 13 U.S. TRUST TERRITORY, 1969 |
| 4 GUAM, 1960 | 14 TONGA, 1966 |
| 5 NAURU, 1961 | 15 WESTERN SAMOA, 1966 |
| 6 NEW CALEDONIA, 1963 | 16 ENGLAND & WALES, 1961 |
| 7 NEW HEBRIDES, 1967 | 17 AUSTRALIA, 1966 |
| 8 FIJI, 1966 | 18 NEW ZEALAND, 1966 |
| 9 FRENCH POLYNESIA, 1962 | 19 SOLOMON ISLANDS, 1959 |
| 10 NIUE, 1966 | |

Table 1.7 FERTILITY RATES FOR ISLAND TERRITORIES COMPARED WITH SOME DEVELOPED AND DEVELOPING NATIONS 1955-60, and PERCENTAGE OF THE DEMOGRAPHIC TRANSITION COMPLETED

Island Territory or Country	Class of Estimate	Summary of Fertility Measure		Age - Specific Rates						Percentage of Demographic Transition completed	
		C.B.R.	T.F.R.	15-19	20-24	25-29	30-34	35-39	40-44		45-49
American Samoa	I	40.6	6267	44.0	290.2	381.2	280.2	180.1	76.1	21.0	24.7
Br. Solomon Is.	II	41.2	5678	103.1	280.1	299.0	225.6	152.3	62.4	13.0	33.0
Cook Islands	II	53.0	7503	99.2	272.2	383.8	335.7	261.2	121.2	27.4	1.4
Fiji Islands	II	45.2	6386	122.7	313.7	331.5	251.7	172.8	69.6	15.1	20.6
Guam	III	35.2	5790	106.2	344.2	285.6	210.5	138.6	65.9	16.2	28.6
New Caledonia	II	35.2	4901	92.0	250.3	253.4	191.5	129.6	52.8	10.8	48.7
Niue Island	II	H 48.7	7180	92.6	275.4	380.7	324.6	238.8	105.2	18.6	9.5
		L 46.1	6897	91.2	280.1	371.5	307.8	219.8	93.7	15.2	
Pacific Islands Trust Territory	III	42.3	6418	106.8	322.6	349.8	256.9	171.8	64.2	11.7	21.6
Tokelan Islands	II	H 45.9	6505	99.1	289.1	350.7	273.3	194.7	77.4	15.9	20.3
		L 43.9	6291	98.0	292.7	343.8	261.5	180.2	68.6	13.3	
Tonga Islands	II	H 42.3	5840	90.3	237.6	296.2	256.6	188.0	84.6	14.8	31.9
		L 40.7	5659	89.4	240.6	290.3	245.8	175.9	77.2	12.6	
Western Samoa	II	H 48.6	7127	120.3	339.5	379.3	290.7	201.2	79.6	15.0	9.2
		L 46.5	6901	119.1	343.3	372.0	277.2	186.0	70.3	12.3	
Australia	I	22.6	3485	41.1	210.4	228.2	132.7	63.2	20.1	1.4	77.1
England & Wales	I	16.1	2506	28.3	151.2	164.5	98.3	44.6	13.5	0.8	94.6
Japan	I	16.8	1978	4.3	102.7	162.3	85.0	32.4	8.4	0.5	100.0
Federation of Malaya	II	43.6	6195	128.0	320.4	324.2	236.1	156.2	160.2	14.0	24.4
Venezuela	II	45.8	6211	121.1	275.4	292.9	263.1	200.7	78.3	10.6	22.2

Source: Bogue, D., 'Principles of Demography', John Wiley & Sons Inc., New York, 1969 pp. 664-668

Definitions: Class I - Countries with good census data and vital statistics, and published fertility measures.

Class II - Countries with a relatively accurate census, but poor vital registration. Fertility measures presented are estimated except for those few countries having published data of satisfactory quality.

Class III - Countries having data only on age-composition. Fertility measures were estimated from the available age data and supplementary indices.

C.B.R. Crude Birth Rate, T.F.R. Total Fertility Rate

H. Highest estimate L. Lowest estimate

while, on the other hand, those which receive transient immigrants have been inversely affected and their labour forces have increased. Any visitor to the Pacific islands will witness a visible sign of a young growing population in the large numbers of children swarming around the villages.

6. POPULATION DISTRIBUTION AND URBANIZATION

The distribution of the population within territories and in the whole area is very uneven which arises from the topographical configuration of the various islands, the ease of transportation, relative attractions to in-migrants and the inertia of former preferences to place of residence. The larger islands generally contain more people than the smaller ones - e.g. about 70 per cent of the population of Fiji is in Viti Levu and similar proportions of the populations of Western Samoa, French Polynesia, Tonga, Cook Islands and New Caledonia are respectively in their main islands of Upolu, Tahiti, Tongatapu, Rarotonga and New Caledonia - but this does not necessarily mean that larger islands are always more populated than smaller ones. In Western Samoa, Savaii is just about the same size as Upolu yet Savaii supports only about 30 per cent of the population. Malaita, in the Solomon Islands, supports nearly one-half of the Protectorate's population while other large islands like Guadalcanal, Santa Isabel and New Georgia are still sparsely populated.

Population densities are usually highest in the small atolls, a legacy of the past when the level of technology demanded settling in places within easy reach of both land and sea resources. The population densities range from over 1000 in some atolls to less than 10 persons per square mile in some of the large islands of the Solomons and New Hebrides. In Tonga the islands of Kotu, Matuku and Okoa all had densities of over 1000 persons per square mile in 1966 while the lowest density was recorded for the island of Tafahi where it was 77. In the Solomon Islands the density ranged from 762 persons per square mile on Nupani to 1 on Vanikoro in 1963. Most atolls have population densities which fall within the range of 300 and 700 persons per square mile. The population densities of the territories range from about 600 persons per square mile in the Gilbert and

Ellice Islands to about 11 in the Solomon Islands.

The patterns of settlement and population distribution have changed since the arrival of the white men, and more recently as a result of population growth and the impact of urbanization. The sites and forms of villages have undergone some drastic changes, and urbanization has sprung up in the larger and more commercially important islands of this area where there was no traditional form of either nucleated or urban settlements. While the islands natural environments have not changed, the socio-economic values of the people have changed and together with the growth of the population have wrought changes in the distribution of the population.

Changing Patterns of Settlement

From early historical accounts since the discovery of the Pacific, it appears that early island settlements were dispersed and generally located along the coasts, especially the leeward coastal areas where sea foods are abundant and harbours are more sheltered. Even today few settlements are far from the sea ~~on~~ on the windward side of the islands. Inland settlements are usually smaller and in the past they often traded with the coastal settlers who furnished them with sea foods while they provided what the coast dwellers needed from the interior. Thus physical factors along with human influences and values have always been important in the choosing of sites of settlements and their subsequent growth. The sea still provide an important part of the islanders' diet and it is still the main highway of transportation between islands scattered like confetti on the vast Pacific Ocean. Coastal springs also influenced the preference for coastal settlements. The larger islands of Fiji, Marquesas, New Hebrides, Solomon Islands, Samoa and New Caledonia are the only places where there were, as today, settlements located more than 2 miles from the coast.

Neo-traditional villages are very different from their early counterparts. The traditional settlements were normally made up of a cluster of dispersed huts with usually 300 to 400 people living in a village. Villagers lived on the piece of land which they cultivated and in the larger islands, where ample land was

available for shifting cultivation, the sites of the villages were often moved as new plots, further away from the village, were cleared for cultivation⁶⁹. The shifting of village sites was most noticeable in the interior of the larger islands of Melanesia, but generally settlements were sedentary with only the sites of the gardens moving⁷⁰. Therefore if the villager had to travel some distance to his garden then usually a temporary shelter would be built in which he would spend some time, especially during the growing and harvesting time. In some atolls the population usually lived in one 'motu', or islet, and grew their crops on the others.

Because wars were frequent some village sites were often located on easily defensible positions on either a hill, mound or ridge-top. These fortified villages were normally occupied only during times of war. Once the hostilities were over the people would return to the dispersed form of settlement and started all over again the task of replanting and rebuilding. However, after the wars in the first half of the nineteenth century some of the fortified villages remained to become permanently settled although such settlements which remained to become nucleated settlements of today were rare.

The coming of the white men with their money economy, the cessation of the civil wars, the conversion of islanders into Christianity and the desire for the conveniences of modern civilization brought about changes from which evolved the main pattern of settlements and the mixture of housing types presently seen in the Pacific. Conversion into Christianity meant moving into the areas where the missions were situated. This finally led to a concentration of houses and the emergence of nucleated villages⁷¹. Schools were also run by the missionaries which also brought an added stimulus to move into nucleated settlements. The establishment of stores, administration and offices in some settlements in later years, particularly the settlements around the main ports, also gave more incentive for people to move in, and these villages that grew up around the trading centres soon became the main towns⁷². The improvement of transport, the location of other government sponsored schemes and the greater variety of

opportunities in such larger settlements, whether for education, medical care or wage employment, have drawn more and more people from smaller islands and villages into these larger settlements. The interior of the larger islands has been depopulated as a result of this movement into coastal settlements. Ironically, the administrators and missionaries, who encouraged the early drifting into nucleated settlements for the benefit of everyone, are now facing the task of discouraging the increasing movement into the port towns.

Population Redistribution and the Present Distribution Patterns

The increase in population numbers means an increase in population density (see Table IV in Appendix). Numerical increase in small islands lacking resources for agricultural expansion and industrialization can not go on for a long time before they can not absorb the surplus population. At the present rate of growth demographic pressures on the islands are felt in various ways. This has made the redistribution of some island populations necessary through planned migration to other parts of the territories or emigration to areas outside that can take them. Moreover, the growing awareness of better opportunities in other areas has instigated a drift from the 'have not' areas to those areas which seemingly have more to offer.

If we consider the uneven distribution of the populations at present, then the plight of the atolls in terms of population pressure will become more lucid. Of about 650 islands inhabited by 1.5 million people, 20 large islands support the greater proportion of the population, with densely populated coastal fringes and urban concentrations at the main ports. The remaining 630 islands support village communities numbering from 40 people upwards⁷³. About 89 per cent of the area's population are in the Fiji Islands, French Polynesia, Solomon Islands, New Caledonia, Western Samoa, Tonga, New Hebrides, Trust Territory of the Pacific Islands, Guam and the Gilbert and Ellice Islands Colony. However, these territories make up between them 97.2 per cent of the total area. So the remaining 2.8 per cent of the total area supports about 11 per cent of the area's population. Within the larger political units there is also a great deal of

unevenness in population distribution. Fiji has only 19.1 per cent of the total area but supports 31.7 per cent of the population whereas the Solomon Islands make up 31.4 per cent of the whole area but contain only 8.2 per cent of the population. The Melanesian islands, excluding Fiji, make up 67.6 per cent of the area but support only 19.7 per cent of the population. This uneven distribution reflects the longer period of rapid population growth in Polynesia, including Fiji, the smallness of the islands of Micronesia and the later and slower population growth in Melanesia (see Table 1.8).

Table 1.8 THE PERCENTAGES OF THE TOTAL AREA AND POPULATION CONTRIBUTED BY VARIOUS ISLAND GROUPS DURING THE MID-1960's

Island Territory	Percentage of Total Area	Percentage of Total Population
Fiji	19.1	31.7
Western Samoa	3.1	8.7
British Solomon Islands	31.4	8.2
Trust Territory of the Pacific Islands	1.9	6.1
New Caledonia	20.7	5.7
French Polynesia	4.2	5.6
New Hebrides	15.5	5.2
Tonga	0.7	5.2
Guam	0.6	4.4
Gilbert & Ellice Islands Colony	1.0	3.2
Other Smaller Territories	2.8	11.0
TOTAL	100.0	100.0

Source: Based on figures given in 'Pacific Islands Yearbook 1967', ed. by Tudor, Judy, 10th Edition, Pacific Publications, Sydney; and 'Demographic Yearbooks, 1948-69', U.N., Department of Economic and Social Affairs.

Population growth has so increased the pressure on small atolls that resettlement schemes have become necessary. The highest population densities (see Table 1.9) are found in the low atolls where soil is poor and economic potential is very minimal⁷⁴. A 'safety valve' for some islands has been provided by emigration, for instance, Tokelauans, Niueans and Cook Islanders are able, with very little restriction, to emigrate to New Zealand and American Samoans to the U.S.A.

However, this is not a solution open to all the islands that need relief from the population pressure and therefore other means of improvisation have to be found. For the GEIC the solution was to resettle some of the population in other uninhabited islands. This started in 1937 when some of the surplus population from the Gilberts were resettled on the islands of Sydney, Gardner and Hull in the Phoenix Group⁷⁵. The settlement on Sydney was never very successful because of the dry conditions in the islands and in 1955 those who had settled on the island were moved again, this time to Gizo in the Western Districts of the Solomon Islands. By 1958 all the 400 odd Gilbertese in Sydney were resettled in Gizo.

More severe drought in the Phoenix Islands in 1962-3 made it necessary to evacuate those who were resettled on Hull and Gardner to Wagina Island in the Solomon Islands. By 1968 there were approximately 2,000 Gilbertese settled in the Solomon Islands. Another resettlement Scheme involved the moving of about 1,000 Banabans (Ocean Islanders) in 1945 to Rabi Island off the eastern coast of Vanua Levu in Fiji. The island was bought for the Banabans because, ironically, while the phosphate from their island was being used to improve soil fertility elsewhere they could hardly grow anything on their island. Two years after the Banabans were moved, about 80 people left Vaitupu in the Ellice Islands to start a settlement on Kioa Island in Fiji⁷⁶.

For an entirely different motive from helping to relieve population pressure, the native populations of Biniki and Eniwetok Atolls were removed and replaced by a large transient population of military personnel who were carrying out the nuclear-weapon testing of the U.S. The 167 natives on Bikini were first moved to Rongerik Atoll, then to Kwajelein and finally to Kili. The 137 inhabitants of Eniwetok were moved to Ujelong Atoll. The removal of the peoples of Bikini and Eniwetok were planned in advance and after consultation with them. On the other hand, the peoples of Utirik and Rongelap Atolls were removed first to Kwajelein, then to Majuro without any prior plan or consultation. Their unprecedented

Table 1.9 POPULATION DENSITIES PER SQUARE MILE FOR THE PACIFIC ISLANDS IN THE 1960's

Island or Island Group	Total Area in Sq.Miles	Density per Sq.Mile
American Samoa	76	263.8
British Solomon Is. Protectorate	11,500	10.8
Christmas Island	52	65.2
Cocos (Keeling) Island	5.5	112.5
Cook Islands	88	218.8
Northern Cooks	1.1	284.0
Fiji	7,055	68.0
French Polynesia	1,544	54.8
Tahiti	402	112.0
Moorea	51	80.0
Leeward Islands	183	90.0
Australs	63	68.0
Tuamotu & Gambiers	343	26.0
Marquesas	492	11.0
Gilbert & Ellice Islands Colony	376	26.0
Gilberts	114	371.0
Ellice	11	550.0
Guam	219	306.1
New Caledonia	7,600	11.4
New Hebrides	5,700	13.6
Niue Island	100	51.9
Norfolk Island	13.3	76.4
Pacific Islands (U.S.Trust Territory)	706	129.5
Marshalls	66	238.0
Carolines	457	67.0
Marianas	183	38.0
Tokelau Islands	4	487.0
Tonga	265	292.2
Western Samoa	1,140	115.2
Nauru	8.5	712.5

Source: Figures given in the 'Pacific Islands Yearbook 1967' ed. Tudor, Judy, Pacific Islands Publications Ltd. Sydney.

Note: Many of the islands have not been properly surveyed and therefore the areas given to many of the groups are only approximations. The population density has been calculated using the population of each group enumerated at the latest census.

removal was the result of accidental fall-out from the nuclear tests. Similarly, the French shifted the population of Mururoa Atoll to Tahiti in order that they may use the atoll for nuclear tests⁷⁷. Natural disasters have also caused the evacuation of some island populations such as the evacuation of the Niuafu'ouans in 1946 after a severe volcanic eruption. Most were resettled in central Tongatapu and in 'Eua but by 1958 some have made their way back to Niuafu'ou.

Population redistribution in the Pacific is as ancient as its history. Today there are few islands still uninhabited and the remoteness or difficulty of transport, or some other reason for its lack of attractiveness has always proved a great obstacle in trying to settle surplus populations on them. However, the growing shortage of land in heavily populated islands and the fact that the people are largely agrarian has inevitably led to the settlement of some of these islands, such as Tofua, Tafahi and 'Eua in Tonga and Kuria and Christmas Island in the GEIC. But movement from overpopulated to underpopulated Pacific islands which involve the crossing of international boundaries is not as easy as it may have been in the past. This has resulted in minimal movements across political frontiers, while other disturbing forms of movement rapidly increase, i.e. movement from atolls to volcanic islands, from small to larger islands and from villages to townships within each territory.

Apart from Suva, Noumea and Papeete there are no urban areas which possess the characteristics that are associated with urban areas in the Western World. While it is difficult to lay down criteria for defining an urban area, particularly in the Pacific where populations are small and non-agricultural employment limited, the Urbanization Advisory Committee of the South Pacific Commission has suggested three distinguishing characteristics: (i) 'noticeably heavy concentration of population by comparison with the surrounding areas', (ii) 'an occupational distribution differing from the surrounding areas, with a large proportion engaged in non-farming pursuits' and (iii) 'a form of local government different from that in rural areas'⁷⁸. Because of the smallness of the islands, and their populations and the limited opportunities for non-agricult-

ural employment, the Pacific islands will never have large urban concentrations except perhaps the larger islands of Tahiti, New Caledonia, Viti Levu, Santo, Efate, Guadalcanal, Upolu and Tongatapu where urban areas of over 10,000 people are located (see Table 1.10).

Table 1.10 URBAN AREAS IN THE PACIFIC ISLANDS WITH OVER 10,000 INHABITANTS BY THE END OF THE 1960's

Island Territory	Urban Area	Population of Urban Area	Percentage of Total Population in Urban Area	Average Growth Rate for the 1960's (%)
Western Samoa	Apia	30,000	20.6	6.7
Tonga	Nuku'alofa	22,000	24.3	7.5
French Polynesia	Papeete	33,000	39.1	5.6
Fiji	Suva	80,000	15.4	8.3
	Lautoka	15,300	3.1	9.2
British Solomon Is.	Honiara	12,000	9.6	27.3
New Hebrides	Vila	11,000	14.4	9.5
New Caledonia	Noumea	50,000	52.1	8.6
All Island Territories	-	253,300	16.8	7.1

Source: Based on figures in 'Pacific Port Towns and Cities', ed. Spoehr, A., Bishop Museum, Honolulu, 1963; 'Pacific Islands Yearbook 1967', ed. Tudor, Judy. Pacific Publications, Sydney; and Censuses in 1966 for Tonga, Fiji and Western Samoa.

Note: The figures are only approximate since the time of census vary from island territory to island territory, yet they still show the extent of urbanization and the rapid growth of the main urban concentrations.

Most island territories have less than 25 per cent of the total population living in areas which could be defined as urban, and for the whole area about 16.8 per cent of the people live in urban areas with over 10,000 people. If other smaller urban areas were included the proportion may rise to about 22 per cent. As shown in Table 1.10, the main urban areas are growing rapidly and more than one-half of the growth is attributed to immigration. The fastest growing urban area is Honiara which has quadrupled its population since 1955. The largest urban area is Suva which has a population of about 80,000 by the end of the 1960's. It was estimated in the 1966 census of Fiji that about 33

per cent of the population were living in urban areas. The only other territories with more than one-quarter of their populations living in urban areas are French Polynesia and New Caledonia. About 52.1 per cent of the population of New Caledonia are living in the urban area of Noumea which indicates the presence of the largest white population in the Pacific islands. Most of the 37,000 white population of New Caledonia are urban dwellers in Noumea.

The urban dwellers in the islands are a mixture of various ethnic groups, and despite the large absolute numbers of indigenous peoples living in the urban areas, the non-indigenous groups are more concentrated in the urban areas than the indigenous population (see Tables 1.11-1.14). The majority of the native populations are still village dwellers in spite of the increasing drift to the towns. While the natives are mostly engaged in agriculture, most outsiders are employed in services, businesses, administration and other non-primary occupations. The most urbanized of the non-natives are the Europeans who are generally the elite of the tertiary workers. Probably the next most urbanized are the Chinese and part-Chinese populations who are mainly small businessmen owning shops, and in Tahiti, for instance, nearly all the stores are owned by Chinese. The Indians are the third most urbanized ethnic group. The non-native populations, particularly the Asians, are forced into the towns because they have only restricted access to the land and consequently they have to make a living from non-agricultural occupations which only the towns could offer.

7. ETHNIC COMPOSITION

One of the major trends that took place since the beginning of modern contact was the considerable amount of 'racial mixture' that has occurred and the addition of new ethnic groups. Before the time of contact there were broadly 3 major ethnic groups: (i) the Melanesians (or the black-skinned people), (ii) the Micronesians (or the people of small islands) and (iii) the Polynesians

Table 1.11 NUMBERS PER 1,000 OF EACH COMPONENT POPULATION LIVING IN TOWNS AND URBAN AREAS IN FIJI IN 1966

Component Population	Towns			Urban Areas		
	Males	Females	Total	Males	Females	Total
Chinese & Part Chinese	716	746	729	825	859	840
European	635	644	639	852	862	857
Fijian	140	141	141	239	238	238
Indian	197	197	197	370	368	369
Part-European	498	559	528	688	738	712
Rotuman	332	326	329	384	386	385
Other Pacific Islanders	178	200	189	462	475	469
All Components	193	194	193	335	333	334

Source: Zwart, F.H.A.G. 'Report on the Census of the Population 1966', Council Paper No. 9., 1968, Suva, Fiji, pp.6-7.

Table 1.12 NUMBERS OF EACH COMPONENT POPULATION PER 1,000 POPULATION LIVING IN TOWNS AND URBAN AREAS IN FIJI, 1966.

Component Population	Towns	Urban Areas	Component Populations	Towns	Urban Areas
Chines & Part-Chinese	41	27	Rotuman	21	14
European	46	35	Other Pacific Islanders	12	18
Fijian	308	303	All others	1	1
Indian	515	559	All Components	1,000	1,000
Part-European	56	43			

Source: Same as for Table 1.11.

Note: Fourteen places were defined as urban on the basis of the various commercial and administrative functions together with public utilities provided. Eight have full legal status of towns and 6 were incorporated towns. Urban areas were defined to include areas contiguous to the main centre of the town and urban in character, but located outside the legal boundary of the town. The two criteria used for the delimitation of urbanized areas were: (i) the complexity of the built-up area contiguous to, or closely associated with, the town; and (ii) preponderant of economic activity.

Table 1.13 PROPORTIONS (PER 1,000) OF THE COMPONENT POPULATIONS LIVING IN THE URBAN AND URBAN PLUS PERIURBAN AREAS OF VILA AND SANTO TO THE TOTAL NEW HEBRIDES POPULATION OF EACH COMPONENT, 1967.

Component Population	Vila		Santo (Town)		Vila plus Santo (Town)	
	Proportion of each component living in areas described as:		Proportion of each component living in areas described as:		Proportion of each component living in areas described as:	
	Urban 20	Urban + Periurban 80	Urban 22	Urban + Periurban 49	Urban 42	Urban + Periurban 129
New Hebridean						
European	439	543	175	218	614	761
Chinese	278	286	428	690	706	976
Vietnamese	549	733	171	179	720	912
Other Melanesian	115	441	120	195	235	636
Polynesian & Micronesian	72	177	85	417	157	594
Part-European	271	425	281	328	552	753
All Other Mixed } All Others }	220	349	131	364	331	713
Total: Non-New Hebrideans	281	416	179	312	460	728
Total: All Components	40	106	33	68	73	174

Source: Same as for Table 1.14

Table 1.14 RELATIVE CONTRIBUTIONS OF THE COMPONENT POPULATIONS OF THE URBAN AND URBAN PLUS PERIURBAN AREAS OF VILA IN 1967 (Per 1,000).

Component	Urban	Urban + Periurban
New Hebridean	475	698
European	253	122
Chinese/Vietnamese	94	45
Other Melanesian/ Micronesian & Polynesian	46	52
Part European/All other mixed/All others	132	83

Source: McArthur, N., and Yaxley, J.F., 1968, 'Condominium of the New Hebrides: A Report on the First Census of the Population 1967,' Gov't Printer, New South Wales, pp. 29-31, Tables B and D.

Note: Periurban areas are areas which by reason of their close economic, social and political ties with the town are part of the greater urban (or periurban) area of the towns.

(or the people of many islands). Contacts between these three ethnic groups were frequent and this led to the rise of some mixed-bloods. The heterogeneity in the physical features of the islanders is indicative of this racial mixture. Such racial intermingling is most noticeable today in the boundaries of division between the 3 main ethnic groups, for example Fiji where the contacts between Melanesians and Polynesians were most marked. Today there are peoples from Asia, Europe and countries of European settlement overseas in the Pacific. Their proportions of the total populations have varied in time and space (see Table III in the Appendix).

Today slightly over one-quarter of the island populations are composed of Europeans and Asians. The largest group are the Indians, who make up 17.6 per cent of the Pacific island populations, are almost confined to the islands of Fiji, particularly in the two main islands of Viti Levu and Vanua Levu. Europeans form the next largest group, about 7.4 per cent, followed by the Mongolian contribution which is about 1.0 per cent and the Vietnamese and Indonesians form about 0.3 per cent. The Europeans are found in every island group but, together with the Indonesians and Vietnamese, are concentrated in New Caledonia and most of the Mongolians are in French Polynesia and Fiji. In the smaller islands of relatively little economic significance such as Tonga and the Cook Islands the numbers of Europeans had fluctuated. The majority of the non-indigenous population prefer the larger and more economically developed islands. The possibility of making profits from services and private enterprises in which most of them are occupied is much better in the larger volcanic islands than the low coral islands, with the exception of the phosphate islands of Nauru and Ocean Island.

The number of Europeans and Asians have fluctuated since they began to arrive in the Pacific. The white men came as masters whose need for labour led to the importation of the Asians who were more efficient workers than the islanders, who were unwilling to work for regular hours and saw no reason why they should when their self-sufficient, subsistence level of living provided their every needs. Thus Indians were brought to Fiji and since 1945 they have

outnumbered the Fijians. By 1966 their proportion of the population of Fiji was 50.2 per cent and that of the Fijians was 42.3 per cent. Although Chinese were the first Asians to be imported the majority of those born outside the island territories came as free immigrants during the 1920's and 1930's. The Vietnamese and Indonesians were recruited almost exclusively to the New Hebrides and New Caledonia but today almost all had been repatriated. Chinese recruited to work in the phosphate islands of Nauru and Ocean Island are the only Asians still recruited into the Pacific islands.

At one time the Japanese in the Marianas, Marshalls and the Caroline Islands outnumbered any other non-indigenous ethnic group, especially during the late 1930's. However, the defeat of Japan in 1945 led to the repatriation of all the Japanese who came mostly as settlers and the loss of her mandate to the U.S.A. The only territories with populations considered to be indigenous but are neither Polynesians, nor Melanesians, nor Micronesians are in Norfolk and Pitcairn. The peoples of these two territories are mixed-blooded, mainly Euronesians. Pitcairn was settled by about 1790 by nine 'Bounty' mutineers, led by Fletcher Christian, together with six Tahitian men and 12 Tahitian women. From them came the descendents of the inhabitants of Pitcairn Island and about half of that of Norfolk. In 1788, under the jurisdiction of the governor of New South Wales, Norfolk was used for a penal settlement. Sending of convicts to the island was temporarily stopped between 1813 and 1826, but in 1853 the use of the island for a penal colony finally ceased. Overpopulation in Pitcairn led to the removal in 1832 of the population to Tahiti at their own requests after severe droughts in the island. In Tahiti many died of disease and the remainder returned. Then in 1856 they were moved to Norfolk and though some returned later to Pitcairn the majority settled down among the European inhabitants of Norfolk.

The ethnic composition of the Pacific island populations changes frequently according to the political situation, the economic viability of the islands, the policy towards immigration and the rates of natural growth of the various components of the population.

Trends of Mixed-Blood Populations

Accurate records of the numbers of mixed-bloods in a population are often difficult or impossible to obtain. The Pacific islands are no exception, especially when the numbers of mixed-bloods are tending to increase rapidly, particularly in Polynesia. Fluctuations in their numbers from one census to another or from the expected numbers and those enumerated are largely the result of changes in the definition of the term 'mixed-blood' from census to census. In some cases the growth may be due to the re-classification of people as mixed-blood who were earlier regarded as full-blood, and it is possible, on the other hand, that the offspring of mixed-bloods who have married full-bloods may have been entered under the full-blood categories. Generally, those mixed-bloods who live the native way of life will identify themselves with the natives and those who preferred the European way of life and have European upbringing will regard themselves as Europeans⁷⁹. Very often third and fourth generation mixed-bloods are unaware of their ancestry and social embarrassment may force others to opt for a full-blood identity. Although the majority of the mixed-bloods are of European-native ancestry there are also mixed-bloods of Polynesian-Micronesian, Polynesian-Melanesian, Micronesian-Melanesian, Japanese-Polynesia, Japanese-Micronesian, Chinese-Polynesian and so on.

The most notable increase in European-native mixed-bloods is in Polynesia. The attitudes in Polynesia are very favourable towards such mixed unions, even from the time of contact when beachcombers, like whalers and traders, took mistresses from the Polynesians and fathered many children. Beaglehole cited that Cook Islanders have always intermarried freely with 'Pakeha'⁸⁰ sailors traders and other settlers on their islands, in spite of some active disapproval from both chiefs and missionaries in the past. Such marriages continue today as they apparently were a hundred years ago - 'free, easy and without anxiety or discrimination on either side'⁸¹. The prevailing attitude in Polynesia today is that it is better for girls to marry white men but not for men to marry white

women although the number of men marrying white women is increasing quickly. Whereas the marriages of most women to white men take place in the islands, that of men to white women take place overseas in metropolitan countries. The exception, however, may be in New Zealand and the U.S.A. where, because of the presence of large numbers of women among island emigrants, the females dominate the mixed marriages between islanders and whites. In Western Samoa the number of mixed-bloods doubled in 20 years from 1,400 in 1921 to about 4,000 in 1940 and in 1966 they numbered about 10,000. The growth of the mixed-blood population in Tonga has not been as fast; it increased from 235 in 1921 to about 512 in 1966.

The rate of mixed marriages vary throughout the Eastern Pacific among the Tahitians, Tuamotuans, Marquesans, Samoans, Tongans, Niueans and Cook Islanders. It seems possible that in a century or so the number of 'pure' Polynesians will become smaller, as in Hawaii, and almost imperceptibly the populations will have become more mixed-blood, though culturally retaining many of its Polynesian characteristics⁸². In the Central and Western Pacific the process of racial admixture is proceeding much more slowly, and the native population seems likely to maintain itself as a separate biological entity for a much longer period.

8. CONCLUSION

Admittedly not all the characteristics of the island populations could be dealt with in this chapter because of the difficulty of collecting data on those aspects of the populations. As a result hardly anything has been mentioned about some social characteristics of the populations such as religion and language. The number of languages spoken in the Pacific is not known. Nevertheless, it is a fact that there are many languages spoken and each territory has its own native language although French is the *lingua franca* in the French territories and English in the other territories. At one time the *lingua franca* in some of these territories was either Spanish, German or Japanese. In some of these territories such as the Solomon Islands and

the New Hebrides there are many languages spoken in different islands and even in different settlements. As for religion, there are few who still adhere to the totemism and other aspects of their primitive religions. Nearly all islanders are Christians though the dominant sects vary between the territories and even ⁱⁿ individual islands.

However, the main features of the populations are: (1) the rapid decline since European contact because of the excessive increase in an already high mortality, (2) the rapid growth of the population since World War II because of continuing high fertility and rapid declining mortality, (3) the youthfulness of the populations, (4) increasing population pressure on resources as the population continue to increase, (5) population drift to the main islands and port towns, (6) the diversities of the ethnic composition, age-sex structures and growth rates and (7) the increase of the mixed-blood population, especially the Europeans. Although an attempt has been made to explain briefly the reasons for the past and present characteristics of these populations, some of the changes can not be fully explained yet because more light needs to be thrown on these. However, those records which probably hold more explanations for the somewhat mysterious decline, let alone the different rates of decline, in some island populations such as the Marquesas, Easter Island and New Hebrides may never be recovered if never existed. Had we known more about the years before 1900 there would be no need to resort to hypotheses. Moreover, some of the theories and hypotheses advanced in an attempt to explain the depopulation of the Pacific islands may be found wanting if more was known. In the subsequent chapters of this thesis we will discuss the trends in mortality, fertility and migration and how they effect changes in the growth rates, age-sex structures and ethnic compositions of the island populations.

NOTES AND REFERENCES

1. Some forms of written language are claimed to have been discovered in Easter Island and in the Carolines. That discovered in Easter Island are more well known. They are known as the 'rongorongo script' or 'talking boards' to archaeologists. This discovery has led to speculations whether the Polynesians had any form of written language which was lost during the period of their dispersal. However, the writings on the boards have not yet been deciphered and whether the Polynesians ever had any form of written record, which is very doubtful, will never be proved apart from providing a topic for lively discussions and imaginations. The other script which J.M.Brown claimed to have found is supposed to be a syllabary far beyond that of the Easter Island tablets and the Chinese hieroglyphs in the island of Uleai or Wolea in the Western Carolines. According to him most of the characters are conventionalised and thus it is half-way on to an alphabet. The script could have been invented in Korea many centuries ago. Suggs, R.C., 1960, 'The Island Civilizations of Polynesia', The New American Library, Mentor, pp. 186-8; and Brown, J.M., 1927, 'Peoples and Problems of the Pacific', Vol. II, T.Fisher & Unwin Ltd, London, pp. 117-9
2. Many writers have quoted different figures for the population of Tahiti during the time of contact and attributed it to Captain Cook's estimate. For more discussion on this see Schmitt, R.C., 'Garbled Population Estimates of Central Polynesia', Journal of the Polynesian Society, Vol 74, No. 1, 1965; pp 57₆₂
3. Keesing, F.M. 1945, 'The South Seas in the Modern World', Institute of Pacific Relations, International Research Series, The John Day Company, p.43. Keesing claims to have compiled his figures partly from critical examination of the population totals given by early visitors and partly from the judgement of 'modern scholars' as to the likely numbers in each group of islands.
4. Keesing, F.M., op.cit. p.56. See also Brown, J.M., op.cit. Vol.1. p.142.
5. See Barrie, W.D., R. Firth, & J.Spillius, 'The Population of Tikopia, 1929 and 1952', Population Studies, Vol. 10., 1957, pp. 229-52; Hogbin, H.I.

- 'Population of Ongtong Java', Oceania, Vol.10, 1939, p.236, Hogbin, H.I.
- 'Problem of Depopulation in Melanesia as applied to Ongtong Java', The Journal of the Polynesian Society', Vol.39, 1930, pp.43-66, Rivers, W.H.R. (ed.)
- 'Essays on the Depopulation of Melanesia', Cambridge Univ. Press, 1922, and the various works by R.Firth on Tikopia.
6. Taeuber, I.B. 'Demographic Instabilities in the Island Ecosystem' in Fosberg, F.A. (ed.) 'Man's Place in the Island Ecosystem', Bishop Museum, Hawaii, 1965, p.227.
7. Ward, R.G., 'The Problem of Smallness in Polynesia', in Benedict, B. (ed.), 'Problems of Small Territories', Institute of Commonwealth Studies, Commonwealth Paper Series No.X., Athlone Press, 1967, p.84.
8. It is probable that within an island group women also form a part of the War party. This was observed in Tonga during the civil wars in the early years of European contact up to the 1840's. See Collocott, E.E.V., 'Koe Ta'u 'E Teau', William Clowes and Sons Ltd, London. n.d.
9. The 'ahu' is the predominant type of the several types of temples in Easter Island - supposed to be in existence even by 1000 A.D. - upon which huge stone heads were erected. It consisted of a central elevated rectangular body or stage, which form the main portion of the temple and upon which the statues were ultimately erected. On either side of the stage lower winglike structures extended laterally. All the ahus faced inland and the backwall of the stage and wings faced the sea. Suggs, R.C. op.cit. pp.178-86, 128-30.
10. Suggs, R.C. op. cit. p.93.
11. Tribes that were defeated were often depleted considerably by the slaughter of their aged and children. Suggs, R.C., op.cit. p.185; Goldman, I, 'Ancient Polynesian Society', Univ. of Chicago Press, Chicago, 1970
12. Ward, R.G., 1967, op.cit. p.84.
13. It is claimed that the rate of decline in the populations of the Pacific Islands was faster and greater than among other 'primitive peoples' such as the Red Indians and the African Negroes. Carr-Saunders, A.M., 1964, 'World

- Population: Past Growth and Present Trends', Frank Cass & Co. Ltd, London., pp. 276-7; Petersen, W., 1964, 'Population', Macmillan, New York, pp. 313-41.
14. On the first circumnavigation of the world Magellan sighted the Marianas and landed in one of the islands in 1522, the first white man to set foot in, as well as discover, the Pacific Islands.
15. The blackbirders were the kidnapers of Pacific Islanders for slavery.
16. Keesing, F.M., op.cit. p.46.
17. Carr-Saunders, A.M., op.cit., p. 278.
18. McArthur, N. & J.F.Yaxley, 1968, 'Condominium of the New Hebrides: A Report on the First census of the Population 1967', Govt Printer, New South Wales, pp. 8-10.
19. Naval Intelligence Division, 1945, 'Pacific Islands' Vol. 1, Geographical Handbook Series, p.346.
20. ibid.
21. McArthur, N., 1967 'Island Populations of the Pacific', ANU Press, Canberra, p.346. See also McArthur, N., 1957, 'The Populations of the Pacific Islands', Part I: 'Territories of French Oceania', ANU, Canberra.
22. Naval Intelligence Division, op.cit. Vol. II. p.72.
23. McArthur, N., 1967 op.cit. pp. 26-34
24. McArthur, N., 1967 op.cit. p.73.
25. McArthur, N., 1967 op.cit. p.101.
26. McArthur, N., 1967 op.cit. p.376.
27. McArthur, N., 1967 op.cit. p.261.
28. Naval Intelligence Division, op.cit. Vol. III p.282.
29. Suggs, R.C., op.cit. p.130.
30. Keesing, F.M., op.cit. p.57; Also Fox, C.E., 1924, 'The Threshold of the Pacific', London.
31. Schneider found in the Island of Yap in the Central Caroline Islands that young women practised self-induced abortions which at first probably helped to keep down population numbers. However, 'it finally became an integral part of a psychologically gratifying behavioural pattern involving youthful love

affairs and non-responsible early adulthood that they persist in pratising it even when underpopulation became the dominant problem'. By the 1940's the crude birth rate in Yap was still under 20 per 1000 population. Vayda, A.P. and R.A.Rappaport, 1965, 'Island Cultures' in Frosberg, F.A. (ed.) 'Man's Place in the Island Ecosystem', Bishop Museum, Hawaii, p.139.

32. In Fiji in 1875 the son of Cakobau returned from Australia with measles. When the meeting and festivities held in Levuka to greet his arrival dispersed, the villagers returned to their villages spreading the disease in both Viti Levu and Vanua Levu.

33. Epidemic frequency could be related to the frequency and the number of ships which visited the islands. However, this is impractical with no data kept of visiting vessels and at the height of the whaling in the Pacific many islands were visited by whaling vessels to get supplies, or recruit crew from the natives or to have some fun with the native women. It has been mentioned that a hundred ships from the American whaling fleet alone, beside the French whalers, would call in Rarotonga each year. Beaglehole, E., 1957, 'Social Change in the South Pacific: Rarotonga and Aitutaki', George Allen and Unwin Ltd, London, p.69.

34. McArthur, N., 1967, op. cit pp.1-12, 68-74, 100-114, 164-90, 235-313.

35. McArthur, N., and J.F.Yaxley, op. cit pp. 1-20.

36. McArthur, N., 1967, op.cit p.252.

37. McArthur, N., 1967, op.cit p.164.

38. ibid.

39. Naval Intelligence Division, op. cit Vol. IV, p.468.

40 Naval Intelligence Division, op. cit Vol. III, p.448.

41. McArthur, N., 1967, op.cit p.254.

42. Naval Intelligence Division, op.cit Vol. I, p.347.

43. Naval Intelligence Division, op. cit Vol. II, pp. 70-71.

44. McArthur, N., 1967, op. cit p.187. Also McArthur, N., 1957, op. cit, Part II: 'Cook Islands and Niue'.

45. Naval Intelligence Division, op. cit Vol. II, p.568.
46. McArthur, N., and J.F.Yaxley, op. cit pp. 13-16.
47. In 1849 Pitman estimated that 'about 100 youths from his district alone have now left Rarotonga on sailing vessels over the past few years'. However, the number of islanders serving as crew varied from year to year. By 1853, he reported that 60 to 70 youths have gone away on whalers during the past year. Beaglehole, E., op. cit p.71.
48. McArthur, N., 1967, op. cit p.30; McArthur, N., 1957 op. cit, Part VI: 'Fiji'.
49. Naval Intelligence Division, op. cit Vol. III, p.637.
50. Suggs, R.C., op. cit pp. 30-31.
51. Burrows, E.G., and M.E.Spiro, 1953, 'An Atoll Culture: Ethnography of Ifaluk in the Central Carolines', Human Relations Area Files, New Haven.
52. Oliver, D.L., 1961, 'The Pacific Islands', Revised ed., Natural History Library.
53. Hogbin, H.I., 1930, op. cit pp. 43-66. See also his other works on the Solomon Islands and the New Hebrides.
54. Turnbull reckoned that in 1802-3 not more than one-tenth of the population of Tahiti were women. Few years later Ellis described the proportion of girls to boys in the early schools as either 3 to 4 or 4 to 5, 'though since the abolition of infanticide their numbers are about equal', but among the adults there were 4 to 5 men to 1 woman. Schmitt, R.C., 1967, 'The Missionary Census of Tahiti 1797-1830', The Journal of the Polynesian Society, Vol. 76. pp. 31-2.
55. Some unknown estimates for infant mortality during the nineteenth century show a range from 200 to 450 per 1000 live births.
56. McArthur, N., 1967, op. cit p.249.
57. McArthur, N., 1967, op. cit p.225.
58. McArthur, N., 1967, op. cit; McArthur, N., 1957, 'The Populations of the Pacific Islands', (Part I: 'Territories of French Oceania', Part II: 'Cook Islands and Niue', Part III: 'American Samoa', Part IV: 'Western Samoa and

the Tokelau Islands', Part V: 'Tonga', Part VI: 'Fiji') ANU, Canberra.

59. McArthur, N., 1967, op.cit p.351.

60. Cumberland, K.B., 1962, 'The Future of Polynesia', The Journal of the Polynesian Society, Vol. 71. p.387.

61. Cumberland, K.B. op. cit p.388.

62. McArthur, N., and J.F.Yaxley, op. cit p.viii.

63. Macura, M., 1969, 'Comment on Population Trends in Asia and the Far East' in Borrie, W.D., and M. Cameron (eds), 'Population Change: Asia and Oceania' ('IUSSP Conference in Sydney'), ANU Press, Canberra. p.56.

64. In most island societies sexual intercourse with mothers nursing their infants were not allowed until the child was weaned which usually took place after the first birthday. Some children were still kept at their mothers' breasts until the age of 2. Moreover, older women kept a strict watch that this taboo was observed for it was believed that pregnancy while still nursing a child would cause the death of that child. In Micronesia, except the Gilbert Islands, husbands of pregnant and nursing wives were allowed to have intercourse with other women, usually their wives unmarried sisters, to which their wives consented in order to give them relief from a long period of sexual abstinence.

65. Illegitimacy rate varies among the island territories according to how strictly the taboo on premarital sex relations are observed as well as the attitudes towards unmarried mothers. See Beckett, I, 1964, 'Social change in Pukapuka', The Journal of the Polynesian Society, Vol. 73, p. 426.

66. Ness, G.D., 1963, 'Population Growth, Economic Development and Development Policies', Journal of Tropical Agriculture, Vol. 17. p.116. Among developed countries of today the only cases where the rate of growth exceeded 3 per cent per annum in the nineteenth century were those countries of immigration such as New Zealand, Australia, Canada and the United States.

67. See Spillius, E., 1959, 'Report on Maternity and Child Welfare in Tonga', WHO, Nuku'alofa, Tonga, (cycl.).

68. Ratings of the levels of population growth and the number of years

required for a population to double its size are given in most of the general population text books such as Bogue, D., 1969, 'Principles of Demography', John Wiley & Sons, Inc., New York, p.642.

69. Many articles have been written or touched on the changing patterns of Pacific island village settlements such as Kennedy, T.F., 1958, 'Village Settlement in Tonga', The New Zealand Geographer, Vol. 14., No. 2, pp 161-72, and Watters, R.F., 1960, 'Some Forms of Shifting Cultivation in the Southwest Pacific', The Journal of Tropical Agriculture, Vol. 14, pp. 35-50.

70. In Melanesia today the inland villages and those which are usually shifted are normally smaller than the coastal villages and those which are fixed. Keesing, R.M. 1967 'Christians and Pagans in Kwaiio, Malaita', The Jour. Poly.Soc. Vol. 76, No. 1, p.84.

71. See Johnston, W.B., 1955, 'The Cook Islands: Settlement in an Island Group of the Southwest Pacific', Journal of Tropical Agriculture, Vol. 5. pp. 1-11.

72. All the major settlements and port towns in the Pacific were in former times villages of little significance but, like the major cities of many Asian countries, these villages have grown rapidly as a result of colonial influences and the need to establish trading and administrative centres.

73. Slater, M., 1967 'Pacific Economy', Dept of Economics, Research School of Pacific Studies, ANU, Canberra, p. 2. (mimeo).

74. Wiens, H.J., 1965, 'Atoll Environment and Ecology', Yale Univ. Press, New Haven, pp. 458-66. In this section of his book Wiens discusses the possibility of overfishing the reefs and lagoons of the islands as the population expands, however, he is not sure about the point when overfishing will actually occur.

75. Maude, H.E. 1952, 'The Colonization of the Phoenix Islands', Jour.Poly.Soc. Vol. 61, pp. 62-89.

76. Tudor, Judy, ed., 1968, 'Pacific Islands Yearbook 1967', Pacific Publications Ltd, Sydney, p. 227.

77. Stoddart, D.R., 1968 'Catastrophic Interference with Coral Atoll Ecosystem Geography'. Journal of the Geographical Association, Vol. 53, pp. 25-40.
78. South Pacific Commission, 1961, 'Report of the Urbanization Advisory Committee Meeting, Sept 4-9, 1961', Noumea (Mimeo)
79. See Schmitt, R.C. 1967, 'How Many Hawaiians', Jour. Poly.Soc., Vol. 76, pp. 468-74.
80. 'Pakeha' is the word used by the Maoris of New Zealand and the Cook Islands to refer to the white people.
81. Beaglehole, E., op. cit p.81.
82. Only 200 of the 577 Easter Islanders in 1942 were said to be pure Easter Islanders and the remainder were half-castes of all sorts. The Chamorros are no longer pure blood but are of mixed Spanish, Filipino and some American blood. However, as in Easter Island, they still retain their language and many of their traditional institutions. In Rotuma the inhabitants of one village are mostly descendents of one English resident.

CHAPTER TWO

MORTALITY

Since the time of contact with the Europeans and their relatively superior culture, the islanders' lifeways have been altered radically. Improvements in various spheres of island life, such as housing conditions, better understanding of the causes of diseases and death, greater appreciation of modern medical treatment, better sanitation, more hygienic personal habits and a rising living standard, have contributed to the decline in mortality throughout the present century, especially the post-World War II years. A general outline of the changing trends in mortality in the Pacific islands was briefly traced in Chapter I. It was seen that the rate of mortality had been constantly high during the pre-contact period although it may have fluctuated widely. Fertility, therefore, barely exceeded mortality during this period. However, after the initial period of contact, especially for most of the nineteenth century, and in Melanesia up to the 1930's, mortality rates fluctuated violently between periods of epidemic and non-epidemic years. During these years, mortality often exceeded fertility with the crude death rates probably reaching 40 or more per 1000 persons in normal years and up to 70 per 1000 persons when widespread epidemics occurred¹, though in years immediately following a severe epidemic the crude death rate may have been lower than the rate usual for normal years. Once mortality started to decline it continued to do so, often at an accelerating speed, with the result that many island territories today enjoy mortality rates which are amongst the lowest in the world (See Table 2.1).

Of the three variables - mortality, fertility and migration - that effect changes in the population composition, structure and total absolute numbers, mortality is the main determinant of such changes, within a 'closed' population in the early stages of the demographic transition, since fertility remains more or less constant. As in other developing countries with an indigenous population the rise in mortality during the early period of contact with the white men brought about the depopulation, and the later reduction in mortality which accompanied

aculturation and adjustments paved the way for population growth. In this chapter the aim is to analyse the changes in the levels and patterns of mortality, the differences in the rates of mortality experienced by the various population components and the factors responsible for the changing trends in mortality in the islands.

1. TRENDS AND PATTERNS IN MORTALITY

Levels of Mortality

During slightly less than three-quarters of a century the death rates in the Pacific islands have fallen to levels which are comparable to the mortality rates which took the demographically advanced countries about a century and a half to achieve. Like other developing nations some island territories enjoy a crude death rate well below the average crude death rates experienced by countries like the United Kingdom and France. However, there are territories that still have some distance to cover in the demographic transition. In the Pacific island territories there are two such island jurisdictions, i.e. the Solomon Islands and the Condominium of the New Hebrides, where the crude death rate is estimated to be about 20 per 1,000 persons in 1967² in each of the two territories. If the islands in the area with which we are concerned are grouped together and treated as one unit then the crude death rate will be approximately between 8 and 9 per 1,000 persons in 1969. This figure is very similar to the crude death rates experienced by Australia and New Zealand at the same time.

Table 2.1 gives some indication of recent mortality experience of the island jurisdictions. The table also conveys a rough idea of improvements in the health conditions of the islanders. Australia and New Zealand have been included for the purpose of comparison although it should be remembered that both have different age-structured populations from those of the Pacific territories. No figures are available for two of the largest territories, the British Solomon Islands Protectorate and the Condominium of the New Hebrides. In interpreting this table, caution should be taken because not all island

jurisdictions possess reliable death registrations³ and the age structures, though similar in many cases, are not really comparable. To reduce annual random fluctuations the figures are given, with few exceptions, in quinquennial periods.

The crude death rates for the period 1965-9 ranged from as low as 3.0 for Tonga to about 20 per 1,000 persons for the New Hebrides and Solomon Islands. American Samoa, Western Samoa, Tonga, United States Trust Territory of the Pacific Islands, Fiji and Guam show crude death rates of less than 6 per 1,000 population. With the exception of the Solomons and the New Hebrides the remainder of the island territories all enjoy crude death rates that are below 12 per 1000 persons. Even if the deficiency of the vital registration is taken into account, there will be no drastic change in the figures shown in Table 2.1. Take Tonga, for example, which probably has only an 85 per cent completeness in the death registrations and to assume a 100 per cent completeness will raise the crude death rate only to 4 per 1000 per population.

Much of the decline in the crude death rate is the result of rapid decline in infant mortality. The pattern of decline and the levels of infant mortality for various Pacific islands are shown in Table 2.2. The infant mortality registration is probably much less complete than the registration of deaths in other age-groups since the deaths of infants would occasionally escape registration particularly if they have not been registered as births. However, the figures still show the general pattern and trend of decline in infant mortality. Again the infant mortality rates for New Zealand and Australia have been given for the purpose of comparison as they represent the population of developed countries in Oceania. The last quinquennium for which figures are available is 1960-4 and this shows infant mortality rates which range from as low as 13.1 to as high as 54.0 per 1000 live births for Tonga and the Cook Islands respectively. The range of mortality levels among infants in the various island groups would be considerably greater if the infant mortality rates for the Solomons and the New Hebrides are to be considered. We may assume from the high crude death rate of 20 per 1,000 persons and a consideration of the youthfulness of the age structure for both dependencies that the infant mortality is likely to be over

Table 2.1 CRUDE DEATH RATES (PER 1,000 PERSONS) IN SOME PACIFIC ISLAND TERRITORIES, 1920 - 1969

Territory	Reliability	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965
American Samoa	C	-	-	-	-	-	9.1	8.1	7.4	5.7	4.5
Cook Islands	C	-	23.1	18.0	18.7	19.1	21.4	18.2	14.1	9.0	8.2
Fiji	U	15.3	17.3	16.5	17.0	12.1	12.0	10.4	7.6	6.2	5.2
French Polynesia	-	-	-	-	-	-	-	12.4 ^a	11.4	12.2	9.0
G.E.I.C.	U	-	-	25.4	30.1	19.4 ^a	19.5 ^b	17.9	16.9	8.7	7.2
Guam ¹	C	-	-	-	-	-	10.7 ^b	4.3	4.0	4.9	4.2
Nauru	C	-	-	-	-	-	9.7	6.4	6.2	4.8	7.9
New Caledonia	-	-	-	-	-	-	-	10.7 ^a	10.1 ^b	8.5	9.4 ^a
Niue Is.	-	22.4	-	21.7	20.8	19.3	26.2	24.4	13.6	9.5	8.2
Norfolk	C	-	-	-	-	-	13.7	10.3	16.0	13.1	9.7
Trust Terr. of Pac. Is.	U	-	-	21.1	17.1 ^b	-	9.9 ^a	8.4	5.3	5.4	4.9
Pitcairn Is.	-	5.9 ^a	+++	25.9	16.6	17.4	18.7	11.8	13.8	9.9	9.2
Tokelan Is.	-	-	-	-	-	-	7.7 ^a	-	9.6	-	10.9 ^a
Tonga	-	-	14.6	13.2	13.8	16.3	10.5	9.8	7.1	4.3	3.0
Western Samoa	U ³	27.5	14.3	10.9	10.7	13.7	9.3	6.1	5.9	4.3	5.0
Australia	C	9.8	9.4	8.8	9.6	10.8	9.9	9.4	8.8	8.7	8.9
New Zealand	C	9.0 ²	8.6 ²	8.6	9.6	10.4	9.8	9.3	9.1	8.9	8.7

Source: 1. U.N., Demographic Yearbooks for various years, especially the 1966 and 1969 Demographic Yearbooks, pp. 354-357

2. Tonga: Reports of the Department of Justice

3. Fiji: 'Annual Statistical Abstract; Fiji 1969', Suva p.21

Symbols: C Reliable; U unreliable; - Unknown

Note 1. Includes U.S. Military personnel, their dependents and contract employees

2. Europeans only

3. Death registration estimated to be 60-70 per cent complete

a One year only

b Two years average

+++ No deaths recorded

Table 2.2. INFANT MORTALITY RATES (PER 1,000 LIVE BIRTHS) FOR SOME PACIFIC ISLAND TERRITORIES, 1925-1969

Territory	1925	1930	1935	1940	1945	1950	1955	1960	1965
	-9	-4	-9	-4	-9	-4	-9	-4	-9
Am. Samoa	-	-	-	-	51.9	52.8	52.3	33.8	28.9*
Cook Islands	127.7	111.3	100.5	113.9	149.0	116.5	98.6	54.0	48.2 ⁺
Fiji	116.1	99.9	93.3	67.3	59.0	55.7	44.3	31.3	25.4 ⁺
French Polynesia	-	-	-	-	-	138.6	94.4	-	52.4 ^x
Gilbert & Ellice Is.	-	-	-	-	140.3	123.2	121.8	50.9	124.3 ^x
Nauru	-	-	-	-	47.4	65.3	34.3	31.2	44.3 ⁺
Guam	-	-	-	-	72.0	34.0	27.0	27.0	25.2
New Caledonia	-	-	-	-	-	-	-	40.5	45.7 ⁺
Niue Island	-	-	98.7	99.6	197.0	73.1	45.3	40.2	34.3 ⁺
Trust Terr. of Pac. Is.	-	-	-	-	45.2	43.0	36.1	33.7	35.3
Norfolk Is.	-	-	-	-	51.7	11.9	13.0	20.0	-
Pitcairn Is.	34.5	187.5	+++	133.3	+++	+++	40.0	+++	+++
Tokelau Is.	-	-	-	-	61.2	-	44.0	-	-
Tonga	124.6	69.4	78.2	69.4	91.4	63.4	34.9	13.1	6.1
W. Samoa	-	-	-	-	57.1	40.9	35.7	29.5	38.8 ⁺
Australia	53.2	42.9	39.1	36.9	28.0	23.8	21.4	19.7	18.2 ⁺
New Zealand	-	-	42.7	38.1	30.7	26.6	23.8	20.9	18.2

Source: Same as for Table 2.1

Symbols: +++ No deaths recorded

- Not available

x 1 year only

* 3 year average

+ 4 year average

80, may be close to a 100, deaths per 1000 live births. In making this assumption it is understood that both dependencies are still some way behind other Pacific territories in providing and accepting medical care, especially child and maternity welfare. The majority of the island groups have infant mortality rates that lie between 20 and 40 deaths per 1,000 live births.

The youthfulness of the island populations is reflected in the lower crude death rates, but higher infant mortality rates than those experienced by developed nations with aging populations; for example, the crude death rate of 8.2 for the Cook Islands for the 5 years 1965-69 is lower than the rates of 8.9 and 8.7 in Australia and New Zealand, respectively, for the same period. During the same time the infant mortality rates per 1,000 live births were 39.7, 18.3 and 18.6 respectively. Because of the differences in the age structures of the island populations from those of developed nations their age-sex-specific rates also differ. For instance, the age-sex-standardized death rates based on the age-sex distribution of the population of the United States of 1960 indicated 9.93 for Fiji, 9.32 for Australia and 9.18 for New Zealand⁴. Thus Fiji's age-sex-standardized death rate is almost twice her crude death rate. However, one will not run into any great danger in collating the crude death rates between the various island groups since their age-structures are still very similar, except Norfolk and the islands which are open to the influence of migration. Differences in the pattern of decline in mortality and the present levels reached mirror the health, social and economic situation rather than differences in the population structure.

Trends and Patterns of Decline in Mortality

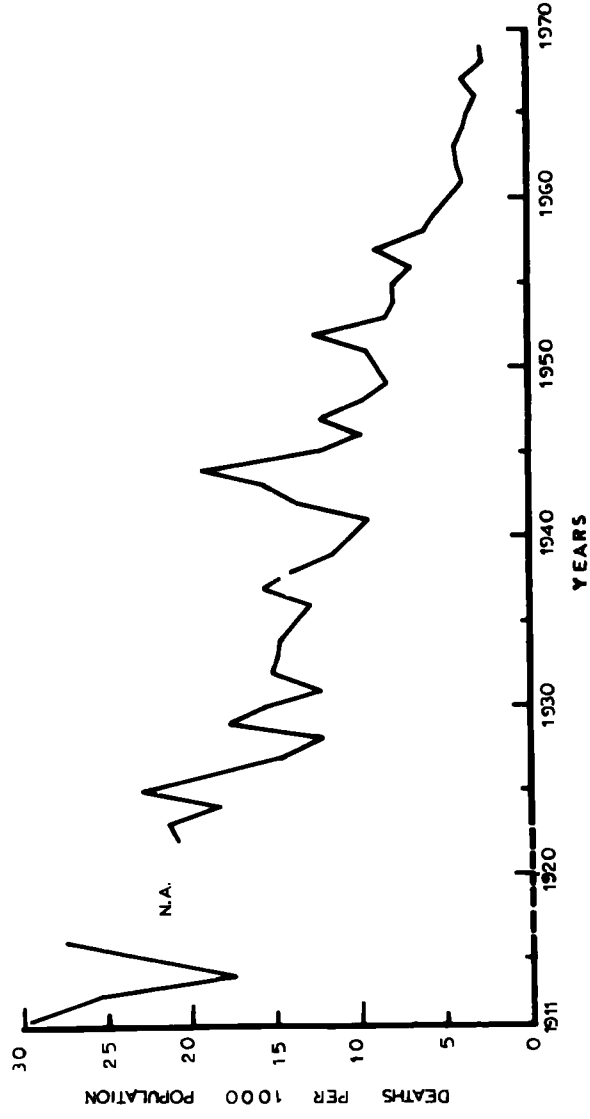
Crude Death Rates

Although the general long-term trend in mortality is downwards a notable feature of the islands' experience is the annual fluctuations. Even when averages for 5 year periods are used in order to reduce the degree of fluctuation the mortality figures still exhibit fluctuations. This is quite clearly seen in the figures for both the crude and infant mortality rates shown in Tables 2.1

Fig.2.1 Recorded Crude Death Rate for Tonga, 1911-69.

- Sources: (1) Tonga, 'Reports of the Department of Justice'.
(2) Colonial Office, Great Britain, 'Biennial Reports for the Kingdom of Tonga, 1948-68', H.M.S.O., London.

CRUDE DEATH RATE, TONGA, 1911-69.



N.A. NOT AVAILABLE

and 2.2; as well as in Figures 2.1 and 22 for Tonga. As for the pattern of mortality decline we cannot really stereotype the islands on the basis of only one island group's experience. Nevertheless, very broadly, there are some similarities in the pattern of mortality decline such as the rapid decline of mortality in post-war years. After World War II, medical facilities in the islands were greatly improved along with other socio-economic developments and this has resulted in circumscribing the effects of epidemics⁵. Thus the fluctuations after the Second World War have been less marked with a tendency for a smooth curve of mortality decline. The only exceptions are the small populations of territories like Norfolk, Niue, Nauru, Pitcairn, etc. where random fluctuations will continue to have marked effects. Fluctuations may also be the result of changes in the extent of efficiency of vital registration which probably accounts for some low figures⁶. In recent years vital registration has become more efficient and this may have also contributed to the smoothing of the mortality curve in territories with any sizeable population.

The crude death rate for Tonga since 1911 is shown in Figure 2.1. The average crude death rate for the period around 1891 when the first census of the Kingdom was taken is estimated to be 28 per 1,000 persons. Between 1881 and 1890 the average annual death rate, according to the registers, was 36. Despite the discrepancy between the two figures it is quite evident that the crude death rate was very high prior to the turn of the century. In 1891 to 1899 the death rates fell to an average of 25 per 1000 (and 22 in non-epidemic years), although a measles epidemic broke out in 1893⁷. The death rate continued to decline very slowly and fluctuating greatly at the same time. By 1915 the death rate was around 20. It fell markedly by 1917 but only to rise sharply again during the 1918-19 influenza pandemic. In the 1920s the crude death rate was about 17 per 1000 and about 14 in the 1930s⁸. In the intercensal period 1939 and 1956 the average rate was 10.8 although the fluctuation ranged from 19.3 in 1944 to 6.9 per 1000 population in 1956. The average rate conceals the rise in mortality during the war years to 16 per 1000. The rise in mortality during the war years was similarly experienced by most of the Pacific islands with the exception of

a few. This rise is probably the result of a corresponding rise in infant mortality rate and a comparison of the two Tables 2.1 and 2.2 as well as Figures 2.1 and 2.2 seems to show some rough correlation in the decline of the crude death rates and infant mortality. Much of this increase in mortality during the war period 1939-45 is probably a result of the decline in utilization of medical facilities rather than war deaths. Some people may have died from the war in the Solomons, Nauru, Marshalls, Carolines, Marianas and the Gilberts, but the numbers would be small since few were in active resistance to the Japanese⁹.

After 1945, the crude death rates in Tonga continued to decline and by 1969 it was reduced to one-fifth of the level in 1945 whereas on the eve of World War II the crude death rate was slightly more than half the level at the beginning of the century. Under the impact of socio-economic growth (whether through post-war prosperity or grants-in-aid), speedy transmission of new medical knowledge and techniques, up-dating of medical facilities in quality and quantity, the acquisition of more sanitary and hygienic habits through education and the shifting age structure a phenomenal decline in mortality has taken place since the 1920s. In Tonga the average death rate for the decade immediately after 1945 was 9.2. By 1969 the recorded crude death rate was about 2.8. The decline in mortality is reflected in the standardized death rates calculated by McArthur for each 3 years centring on the 1939 and 1956 censuses which were 12.0 and 7.9, respectively¹⁰. The standardized death rates for the 3 years centring on the 1966 census was 3.7 per 1000 population. A comparison with the average for these years shows that any shift in the age composition has been very slight because, respectively the averages for 1938-40, 1955-57 and 1965-7 were 11.9, 7.8 and 3.4.

The pattern of mortality decline in other islands is similar, generally speaking, to that seen in Tonga. However, there are some exceptions, as seen in Table 2.3, which shows the change in the crude death rates for the last 25 years. In the Cook Islands mortality decline has been rather slow and even by 1955-57 the crude death rate was about 16 per 1000, i.e. more than twice the rate

for Tonga¹¹. It has already been mentioned that the Melanesian dependencies of the Solomon Islands and the New Hebrides are just entering into this phase of declining mortality. Hence, their rate of growth in comparison with Polynesia and Micronesia is rather slow. Other territories which deviate from the normal pattern of decline in mortality are Guam, Norfolk Island, Pitcairn and, possibly, Nauru. By the quinquennium 1950-4 the lowest death rates were registered in Nauru and Guam. This may be explained by the fact that Nauru has a large adult population with few children and old people. Nearly half of Nauru's population are indentured labourers. The increase in the crude death rate for Nauru by 1965-9 is partly a result of the increasing employment of Gilbert and Ellice Islanders who tend to move with their families and live in Nauru for at least two years while employed in the mining of phosphate. Guam's low death rate could be the result of the effectiveness of the work of Americans as well as the presence of American military personnel and contractors under their employment. Table 2.3 shows that the change in the crude death rate since 1945 is almost negligible for Norfolk. This is so because she has an aged population, and the young adults in the reproductive ages are steadily emigrating to Australia leaving behind most of the aged and the children. Pitcairn best exemplifies the random fluctuation within a small population of about 100 people heavily weighted at the apex and the base of the age pyramid.

In conformity with the general trend in other developing nations the crude death rate has declined rapidly in post-Second World War years. If the Solomons and the New Hebrides continue to exhibit mortality decline as the other territories have done then by the 1980s, or even in the late 1970s, there will be little difference in the levels of mortality between the islands, provided the process of modernization, particularly medical care, continues to encompass the whole area of each dependency. The section of the population of the territories which contributed most to this mortality decline is the infants, i.e. those under 1 year of age, although the 1-4 years age-group also contributed much as well to this decline.

Table 2.3 CHANGE IN THE CRUDE DEATH RATES (PER 1000 POPULATION) AND THE INFANT MORTALITY RATES (PER 1000 LIVE BIRTHS) IN SELECTED ISLAND TERRITORIES, 1945-64

Island Territory	Decline (%) Between Averages for 1945-9 and 1960-64	
	Crude Death Rates	Infant Mortality Rates
American Samoa	59.6	53.5
Cook Islands	137.8	174.1
Fiji	93.5	88.5
Gilbert & Ellice Islands	124.1	175.6 ^a
Guam	154.8 ^a	166.7 ^a
Nauru	102.1	109.3 ^b
Niue	221.0	390.0 ^b
Norfolk	4.6	158.5
Trust Territory of the Pacific Islands	83.3	27.6
Tonga	144.2	597.7
Western Samoa	116.3	93.6
Australia	13.8	42.1
New Zealand	10.1	46.9

Source: Same as for Tables 2.1 and 22

* The decline in the crude death rate for Niue is greatly exaggerated in magnitude by the high average crude death rate for 1945-49 which was 24.4 although the average for 1950-54 was only 13.6 per 1,000

a Two^{year} average only for the period 1945-9

b Average for 1950-4 is used in the calculation and not 1945-9. Norfolk Island shows the random variation in mortality in a small population

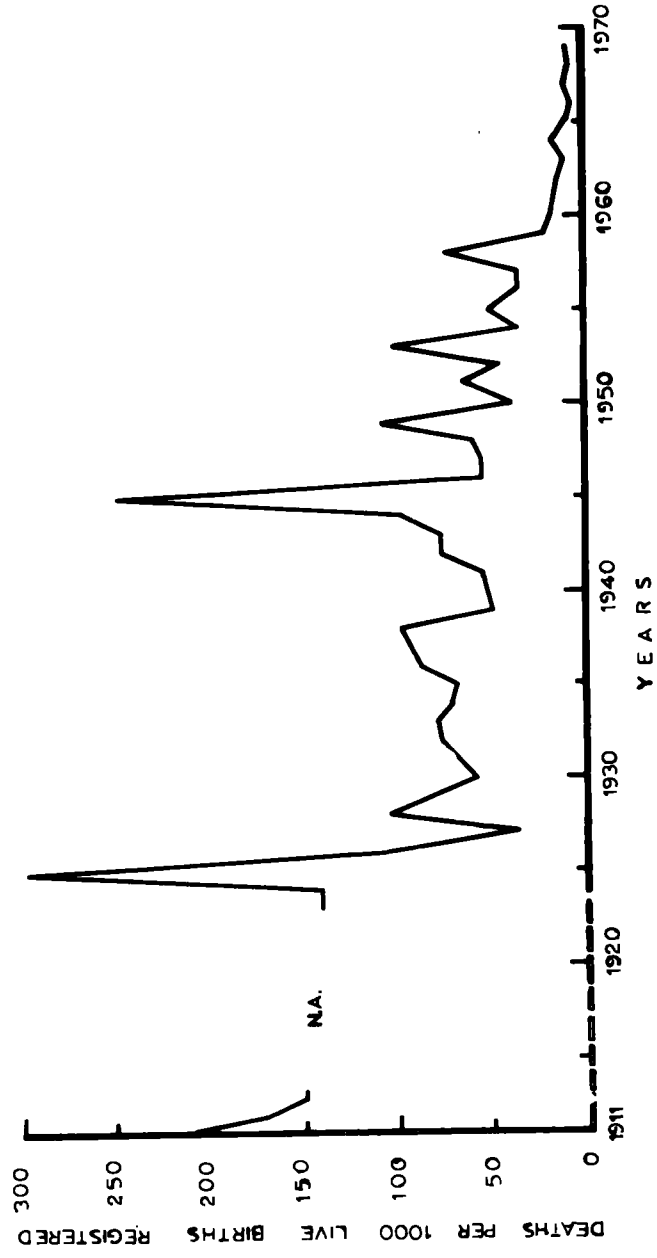
Infant Mortality

It has been mentioned that the fluctuations and the decline in infant mortality rates roughly correspond to those in the crude death rates. In Fiji, the infant mortality for the 1880s was about 451 deaths per 1,000 live births¹². The figures for other island territories were also high though probably not as high as for Fiji. For example, in Tonga the infant deaths by the end of the nineteenth century was about 200. American Samoa exhibited an

Fig.2.2 Recorded Infant Mortality per 1,000 live births in Tonga,
1911-69.

Sources: same as for Fig.2.1

INFANT MORTALITY PER 1000 LIVE BIRTHS, TONGA, 1911-69.



N.A. NOT AVAILABLE

infant death rate similar to that in Tonga and in the first decade of the present century it was around 200 per 1,000 live births¹³. However, it should be pointed out that Fiji's population was still declining and hence the very high infant mortality rate while the populations of Tonga and American Samoa were, by this time, recovering. Table 2.2 shows the pattern of decline in the infant mortality for most of the territories. The fluctuations of infant mortality rates are much greater than the fluctuations in the crude death rates although the figures given are the averages for 5 year periods. The explanation lies in the fact that mild epidemics could still exact a high death toll among infants, especially in pre-World War II years when child welfare was not yet fully integrated within the medical departments. Moreover, it is at that delicate age of under 1 year that the risk of death, apart from old age, is greatest. However, after 1945 the trend was towards a smooth curve indicating the curbing of the effects of mild epidemics upon infants by the great improvements in child and maternal welfare.

The pattern of infant mortality decline for Tonga is shown in Figure 2.2. The greater fluctuation in infant mortality indicates that not all decrease in the crude death rates has resulted from only the decline of infant deaths. In Tonga the infant mortality rate has declined from about 200 per 1,000 live births at the beginning of this century to 75 in the 1930s, 34.9 in 1955-9 and an average of 6.1 in 1965-9¹⁴. The infant mortality has been reduced by about 10 times in 20 years since 1950, and this has been mainly responsible for the explosive population growth since 1945. From Table 2.2 it can be seen that average infant mortality rates among the island territories in 1945-9 ranged from 197 deaths per 1,000 live births in Niue to 45.2 in the Trust Territory of the Pacific Islands. The low figure for the Trust Territory may be the result of under-registration since things were not yet back to normal immediately after the war. However, low figures for subsequent years seem to show that either the extent of the under-registration was not very significant during these years or the efficiency of the registration system has not improved significantly. By 1960-4 the range in the average infant mortality rates has narrowed down

considerably to 54 to 13, the extremes being for the Cook Islands and Tonga respectively. Although not all the annual infant mortality rates for 1965-9 are available it is clear that infant mortality still continue to decline in all the territories, though at different rates. In Tonga the average for 1965-9 is more than half the average for 1960-4 whereas in American Samoa there has been no remarkable change in the averages for the same periods. As the child welfare services in the islands have developed, the ones which were behind by the end of the last World War are catching up rapidly (See Table 2.3). Thus it is in these islands that the rate of decline is greatest. Again the exceptions are the New Hebrides and the Solomon Islands where infant death may still be close to 100 per 1,000 live births. However, there are no figures available for either of these territories although it is probably reasonable to assume that infant mortality, like the crude death rate, is declining, probably at a much faster rate.

Table 2.4 gives the figures for the infant mortality in some Pacific islands by age and sex between various dates. Averages for 3 years have been taken in order to reduce the effect of random fluctuation. Had figures for earlier years been available, one would be able to see clearly the magnitude of decline in neonatal and postnatal deaths. There is no reason to believe that the death rates for the neonates in the Pacific islands are greatly different from those in most other developing nations. In view of this, we can assume that while postnatal deaths have declined rapidly neonatal deaths have declined rather slowly since the causes of the deaths of neonates would be mostly endogenous rather than being exogenous. Therefore, taking the present state of baby care in the islands into consideration one has no choice to believe otherwise. The low figures for neonatal deaths in the Table 2.4 can be attributed to under-registration. The decline in both neonatal and postnatal deaths may be seen in the figures for American Samoa, Cook Islands and Fiji.

The decline in the crude death rates and infant mortality rates has brought a corresponding change in the age-specific rates. Moreover, the rates of survival have considerably improved among the islanders and as infant

Table 2.4 INFANT MORTALITY RATES (PER 1,000 LIVE BIRTHS) BY AGE AND SEX IN SOME PACIFIC ISLAND TERRITORIES FOR VARIOUS PERIODS

Island Territory	Date	Sex	Under 1 year	Under 1 day	1 - 6 days	7-27 days	28 days to 5 months	6 - 11 months
Guam	1956-8	M+F	25.1	10.3	4.2	2.2	5.1	3.3
		M	25.5	10.6	3.9	2.2	5.2	3.6
		F	24.7	10.0	4.6	2.2	5.0	2.9
	1962-3	M+F	29.4	10.8	8.4	1.9	4.6	3.6
		M	34.7	10.9	10.6	2.7	5.7	4.9
		F	23.8	10.7	6.1	1.8	3.7	2.1
American Samoa	1956-8	M+F	62.4	2.6	6.8	3.4	15.9	30.1
		M	64.6	3.1	7.5	2.6	15.5	31.3
		F	59.2	1.7	5.9	4.2	16.1	28.7
	1962-4	M+F	38.0	5.9	4.5	1.0	11.8	14.7
		M	44.1	6.8	6.1	1.4	13.1	16.9
		F	32.0	5.1	3.0	0.7	10.7	12.8
Cook Islands	1956-8	M+F	101.7	- 32.1	-	13.0	33.8	22.4
		M	106.7	- 36.2	-	10.2	32.1	28.1
		F	96.8	- 27.9	-	15.8	35.5	16.7
	1959-60	M+F	44.2	4.8	7.6	6.0	12.2	13.6
		M	48.5	4.6	8.2	7.1	17.1	11.4
		F	39.9	5.0	7.0	4.9	7.3	15.8
Fiji	1956-8	M+F	41.4	3.8	7.9	6.8	12.3	10.7
		M	44.8	4.5	8.7	7.4	12.8	11.4
		F	38.0	3.1	7.1	6.2	11.8	10.0
	1962-5	M+F	27.9	2.1	6.0	4.4	7.6	7.8
		M	29.4	2.0	6.6	4.7	7.4	8.6
		F	26.4	2.2	5.4	4.1	7.8	7.0
Pacific Islands T.T.	1959-61	M+F	34.5	6.4	7.2	2.6	9.9	7.0
		M	38.5	8.4	9.0	3.1	9.4	7.2
		F	29.5	8.4	5.4	2.1	10.4	6.8
	1962-4	M+F	34.6	6.5	7.8	3.9	10.8	5.4
		M	38.2	7.5	8.7	4.4	11.9	5.6
		F	31.0	5.5	6.9	3.4	9.7	5.2
Western Samoa	1956-8	M+F	38.3	3.8*	4.5*	2.2*	9.3*	20.8*
		M	38.7	2.1*	7.0*	3.0*	7.9*	20.2*
		F	37.9	0.8*	1.6*	1.6*	12.4*	26.2*
	1963-5	M+F	38.1	- 8.0	-	-	9.1	18.1
		M	38.9	- 9.5	-	-	8.9	17.0
		F	37.3	- 6.2	-	-	9.3	19.2

Source: Same as for Table 2.1

M = Males, F = Females

* = 2 year average only

mortality continues to decline the life expectancy at birth continues to improve. In comparison with Australia and New Zealand it appears that the island territories can still lower their infant mortality but the question is whether they can do so with their limited financial resources and medical know-how, even if other obstacles are not taken into consideration. It appears from the average figures for some years during 1965-9 (See Table 2.2) that infant mortality is rising slightly in some territories, though this may be temporary.

Age-Sex-Specific Mortality Changes

As more will be said later when we look at the age-sex differentials in mortality it will suffice to mention only the broad trends at this stage. The greatest reduction in mortality has taken place in the age group under 30 years of age. Deaths at older ages arising from degenerative ailments are not readily remedied by medical science. Unlike deaths from infectious diseases which are easily prevented and the causes remedied by mass exposure of the population to chemo-therapy treatments without having to ensure that medical standards are as high as in the developed nations, degenerative ailments may only be overcome by much higher medical standards than exist at present in the islands. Improvements in midwifery and increasing use of maternity wards for confinements during childbirth have resulted in a reduction of maternal death rates¹⁵. This is seen in Table 2.8 (see also Table IV in the Appendix) where the mortality for Indian and Fijian women has dropped since 1945 to levels similar to that of men in the age-groups 15 to 44 years (also see Fig. 2.3). In fact the death rates for women of all ages in the islands is lower than those for the men. The only exception is found in the Indian population of Fiji where the death rate for women exceeded that for the men until the 1960s¹⁶.

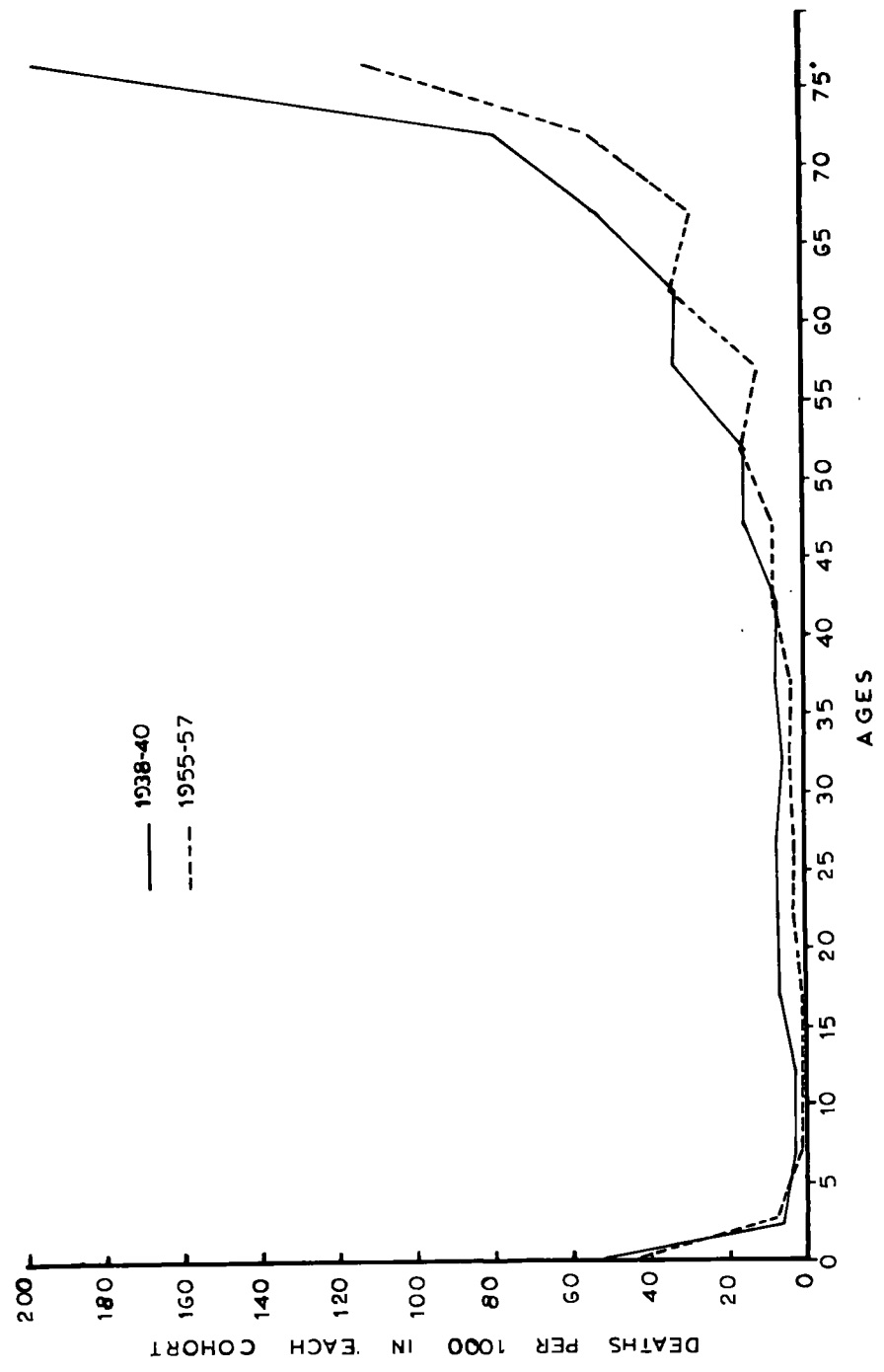
The differential changes in the mortality rates for each age-group have resulted in changes in the percentage distribution of deaths with each age-group¹⁷. Table 2.5 shows the percentage distribution of deaths in some

Fig.2.3 Average Age-Specific Mortality Rates for quinquennial age-groups, Tonga, 1938-40 and 1955-57.

Source: McArthur, N., 1967, op.cit., p.93.

Note: The Age-Specific Mortality Rates for 1938-40 excludes Niuafouu for which registers of death were not available.

AGE-SPECIFIC MORTALITY RATES: TONGA, 1938-40 AND 1955-57.



selected Pacific territories for the 4 year period 1961-4. Figures for earlier periods were not available, therefore the exact extent of changes in the percentage distribution of deaths among age-groups over a certain period cannot be measured. Nevertheless, we may safely assume that, provided all things are equal, the greater reduction of mortality in the younger age-groups will reduce their share of the total mortality while this would be compensated by an increase in percentage among the older age-groups where decline is at a slower rate. In Western Samoa about 60 per cent of all deaths between 1907 and 1911 were infant deaths¹⁸. These were normal years and the percentage of infant deaths could be higher in epidemic years. On this basis, one can assume that the proportion of infant deaths to all deaths was not very different in other island jurisdictions from that in Western Samoa. In the 1961-4 period the percentage contribution of infant deaths in most islands was less than 30 per cent except in the Solomons and New Hebrides where it might have been higher. The percentage of death in the age-group over 39 years has probably increased. The very low percentage of infant deaths and the very high percentage of deaths in the age groups 65 yrs and over in Norfolk Island reflects the aging of her population and the proportionally fewer children and young adults in the reproductive age-groups. In respect to the lowering of the death rates among infants and the adolescent age-groups the expectation of life at birth has improved and more people are now surviving to the end of their reproductive ages. The probability of survival among males 15 years of age to reach the age of 65, thereby increasing the male labour force, has also increased.

Expectation of Life at Birth

In pre-contact times the expectation of life at birth of a newborn babe in the islands would probably have been about 30 years¹⁹. This low expectation of life at birth may have continued up to the beginning of the present century. Irene B. Taeuber estimated that in 1925 the life expectation at birth in American Samoa was around 25 years²⁰. In sample

Table 2.5 AGE-SPECIFIC DEATH RATES IN PERCENTAGE (%), 1961-64, IN SELECTED TERRITORIES

Age Groups	American Samoa	Fiji	Guam	Norfolk Island	Pacific Islands TT	Tonga	Western Samoa
0*	25.6	18.8	21.9	1.7	22.7	9.8	23.5
1-4	9.5	7.7	4.5	1.7	8.1	6.3	13.9
5-14	5.4	4.3	2.9	0.0	4.0	6.1	4.9
15-24	3.3	5.1	5.2	1.7	2.8	4.8	4.2
25-34	4.5	5.1	4.6	1.7	4.3	6.6	4.2
35-44	6.2	6.0	8.6	6.8	7.5	7.5	6.4
45-54	7.0	9.4	12.7	5.1	8.7	8.7	8.1
55-64	9.3	12.5	14.6	16.9	13.1	14.5	17.1
65+	25.2	31.1	25.0	64.3	28.8	35.7	17.7
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Same as for Table 2.1

areas in New Guinea Scragg calculated the expectation of life in 1949 to be 34.3 years, and at this period New Guinea and other islands in Melanesia were just beginning to enter the demographic context in which the islands of Polynesia and Micronesia were placed in the pre-Second World War years²¹. Gains in the expectation of life at birth were probably very limited in the first half of this century, although the territories in which the death rates were lower, especially infant mortality, may have attained a life expectation of around 40 years during the 1930s. The level and decline of mortality among the Maoris of New Zealand have been very similar to that of the territories of Polynesia and Fiji, and in 1936 their life expectation was about 46 years²². In post-war years life expectation at birth in all the island territories has risen considerably as the mortality continued to decline rapidly. Probably during the late 1940s the expectation of life at birth in most of Polynesia, Fiji and parts of Micronesia, especially Guam, was around 50 years; a gain of about 10 years

in a period of about 15 years²³.

As the expectation of life at birth continued to improve after the war a change began to take place in the male and female life expectation. Whereas before the war male life expectation was longer than that for females, the female life expectation started to exceed that of the males after the war and continued to increase much faster, thus widening the gulf between the life expectancies of the two sexes²⁴. For example, in Scragg's sample areas in New Guinea life expectancy at birth was 55.4 years in 1965 and this corresponds with the life expectancy of about 55 years for the Solomons and New Hebrides²⁵. On the other hand, the Maoris in New Zealand reached a life expectancy of 48.4 years for both sexes, 48.8 years for males and 48.0 years for females, in 1945 and it rose to 60.2 years, 59 years for males and 61.4 years for females, by 1961. In American Samoa, both sexes had a life expectancy of 62.5 years in 1958, 60.0 and 65.0 years for males and females respectively. Tongans in 1956, reached a life expectancy of 64 years for both sexes, i.e. 61 and 67 years for males and females respectively. Fiji's life expectancy was 64.2 years in 1956, ~~66.5~~ 66.5 years in 1964 and 68.6 years in 1967. This means an average annual gain in longevity of about 0.4 years between 1956 and 1967. The life expectancy of either sex was 63.5 years and 64.9 years in 1956, 65.0 and 70.1 years in 1964 and 65.4 and 71.6 years in 1967 for males and females respectively²⁶.

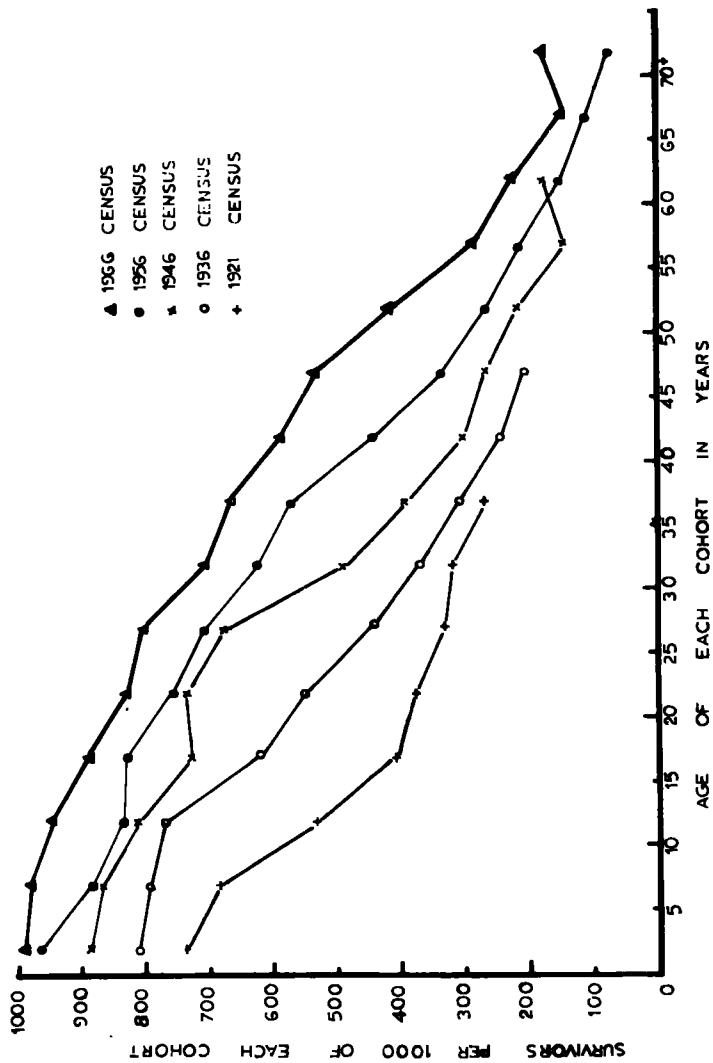
Tonga, Fiji and Samoa represent the top extreme in the Pacific Islands where progress has been very considerable and by the end of the 1960s their life expectancies, like their mortality, closely match that of developed countries. At the bottom of the scale comes the Solomon Islands and New Hebrides. Between the two extremes are the remainder of the territories, for example, the Cook Islands probably has a life expectancy which is slightly over 60 years now since their infant mortality have been planed down considerably. In 1956 her life expectancy at birth was about 59 years²⁷ similar to the Gilbert and Ellice Islands which had a life expectancy of 57.4 years in 1963²⁸. This rise in longevity can be seen in the increasing

Fig.2.4 Fijians : Survivors per 1,000 in each 5-year age-group during successive censuses, 1921-66.

Sources: (1) McArthur, N., 1967, *op.cit.*, p.41.

(2) Zwart, F.H.A.G., 1968, "Report on the Census of the Population 1966", Council Paper No.9, Suva, Fiji.

FIJIANS: SURVIVORS PER 1000 IN SUCCESSIVE CENSUSES, 1921-66.



proportion of survivors in each age group. This is portrayed by Figure 2.4 in which the proportions of survivors in each birth cohort of the Fijian component population has been plotted against their age in 1966. The survival pattern is reasonably compatible with their declining mortality. Moreover, the increase in probability of survival, particularly of women to the end of their reproductive period, is an omen for continued population increase in the future, even if fertility is reduced. For the Maoris of New Zealand about 67 per cent of women aged 15 years in 1945 would survive through to the end of their reproductive period; by 1961 it had risen to 84 per cent²⁹. Similarly, in Tonga at least 90 per cent of girls attaining 15 years of age in 1956 were expected to survive to the end of their reproductive period. Previously, only 81 per cent of those aged 15 years in 1939 were expected to survive to the age of 45 years. This lessening of mortality effectively lengthens the average reproductive span from 27.3 to 28.9 years and thus increases the average period of exposure to the risk of pregnancy by 1.6 years³⁰. Male probability of survival to the age of 45 years has increased, for example among Maori males in New Zealand who were 15 years of age in 1945 only 56 per cent were expected to reach the age of 45 years, but in 1961 65.6 per cent were expected to survive to 45 years. The process among the other territories is not very different and this forecasts an increase in the labour force. However, between the two sexes, the probability of survival is higher for females.

2. DIFFERENTIALS IN MORTALITY

It has been seen that the mortality level varies from one island group to another as well as the pattern of decline. At times we touched upon the differences between the experience of the two sexes and various age-groups in relation to mortality. In this section the aim is to discuss and analyse the differences in mortality between islands of the same administrative area, ethnic group differentials, urban-rural differences and occupational and socio-economic group differentials. And finally more will be added to what has been mentioned about the age-sex mortality differentials.

Intra-Territorial Differences

All the territories under study are made up of a number of islands scattered over a wide expanse of ocean, except Niue, Norfolk, Guam and Nauru which are the only single island territories³¹. Although the majority of the people in the island territories have relatively easy access to medical facilities, particularly in the last two decades when an increasing proportion of the population became concentrated in the main islands of each territory³² where medical treatment is readily available, the quality of treatment and the competence of medical men vary from island to island³³. Accessibility to the main hospitals in the case of major illnesses and fatal accidents also vary, and the islands particularly affected are those which are remote and less frequented by ships³⁴. As a result it is in these remote areas that the beliefs in the use of sorcery and the healing powers of native herb doctors are more firmly entrenched³⁵. The small sizes of the islands and their populations has been advantageous in the struggle against major infectious diseases and the lowering of the death rate but their wide dispersion has become an obstacle to greater efficiency and further progress in fighting degenerative ailments and endogenous causes of death. In this perspective inter-island differentials in mortality become very lucid. Thus, in spite of the lack of figures, since island territories do not publish any statistics on individual islands or the groups of islands in the territory³⁶, one can safely assume that the differences in mortality between islands exist.

The number of deaths in the island groups of the Cook Islands during the periods 1944-46, 1950-52 and 1955-57, which McArthur has taken from the island registers, is given in Table 2.6³⁷. In the Lower Group, including Rarotonga in which the main hospital is located, more than half of all the deaths for the years shown have occurred outside Rarotonga which supports over 70 per cent of the Group's population. The lower number of deaths in more populous Rarotonga, where registration is more efficient, is clearly evident when it is compared with the figures for all

the Cook Islands and those of the Lower Group excluding Rarotonga. While over 60 per cent of the Cook Islands' population lived in Rarotonga during these years her contribution to all the deaths recorded during these periods was only about 38 per cent. Therefore the greatest decline in mortality appears to have taken place in Rarotonga. In 1959 the infant mortality rate for all the Cook Islands was 54 per 1,000 live births whereas in Rarotonga it was only 27³⁸. Such circumstantial evidence indicates the existence of a disparity among the islands of any territory in health services provided. One of the major reasons for the migration of people from the outer islands to the main islands is to avail themselves of the better medical services provided by the main islands where most of the development, medical and otherwise, takes place. In the Solomon Islands families have moved from the more remote islands and isolated hill settlements to live near the hospitals, whether mission or government run, in order that wives and children, among whom the incidence of morbidity is high, especially malaria, may be treated³⁹. Moreover, higher living standards exist in the main islands than in the outer islands which means better sanitary conditions and greater use of domestic hygiene, especially in the preparation of food. This partly explains the urban-rural mortality differentials that may exist in the islands. The greater extension of the medical services in recent years may have reduced the differences in mortality between the outer islands and the main island. However, differences in the age structures also account for part of the differentials since migration to the main islands and port towns has increased the proportions of those under 15 years of age and those 45 years and over in the more isolated districts and outer islands.

Urban-Rural Differentials in Mortality

It is hard to speak of any urban-rural differences in mortality among the Pacific islands, because only a few major settlements such as Suva, Noumea and Papeete are truly urban in the European sense. Furthermore, there are no figures available to substantiate the existence of such differentials in mortality. However, an examination of certain factors considered below would

Table 2.6 NUMBER OF DEATHS RECORDED IN THE COOK ISLANDS DURING THE YEARS 1944-46 and 1950-52 and 1955-57 BY SEX AND ISLAND GROUP

	Years	Males	Females	Both Sexes
Rarotonga	1944-46	175	147	322
	1950-52	161	169	330
	1955-57	146	151	297
Lower Group excluding Rarotonga	1944-46	197	207	404
	1950-52	200	166	366
	1955-57	182	170	352
Lower Group including Rarotonga	1944-46	372	354	726
	1950-52	361	335	696
	1955-57	328	321	649
Northern Group	1944-46	76	62	138
	1950-52	53	72	125
	1955-57	83	76	159
Cook Islands	1944-46	448	416	864
	1950-52	414	407	821
	1955-57	411	397	808

Source: McArthur, N. 1967 "Island Populations of the Pacific", A.N.U. Press, Canberra. p.217

certainly point to mortality differences between rural areas and centres considered in the Pacific to be urban⁴⁰. In smaller main islands of such island jurisdictions as Tonga, Cook Islands and the Gilbert and Ellice Islands, including the single island territories, mortality differences between villages and the main centre will be less marked because of the short distance and easy access from all parts of the island to the hospitals. Moreover, mobile clinics have greater access in terms of time to the relatively fewer villages. Therefore, in these island jurisdictions inter-island differences in mortality are far more important. Greater differences between rural and urban areas in regard to mortality will be found in larger islands such as Viti Levu in the Fiji Islands, New Caledonia and Guadalcanal or Malaita in the Solomon Islands.

The best equipped hospitals staffed by the best qualified personnel are in the towns, especially the port towns. Major cases throughout the island or the

entire archipelago will have to be admitted to these hospitals⁴¹. In the towns the inhabitants are more health conscious and readily seek medical help, although there are dispensaries in some villages. Better educated people tend to live in the towns where they may be employed in non-agricultural jobs. Their incomes are very much higher than what the average villagers get from their lands⁴². Consequently, the towns enjoy the better public amenities provided and a higher standard of living. Hence, the mortality differential between towns and villages is also related to occupational and socio-economic differences. The inhabitants of the towns generally have more balanced diets and relatively better housing⁴³. The preponderance of persons in the young adult age-groups also contribute to the lower mortality in the towns (See Figure 2.5).

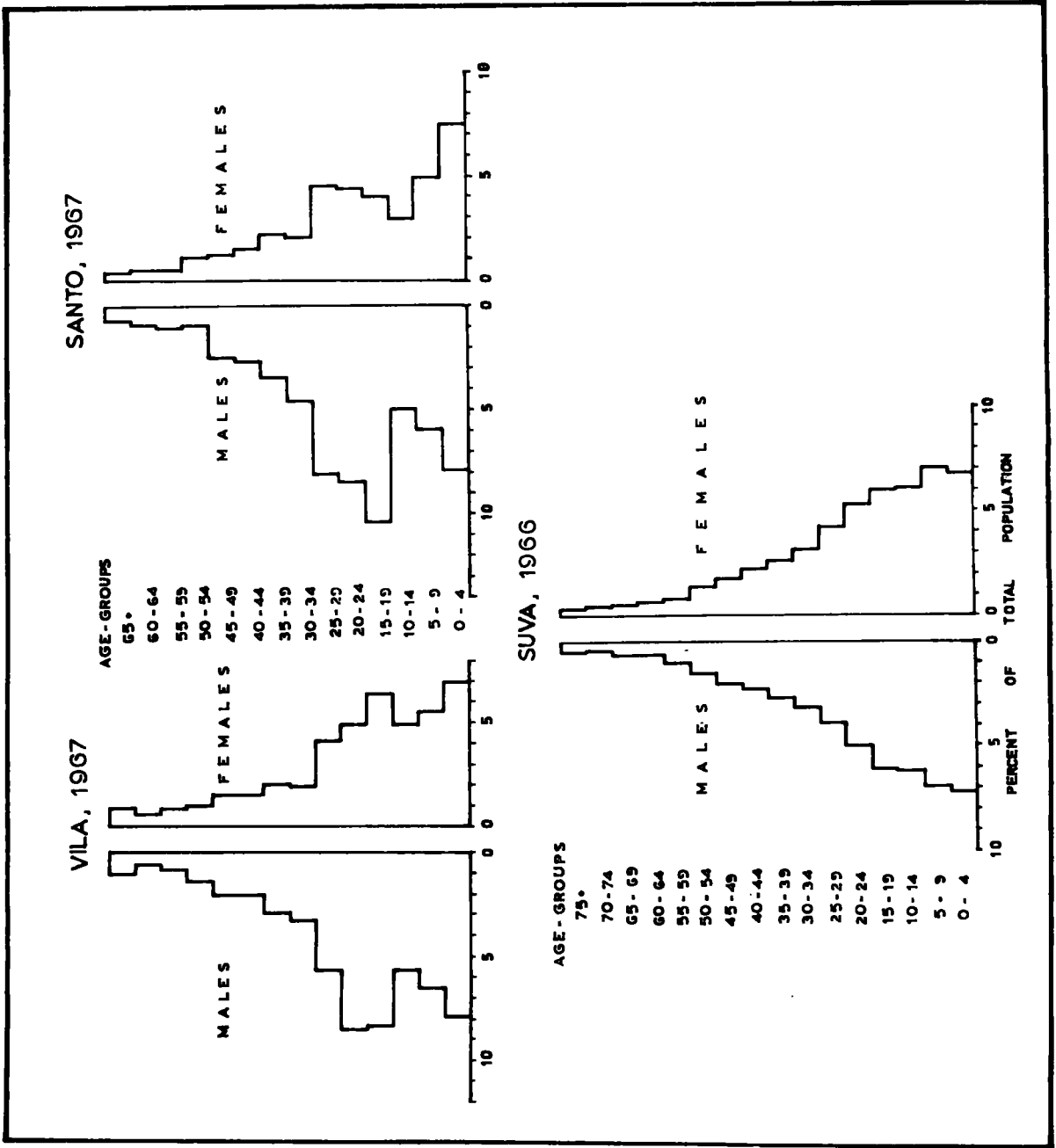
Adding to the differences between ~~the~~ urban-rural mortality is the concentration in the towns of non-indigenous minority groups, who enjoy a lower rate of mortality. In Fiji, for instance, over 85 per cent of the European component population were living in urban areas during the 1966 census. Similarly, 84 per cent of the Chinese and Part-Chinese population of Fiji were living in urban areas during the same census⁴⁴. Both these component populations of Fiji have lower crude death rates than either the Fijian or the Indian component. Among the urban dwellers, there is greater tendency for women of child-bearing ages to spend the period of confinement during child-birth in a maternity ward. On the other hand, village women in the reproductive ages rely greatly on untrained midwives. Thus it could be expected that infant and maternal mortality is lower in the urban areas. As a result urban-rural mortality differential can be partly attributed to ethnic differences in mortality although it should be borne in mind that the non-indigenous people only constitute a minor proportion of the urban population, for example about 10 per cent of the urban populations of Fiji were composed of European and Part-European and Chinese and Part-Chinese components in 1966.

Fig.2.5 Age-Sex Structures of Suva (1966), Vila and Santo (1967).

Sources: (1) Zwart, F.H.A.G., 1968, op.cit.

(2) McArthur, N., and J.F. Yaxley, 1968, op.cit.

Note: The differences in the age-sex structures of these three urban areas arise from the differences in the stage of urbanization. Suva has a longer history of growth and expansion than Vila and Santo and as a result the character of in-migration is different, that is, in-migrants tend to include children and females whereas, like Honiara, the wives and children of in-migrants to Vila and Santo are mostly left behind in the villages, partly because of the lack of accommodation, and most men eventually return to the villages. Chain migration has not had much time yet to be effective in generating permanent migration, including wives and children. However, the base of the age pyramid in Suva is still less broad than any other district or province in Fiji, with about 40 per cent under 15 years of age. On the other hand, Suva has the highest per cent of adults (57 per cent) in comparison with less than 50 per cent in the provinces.



Ethnic Mortality Differentials

Differences in mortality between the various racial groups reflect their differences in the extent of acculturation, place of residence, occupation, attitudes towards modern scientific medical treatment, literacy and socio-economic attainments. Broadly, there exists differences in mortality between the three main ethnic groups in the Pacific - the Melanesians, Micronesians and Polynesians. The Melanesians generally have higher death rates than the last two ethnic groups, both of whom have very little difference between them in mortality. Reasons for the higher death rates among Melanesians have already been referred to. Among these reasons is the recent establishment of medical services, for example the first hospital was built in the Solomon Islands in 1913 and even then it was run for a long time by native orderlies⁴⁵. Thus the population continued to decline up to the 1930s. Perhaps, it should be mentioned that the Polynesians in Melanesia⁴⁶, such as the Tikopians and the Ongtong Javanese also suffer from high death rates just as the other Solomon Islanders do for the same reasons.

Within any island territory the immigrant component of the population usually suffer lower mortality than the natives. Part of this difference is due to differences in occupation since ethnic groups such as the Europeans occupy the top paid jobs and other groups like the Asians usually have higher incomes from trade and business. This also reflects, therefore, the socio-economic differences between the various ethnic groups. The Europeans and other ethnic groups in the islands, besides Chinese and Indians, are largely transient populations and this means that small proportions of their populations are of children and old people. In New Caledonia, one can expect a gulf to exist between the European and native mortality rates because the Europeans live in Noumea and other areas where access to medical services, private⁴⁷ or public, is relatively easy whereas the majority of the natives live in villages in reserves except when they are temporary in Noumea for some employment.

In Table 2.7 is given the figures for the crude death rates from 1958 to 1968 of the various ethnic groups in Fiji, a good example of a multi-racial,

pluralistic country. The Europeans and persons of mixed European and Native descent show much lower crude death rates throughout the period whereas there is no great difference between the other ethnic groups. The Polynesians and other Pacific Islanders, Rotumans and Chinese have had crude death rates which fluctuated more than the other ethnic components, probably owing to chance variations since these components are only a few thousands and are more permanently settled in Fiji than the Europeans. Between the two major components, the Fijians and the Indians, the Indians have a lower death rate than the Fijians, throughout the ten year period except for 1966. The age-sex-specific mortality rates for the two component populations, shown in Table 2.8 are for the 1945-7, 1955-7 annual averages and 1967. There has been less change in the mortality rates for the Indians, whereas for the Fijian component the decline has been very dramatic so that Fijians now enjoy a crude death rate and age-sex-specific rates similar to that of the Indians. In fact, the infant mortality rate for the Fijians in 1967 was lower than that for the Indians. However, the Fijians have a higher child mortality rate while the Indian females of reproductive ages have a higher maternal mortality rate, although it has been reduced during the two decades 1947 to 1967 to levels similar to the rate for the Fijians.

The Fijian female population have had a lower mortality, both age-specific and crude death rates, than the males during 1947 to 1967. On the other hand, their Indian counterparts have had a higher mortality than the males except for 1967. Because the Indian population was formerly an immigrant population with an unbalanced age-sex structure they have had a lower death rate than the Fijians even back in 1921 when the crude death rate for the Indians was 6 per 1000 persons whereas the death rate for the Fijians was 27 per 1000⁴⁸. But the similarity between the level of mortality in the two populations in 1956 and the extent of the changes in mortality in both components during the decade 1946 to 1956 are illustrated by the standardized mortality rates of 15.7 per 1,000 persons in 1946 and 8.1 in 1956 for the Fijian component, and 7.6 and 8.0 for the Indians⁴⁹. Thus the mortality

Table 2.7 FIJI : CRUDE DEATH RATES (PER 1,000 POPULATION) BY RACE,
1958-68

Year	Fijians	Indians	Europeans	P.M.E.N.D.	Polynesians etc. ^a	Rotumans	Chinese ^b
1958	7.7	6.6	5.2	5.3	8.0	7.9	4.0
1959	7.6	7.7	4.4	4.5	6.9	5.8	5.6
1960	7.2	6.5	3.4	3.9	7.7	4.9	6.4
1961	7.0	6.2	3.6	3.4	5.8	7.1	4.8
1962	7.5	5.5	2.9	5.2	4.9	8.2	7.6
1963	6.4	5.4	3.7	4.1	6.0	6.8	4.6
1964	6.8	5.6	2.9	5.1	8.1	7.5	4.5
1965	5.5	5.0	2.4	3.2	4.6	5.1	4.5
1966	5.0	5.4	3.4	4.3	7.1	3.7	6.7
1967	5.2	4.9	2.2	5.1	3.9	6.6	4.1
1968	5.5	5.1	3.6	3.2	5.8	5.4	7.0

Source: Fiji Government, 1969, "Annual Statistical Abstract; Fiji 1969"
Bureau of Statistics, Suva, p.21

Crude Death Rate per 1000 persons is based on the Mid-Year Population

P.M.E.N.D. - Persons of mixed European and Native descent

a = Including other Pacific Islanders ; b = Including Part-Chinese

for the Fijians has fallen almost by half during the decade whereas the Indian rate has increased, reflecting the increase of older people. The chances of survival for the Indian males are probably still better than their Fijian counterparts, but for the female populations there is very little difference. The decline of mortality among the Fijians between 1947 and 1967 was part of a continuing process, whereas mortality in the Indian population has been relatively stable for many years up to 1956 when it even showed some signs of increasing slightly before declining again in the next decade. The lack of predictability for the Indian component is because of changes in the age and sex structure of the population.

Age-Sex Differentials

The age-sex-specific mortality rates for some Pacific island territories at certain dates are given in Table IV (a to g) in the Appendix. Earlier we referred to the decline in the age and sex specific mortality. References also have been made to the differences in the age and sex mortality between the Fijians and Indians in Fiji. Now we will discuss the age-sex mortality in Tonga and then make general comments on some of the Pacific island territories.

Assuming that the deaths were all registered or the ones which were not registered in 1938-40 and 1955-57 in Tonga were distributed identically with respect to sex and age, at neither period was there any significant difference between the mortality experience of males and females of the same ages beyond the first year of life. In 1938 to 1940 male infants had a smaller chance of survival than females, but in 1955-57 the infant mortality rates for males and females were identical and comparable in magnitude with contemporary rates in the Samoan and Fijian populations. The most striking change since 1939 is the decline which has occurred in the mortality of both males and females at ages 15 to 39 years, and to a lesser extent, at ages 5 to 14 years, where mortality reaches the lowest levels. This decline is the result of the increasing measure of control over infectious diseases and it is reflected in the changing pattern of mortality with age. For example, in 1944-46, both males and females in the Cook Islands showed a sharp increase in mortality at ages 15 to 19 years as compared with those in the two younger age groups, and for females this relatively high rate was maintained throughout the reproductive period. In 1950 to 1952 the difference between the mortality rates at ages 10 to 14 and 15 to 19 was less marked than in the earlier period, and in 1955-57 it had disappeared for males, although a trace still remained for females. In Tonga there has been no change in the mortality at ages 1 to 4 years or at ages beyond 45 years although the populations at these latter ages are so small that chance fluctuations in the numbers of deaths in any year may produce quite large

Table 2.8 AGE-SEX-SPECIFIC MORTALITY RATES FOR INDIANS AND FIJIANS FOR 1945-7, 1955-7 and 1967

Age Group	Males						Females						Males + Females					
	1945-7		1955-7		1967		1945-7		1955-7		1967		1945-7		1955-7		1967	
	I	F	I	F	I	F	I	F	I	F	I	F	I	F	I	F	I	F
0+	50.5	81.5	47.1	49.4	29.9	20.9	43.6	70.9	39.0	44.9	26.7	23.5	47.5	76.2	43.0	47.1	28.3	22.2
1	6.7	51.0	6.3	23.4	3.0	10.2	5.7	48.6	5.7	20.4	3.0	7.3	6.2	49.8	6.0	21.9	3.0	8.8
2-4	2.1	12.4	1.8	5.0	1.3	2.6	2.2	11.1	1.9	4.7	1.6	6.4	2.2	11.7	1.9	4.9	1.4	4.3
5-9	0.9	4.0	0.6	1.3	0.5	1.0	1.0	4.2	0.9	2.3	0.6	1.9	1.0	4.1	0.7	1.8	0.6	1.0
10-14	1.0	3.4	0.8	1.7	1.0	0.6	1.2	3.7	1.0	1.2	0.9	1.0	1.1	3.5	0.9	1.4	1.0	0.8
15-19	2.0	5.9	1.4	1.3	1.0	1.2	4.4	5.4	2.2	1.8	1.3	0.6	3.2	5.7	1.8	1.5	1.1	0.9
20-24	1.9	6.5	1.2	2.6	2.0	1.3	4.3	7.1	3.1	2.2	2.1	1.7	3.1	6.8	2.1	2.4	2.1	1.5
25-29	2.1	7.4	1.6	3.1	1.3	1.4	4.7	7.2	2.9	3.2	1.9	1.0	3.4	7.3	2.2	3.2	1.6	1.2
30-34	3.1	8.6	2.1	3.2	2.4	1.6	8.3	7.4	4.6	3.9	0.8	2.1	5.7	8.0	3.3	3.5	1.6	1.9
35-39	3.0	7.6	3.2	3.6	4.0	4.8	8.4	9.5	4.1	5.1	3.0	4.4	5.7	8.6	3.5	4.3	3.5	4.6
40-44	7.4	12.3	6.0	5.2	5.0	4.4	8.0	10.5	6.9	5.1	3.8	3.3	7.7	11.4	6.4	5.2	4.4	3.9
45-49	8.0	15.8	12.8	8.3	10.3	8.6	9.8	12.4	10.9	6.2	4.9	4.2	8.9	14.1	11.9	8.5	7.6	6.4
50-54	17.2	24.0	15.3	13.0	14.3	11.1	14.4	14.2	17.3	8.7	8.5	6.3	15.8	19.1	14.7	10.8	11.4	8.7
55-59	10.5	26.9	19.4	21.9	14.4	16.3	22.9	19.2	8.1	9.4	9.8	13.4	24.9	19.3	15.0	16.4	16.4	11.9
60-64	27.0	52.1	30.5	34.2	28.2	28.3	36.7	52.1	40.3	33.0	25.4	16.2	31.8	52.1	35.4	33.6	27.3	22.2
65-69	21.9	52.8	29.8	36.9	47.0	36.8	34.8	48.0	38.0	24.7	24.0	19.1	28.3	50.4	33.9	30.8	35.5	27.9
70-74	49.3	106.6	75.0	87.1	41.4	44.4	73.4	121.3	74.6	59.8	82.4	29.7	61.3	113.9	74.8	73.4	36.9	37.0
75+	66.3	114.7	129.3	95.7	101.3	40.4	113.7	130.0	180.6	64.3	187.7	26.2	90.0	122.3	154.9	80.0	144.5	33.0
All ages	7.5	15.8	7.2	10.6	5.7	5.5	10.4	15.6	9.5	8.0	4.0	4.8	8.9	15.7	8.8	9.3	4.87	4.14

Sources: 1. McArthur, N., 1968, op.cit. p 53, 54.

2. Fiji Government, 1969, op. cit. p.35 Table 1.28

I = Indians, F = Fijians

variations in the rates.

The situation in Fiji is very similar to Tonga. While the infant rate and the rates for age groups 1 to 4, 5 to 9, 10 to 14 and 15 to 19 has declined dramatically, followed by decline in the ages 20 to 44 years, there has been no significant decline in rates for people 45 years and over, except the females of the Fijian component. As in the other territories the male infant mortality rate is higher than the female although in recent years the difference between the two has become less noticeable. In Western Samoa, mortality rates for males and females of the same age were very similar in 1950-52 and 1955-57; except perhaps among the infant males and females. By 1961 the mortality for infant males and females were almost identical although it was slightly higher for the males. The age and sex-specific mortality rates for American Samoa in 1949-51, 1955-57 and 1960 were very similar to the rates for parallel age groups in Western Samoa. There was probably some decline in the risk of mortality at most ages between 1940 and 1950 although between 1950 and 1956 there has been no appreciable improvement. By 1960 the age-specific rates for males and females have almost been halved since 1956, but the mortality experience for males and females of corresponding age-groups remained similar except perhaps for those under 1 year of age and 1 to 4 years. In the former age-group a reversal from earlier years took place and females were credited with a higher rate though it may be the result of more female infant deaths being registered, whereas in the latter age-group the males registered a higher rate than females. There is always the possibility that this was only a chance fluctuation.

In the Cook Islands some of the sex differential in chances of survival may be due to sex differential in mortality. In 1944-6 except for those below the age of 15 years, chances of survival in the population were generally greater for males than for females. Mortality rates in childhood and at most ages up to the end of the female reproductive period were higher for females than for males in 1950-52; and in 1955-57 this difference could still be traced. Among infants and persons at ages beyond 45 years the rates for males

tend to exceed those for females for the three periods. A consistent decline in the mortality rates of males aged 35 to 54 years and females in the reproductive ages seems to have taken place throughout the three series of rates.

In French Polynesia there was no very great difference between the mortality rates for males and females at either period, 1950-52 and 1955-57 except among infants. Mortality at all ages for the period 1950 to 1952 was undoubtedly exceptional because of the measles epidemic in 1951⁵⁰. Rates for males and females at ages 15 to 24 years were exceptionally high, and the slightly lower rates recorded for both sexes at ages 25 to 29 years may reflect the level of immunity to ^{the} 1951 measles epidemic in the population, especially on Tahiti. Bearing in mind that changes in the rates at all ages for either males or females may be spurious because of random fluctuations in the small base populations at various age groups, there may have been no significant change in the rates for both sexes in Guam in 1950 and 1960 except the rates for those below 1 year of age. In 1960 there was a reversal in the infant rates when there were more deaths recorded for females than for males, whereas in 1950 male infants had higher mortality rates. Similarly, there has been no significant change in the rates for all ages for both sexes in the Trust Territory of the Pacific Islands between 1954 and 1965, except for male infants. The rate for male infants in 1965 was slightly more than half that of 1954 whereas for females there was no change. Death rates among male persons in the age groups 5 to 9 and 10-14 years also declined between the two periods.

As in any other country, the death rates decline sharply from the under 1 year-old age-group to very low rates in the 5 to 9 and 10 to 14 years age-groups and then rise up gradually to the older age-groups of 65 years and beyond when the rise becomes more precipitous. This pattern partly reflects the degree of success in controlling the environmental diseases. To lower the deaths at old age and among neonates greater skill and medical knowledge must be acquired by the native medical practitioners in order to combat degenerative ailments and endogenous diseases that have hindered the reduction

of neonatal deaths and those ascribed to senility. But then in developed nations this has been found to be quite a formidable task in spite of the tremendous achievements in the medical field.

3. FACTORS ASSOCIATED WITH MORTALITY DECLINE

Development and Expansion of Health Services

The phenomenal declines in mortality which have occurred in the Pacific island territories since the 1940s have ultimately produced mortality rates that either match or are lower than those of the industrialized countries. The main factors behind this are (i) the greater responsibilities assumed by the various island governments during post-World War II years for the welfare and, especially, the health of islanders; (ii) international co-operation in marshalling resources for the fight against diseases; (iii) great advances in the technology of disease control, particularly in the development of efficient methods of prevention and cure of infectious and respiratory diseases, and (iv) economic growth (in islands where it has been achieved) and more grants-in-aid from metropolitan countries has added to the means at their disposal for health programmes. The discussion that follows will attempt to trace the growth of the public health services and disease control methods in the island territories which may be considered most important in lowering mortality rates in areas where economic growth has not been found to be satisfactory.

In the attempt to improve the health of the islanders and reduce mortality, the first major work was done by the missions⁵¹. Records show that the pioneer missionaries in the nineteenth century, and even in the twentieth century, spent much of their time doctoring native ailments and campaigned vigorously against bad conditions of hygiene and sanitation⁵². Their efforts were not always welcomed⁵³ for their concepts of the causes of illness, deaths and the treatment of diseases conflicted with the traditionally held primitive ideas. Nonetheless, their success eventually began to win the confidence of the natives and 'doctors and nurses, or Roman Catholic nuns⁵⁴, were brought into the

mission fields and hospitals were established,⁵⁵. When the Pacific was finally carved up between the colonial powers who later made the improvement of health among the natives their first prerogative, the missions began to withdraw slowly from providing health services, and concentrate on saving souls. They no longer provide health services today in Polynesia and Micronesia but in Melanesia, in particular the Solomons and the New Hebrides, the missions are still largely responsible for running the hospitals though they are subsidized by the administration⁵⁶. This reflects the more recent development and extension of health services in Melanesia and the reason why mortality is still considerably higher there.

The dates of government responsibility for the provision of public health services in the island territories vary. The fear of total decimation of natives led to enquiries and later researches into the causes of depopulation. The most important of these reactions against rapid population decline occurred in Fiji, where something was urgently needed to combat the high mortality among the indigenous population. The counter-attack against high mortality had been begun in 1884 when Dr. William MacGregor's scheme for training selected young Fijians in the treatment of the commoner diseases had been adopted. In 1893 a Commission was appointed to investigate the problem of population decline and it made suggestions for counter-action which could be grouped roughly under such headings as food production and diets, child welfare, medical care and public sanitation, including housing and water supply. By 1899, when revenue improved, steps were taken to improve the medical services by building provincial hospitals and better sanitary regulations were inaugurated⁵⁷. But as in other island territories, the effects of these early efforts were very limited since operations were mainly restricted to the port settlements and the main islands.

In Tonga, although there was a Government doctor at Nuku'alofa during the late nineteenth century, little was done to develop a medical service until 1906 when medical officers were stationed at Nuku'alofa, Pangai and Neiafu⁵⁸. By 1909 small hospitals had been built at each of the three centres and public

health measures, such as the improvement of water supplies and latrines⁵⁹, were gradually developed. Regulations were passed and concerted efforts were made to ensure the maximum security against the spread of diseases. As in most of the other territories during this time the Tongan Government enacted measures for the purpose of controlling the entry of ships as well as demanding quarantine when desirable. However, the main drawbacks were the lack of an effective administration to carry out the legislations and the unwillingness of the population to comply with the health measures or cooperate with the health authorities. Since the end of World War II the administration has become more successful and more effective in enforcing the health legislations that many have become irritated by its rigid application⁶⁰ although as a result the Kingdom has been freed, from epidemics.

The development and extension of the health and medical facilities was also slow in the other territories. After the partition of Samoa in 1900⁶¹, the United States Navy began to organize medical and public health facilities for their Colony using its medical officers. The initiation of medical care in Western Samoa was much earlier; the first doctor, an L.M.S.⁶² missionary, began work there in the 1860s. In the 1890s the German Navy established a hospital in Apia which served the Samoan patients in the surrounding districts as well. In 1904, 4 years after German annexation, a substantial public hospital was built in Apia as a gift from a German philanthropist⁶³. For her colonies in East Polynesia as well as New Caledonia the French began to provide limited medical services, especially in Papeete and Noumea. However, in New Caledonia the medical services were made available mainly to the French settlers. The natives, who resisted the French, were forced back into the less hospitable parts of the Colony and since their movements were restricted they had limited access and benefits from the health and medical services. When the Americans bought Guam in 1898 and the Navy was made responsible for its administration, they were also obliged to provide medical care using the naval base's medical staff. Before Spain sold Guam to America the only attempt to fight diseases and improve the standard of health was

made by the missionaries. The Germans made limited efforts to provide health and medical services in their Micronesian colonies of Nauru, Carolines, Marshalls and the Marianas. As in other territories the benefits which the natives received from the services were limited to those who lived in and around the port and mission settlements. More than half of those who needed medical aid could not be attended to. In the Gilbert and Ellice Islands the traders and missionaries attended ~~the~~ most who needed medical care. The colonial doctor was stationed at Tarawa in the 1890s and since 1900 he was removed along with the hospital and Government headquarters to Ocean Island. The difficulty of transportation and the fragmented nature of the dependency limited his availability to those who were in need of his profession, even when he was later assisted by a Fijian medical practitioner. By the first decade of this century New Zealand began to provide limited health services for Cook Islanders and Niueans. The first hospital in the Solomon Islands was not built until 1913 by the Melanesian mission, and about the same time the New Hebrides received her first hospital.

Before World War I much of the medical treatments and knowledge about health, sanitation and hygiene were received by the indigenes in most of the territories from missionaries, and to some extent from traders. Where outstation dispensaries had been established as in Tonga and Fiji the facilities were crude, the supplies of medicine were limited in variety, quantity and quality and the staff were native orderlies and dispensers who were taught the rudiments of the medical profession and often could do nothing more than dress wounds and dispense certain pills. After World War I greater efforts were made by the administrations to improve and extend the health and medical services which resulted in the decline in the importance of missionaries and traders in providing medical care. However, plantation owners and mining companies in Melanesia, Nauru and Ocean Island continued to provide their labourers and their dependents with health services of the most elementary kind. In the Solomon Islands and the New Hebrides the missions remained dominant in the field of health and medical care. In most territories rural dispensaries became more common in isolated and outlying islands⁶⁴, and these

were often staffed by more experienced and better trained native practitioners.

During the inter-war years, much progress was made in the territories of Polynesia and Micronesia in eradicating or limiting the effects and incidence of some common infectious diseases although the incidence of pulmonary diseases was still high; epidemic diseases such as measles, dysentery, typhoid and influenza still exacted heavy death tolls and skin diseases like yaws and ringworm were still disastrously common. In Melanesia malaria was still dreaded and little progress was made in the attempts to reduce its incidence⁶⁵. Maternity and Child Welfare schemes were still in their infancy, often not beyond the experimental stage. Midwifery was still largely practised by untrained native midwives. Doctors were sought only when complications in childbirth threatened the life of the mother, i.e. if any doctor was anywhere near. Modesty among native women as well as other taboos also inhibited the use of male doctors and native practitioners. Keesing remarked that 'few places show more than a very small proportion of native women receiving modern care at childbirth. The most forward in this respect appears to be Tonga, where out of 1355 recorded births in 1938, 45 were in hospitals and 279 were attended at home, and the Cook Islands, which show 57 hospital confinements in 536 births'⁶⁶. In the most isolated areas, medicinal supplies were usually left with the pastors who administered it to the sick following instructions they had been given. Attempts were made to improve housings, toilet facilities, food preparations, ways of wearing clothes, use of water, etc.⁶⁷. Health inspections, usually carried out by the medical practitioners, became more common. Philanthropic organizations, such as the Rockefeller Foundation and the League of Nations, began to contribute to the fight against diseases in the islands. Much of the success of all these depended on the natives' cooperation and the increase in personnel.

Easily the most significant development in health services had been the extension of the Fiji training scheme so as to take in a number of island

jurisdictions. This was organized by Dr. Lambert and the Rockefeller Foundation which aided the governments concerned in financing the project. It took the form of a Central Medical School attached to the Suva hospital. The scheme started in 1926 and in the early years the participating jurisdictions were Fiji, Western Samoa, the Cook Islands, Tonga, the Gilbert and Ellice Islands, the New Hebrides and the Solomons - all of which sent an agreed quota of picked young men. In 1933 American Samoa joined and towards the end of the decade Guam did also. Most nurses were trained in island hospitals and in Guam and American Samoa they were greatly used as itinerant workers. However, a central nursing school parallel to the medical school in Suva was started after World War II⁶⁸. Thus more personnel were becoming available and the extension of the health services became feasible, though highly dependent on the utilization of partly-trained natives working among their own people. Nevertheless, the results achieved were spectacular in relation to the very low cost per head.

Health campaigns concentrated on reducing the incidence of diseases which reduced the resistance of natives against the more lethal infectious diseases. The idea of a health campaign, which is so widely used in the Pacific today, was developed by Dr. Lambert of the Rockefeller Foundation. It was found that two native diseases noted as most universal, yaws and hookworm, can be dealt with quickly through simple treatments. Securing the cooperation of various island governments, notably the British jurisdictions, a series of travelling clinics were organized which ranged through village after village, covering quickly whole districts and islands. These campaigns were so successful that they contributed greatly to winning the islanders' confidence in the wonder drugs of the white men. Attempts to deal with more complicated diseases such as tuberculosis, typhoid, malaria etc. were begun in the 1950s under the auspices of the World Health Organization and other such international organizations⁶⁹. The weakness of the earlier campaigns, however, was the failure to follow up clinic visits with intensive medical work⁷⁰.

Today, the health services which are provided free by the island governments⁷¹ have been greatly expanded and the quality and quantity of both equipments and staff have also improved immensely. Government expenditure on health have increased in proportion to the expenditure on other services. In Tonga, for instance, about 15 per cent of the Governments annual expenditure is on health services⁷². To free the medical practitioners and qualified doctors from sanitary inspections, health inspectors have been trained in Fiji to carry out such duties. Sisters, in increasing numbers, have qualified from overseas and this has made the utilization of hospitals more welcomed by women, especially for childbirth. Some territories, like Tonga, possess mobile clinics which visit the villages regularly. Women's committees are active on many islands encouraging the improvements in sanitation and homes. A powerful stimulus for such movements has been provided by the Women's Pan Pacific Association. Construction of fly-proof latrines and bathing houses in every home is widely accepted today. However, in some areas the natives are still very conservative in this matter that even where governments have built privies, they are likely to continue to go as before to the beach or the bush. In an attempt to improve housing, particularly traditional housing with poor ventilation and damp, dark interiors the governments have, to some degree, been successful⁷³. Dental services are also provided and visits to the schools are made regularly. In the main towns garbage collection and disposal~~is~~ is provided, as well as articulated water supplies from mountain or underground springs which reduced the reliance on water collected in cement cisterns during rains. Livestock like pigs and goats have been prohibited to be kept in the towns⁷⁴. Thus the incidence and spread of infectious diseases have been reduced, particularly in the towns, though greater improvements could still be achieved⁷⁵.

Table 2.9 INHABITANTS PER HOSPITAL BED AND PER PHYSICIAN IN SELECTED ISLAND TERRITORIES, 1967, COMPARED WITH NEW ZEALAND AND AUSTRALIA, 1960

Island Territory	Inhabitants per hospital bed	Inhabitants per physician
Western Samoa	424	2,740
American Samoa	100	N.A.
Tonga	388	3,103
Cook Islands	338	875
French Polynesia	130	1,838
Trust Territory of the Pacific Islands	195	2,496
Fiji	307	2,325
Solomon Islands	N.A.	5,709
New Hebrides	N.A.	3,249
New Caledonia	67	N.A.
Australia	90	860
New Zealand	90	700

- Source: 1. Fiji Government, 1969 op.cit. p.76
 2. Tudor, Judy (ed), 1968 "Pacific Islands Yearbook 1967" Pacific Publications Ltd, Sydney

Note: Native Medical Practitioners are included although other health personnel are excluded

N.A. Not available

The number of persons per hospital bed and per physician in selected island territories in 1967 is given in Table 2.9. The figures are not really comparable because neither the competence and the qualification of physicians nor the quality of the service was taken into account. Moreover, using the Chi-square (χ^2) Test it was found that there was no significant correlation between either the crude death rates or the infant mortality rates and the number of inhabitants per hospital bed and per physician. Therefore the two health variables given in the table above are not really true indicators of health conditions in the territories because they do not reflect the extent and the use of preventive out-patient treatments. In comparison with New Zealand and Australia it is clear that there is plenty of room for improvements in the health services. But what accounted for the

success of health services and the disease control methods used? As in other developing countries the health methods 'are essentially new in degree of effectiveness relating to costs and personnel required to implement them'; their importation are far easier than ever before; and they 'have been almost unhindered by the social and structural obstacles besetting other forms of development'⁷⁶.

Changing Disease Pattern

The improvement in the methods of disease control, sanitation, domestic hygiene and nutrition, and health services have helped to change the pattern of mortality ~~from~~ various diseases, particularly infectious diseases. There ~~are~~ no figures to substantiate the claim although circumstantial evidence would seem to support the statement. There are diseases whose high incidence mean a high death rate and there are others, like skin diseases, which do not cause high mortality inspite of its wide incidence. Examples of diseases which belong to the latter category and were widespread in the Pacific are yaws and hookworms. Tuberculosis, as in every developing nation, was one of the main killer-diseases. Leprosy caused a slow death but its incidence was not as widespread as T.B. Typhoid and other respiratory diseases, as well as intestinal diseases, had their share in the past high mortality in the islands. I.D.Pool contended that the 'most important single contribution to the improvement in life expectation among the New Zealand Maoris came from a decrease in the TB death rate'. According to him '79 per cent of the decrease in the death rate of Maori males and 75 per cent for females 5 years and over is due to the significant decrease in this one cause'⁷⁷. In the 0 to 4 age group the control of acute diseases, for example infectious and respiratory disorders and certain acute diseases of the digestive system, by new methods introduced in the post-war period has been most significant in lowering mortality. There is no reason to believe that the changes in the pattern of mortality caused by these diseases have been very different in the Pacific islands, though New Zealand has greater resources to combat

these diseases.

Table 2.10 shows the number and percentage of deaths according to grouped causes recorded in the main hospitals in Fiji from 1960 to 1967. Although there is no conclusive evidence in the figures it appears that deaths from all forms of TB and infectious diseases have declined during the period. Had figures for earlier periods been available it is most probable that the decline in deaths caused by the above grouped diseases will be more noticeable. Moreover, throughout the period less than one-quarter of all deaths recorded occurred in hospitals, which means that deaths from degenerative diseases may be considerably higher than that shown since older people are less likely to be admitted to hospitals. However, this is a moot point and only further research into the causes of death in the Pacific islands would throw more light on the subject. In Melanesia, deaths from malaria have been reduced and, in addition to the more common causes of death in the island territories, it has contributed to the changing pattern of mortality.

In the island territories today common diseases which are health hazards are filariasis (in Polynesia and Micronesia), malaria (in the Solomon Islands and Northern New Hebrides)⁷⁸, TB, leprosy, influenza, typhoid fever, pneumonia, skin diseases such as ringworm, enteric infectious diseases and diarrhoeal diseases. Yaws have been almost completely eradicated by mass inoculations, although it was once endemic and no child would ever reach adulthood without having suffered from it. TB has been considerably reduced, as already mentioned, through careful diagnosis and mass immunization campaigns. Likewise, leprosy is now less common and in almost every island there is a leprosarium attached to the main hospital. Sprays and pesticides are being used in reducing the breeding grounds of malaria and filariasis mosquitoes. This has been so successful in some islands that the filaria vector has been considerably reduced and filariasis has almost disappeared. Eye diseases, especially conjunctivitis, are still common in some islands. In French Polynesia and in parts of Suva, Fiji, venereal diseases still remain

Table 2.10 NUMBER AND PERCENTAGE OF DEATHS IN HOSPITALS IN FIJI BY GROUPED DISEASES, 1960-67. PERCENTAGE OF DEATHS

Grouped Diseases	Percentage of Deaths									
	1960	1961	1962	1963	1964	1965	1966	1967	1960	1967
1. All Infectious and Parasitic diseases including influenza	37	60	33	33	28	16	18	26	6.69	5.62
2. TB (All forms)	49	42	44	31	32	40	15	23	8.86	4.08
3. All diseases of the Respiratory System except influenza	76	68	51	45	75	50	44	50	13.74	8.88
4. Degenerative diseases	157	158	152	124	157	145	121	165	28.39	29.31
5. Diseases of early infancy, Birth injuries, post-natal asphyxia	38	54	12	24	51	117	26	67	6.87	11.90
6. Intestinal diseases	38	60	28	34	46	41	26	61	6.87	10.83
7. Remaining diseases	130	174	142	141	126	123	111	137	23.50	24.33
8. Accidents and violence	28	8	15	16	30	28	25	22	5.06	4.05
Total Deaths in Hospitals	553	636	477	521	541	562	393	563	100.00%	100.00%
Total Deaths in Fiji	2622	2622	2653	2510	2720	2383	2484	2456		
Percentage of Total deaths recorded in hospitals	13.46	24.26	17.98	20.76	19.89	23.58	15.82	22.92		
Hospital Death Rate per 1000 persons	1.35	1.56	1.13	1.19	1.20	1.21	0.82	1.16		
Crude Death Rate in Fiji (All Races)	6.75	6.53	6.30	5.78	6.06	5.13	5.20	5.07		

Source: Fiji Government, 1969, op. cit pp. 24, 96-7.

a problem among the waterfront girls⁷⁹. Annual epidemics of influenza still occur although it is no longer serious. Measles no longer appear in epidemic proportions and immunization campaigns have already been undertaken against this disease as well as whooping cough, poliomyelitis and tetanus. Infantile diarrhoea is still a danger to young children. The occasional outbreak of amoebic dysentery, especially in the hot seasons, and enteric infectious and diarrhoeal diseases reflect bad personal hygiene, food handling and use of contaminated water. The use of contaminated water, especially in atolls where water is scarce, has often led to increases in the number of cases caused by water-borne bacteria to epidemic proportions. The majority of women still give birth to their babies in their homes though attended by trained midwives or medical practitioners. There is no possibility that 80 per cent of all expectant mothers will have their babies born in hospitals because of the difficulty of communication between the islands. Some infants are still known to be suffering from malnutrition in Western Samoa, Gilbert and Ellice Islands, Cook Islands and Melanesia. However, what may be considered in Western nations as malnutrition may not be so considered in the islands. As the knowledge of better health care is being filtered to every strata in the society the disease pattern will continue to change, especially as more people are now entering the age-groups beyond 60 years. Thus diseases associated with old age may increase in the future.

Potentiality of morbidity from the fatal diseases has been markedly reduced through the control of the environmental links in the organic-host cycle of infectious diseases during comparatively cheap operations. Nevertheless, some of the diseases to which islanders have been exposed most frequently, particularly TB, cannot be eradicated so readily; yet most of the overall decline in mortality came from a decrease in these causes.

4. CONCLUSION

— What are the prospects for future declines? It has been noted that with the exception of the Solomon Islands and the New Hebrides, the island territories are now enjoying low mortality rates similar to those of industrialized countries. Substantial decline in mortality, though partly due to the shifting age structure, is primarily the result of the extension of health services, particularly in the last two decades since 1950. Although great progress has been made in the application of new technology, such as vector control and mass immunization, commensurate progress has not been made in the classical medical services, sanitation, education, level of living or other determinants of mortality. Hence, it may be argued that there is still scope for reductions in mortality in the islands, especially in Melanesia. However, this will involve a shift in emphasis from eradicating acute disorders to reducing the age-specific mortality rates at later adult life, early infancy and old age. To do this means utilising and extending the existing infrastructure of personnel, buildings and institutions and channelling a significant proportion of the national incomes to the advances in medicine and surgery. Considering the present economic state of these micro states one cannot help but feel that such demands are not within their scope to deal with since they are increasingly dependent on grants-in-aid for such schemes. Moreover, the very nature of the fragmentation of these territories makes improvements of the existing systems very costly. Possibly, there may still be some decline in mortality in future but any substantial decline will be achieved only in the Solomons and the New Hebrides. The initial rapid decline in the past since World War II has started to decelerate, but only the availability of more accurate up-to-date figures can substantiate this.

The average longevity of life in the island populations has continued to increase. As more people survive to reach late adulthood and old ages, mortality may then well increase in the future. Furthermore, if the attempts at present to reduce fertility through family planning become successful then a shift in the population structure will be instrumental in a slight increase

in mortality, particularly when considering the present state of health services. On the other hand, if the fertility is not reduced continued growth will lower the present standard of living which cannot really be maintained, let alone improved. Thus mortality may increase again. But at present, the fluctuations in mortality as a result of epidemics have been slight or hardly noticeable because of the circumscribed effects of epidemics. Nevertheless, random fluctuations in these small populations still remain a feature of mortality.

Mortality in the Pacific territories is almost an ignored variable of the demographic transition although its role in bringing about the great publicity on the 'population explosion' has been acknowledged and appreciated by government health authorities. Little study has been made on mortality although much more intensive investigation into the interrelations between mortality and other spheres of population problems is highly desirable. The present stress had shifted to fertility programmes in one guise or another, and medical and health departments have integrated family planning programmes into the health services. In view of the present levels of mortality, its subjection to annual random fluctuations and the existing state of health and medical facilities one can not prognosticate with any certainty the future course of mortality in the island territories, although it is likely to continue to decline during the ^{early} 1970s in most territories, if only slightly.

NOTES AND REFERENCES

1. Pool, D.I., 1968, "The Isolation of Various Components of the New Zealand Maori Mortality Decline, 1945-1961", in 'Proceedings of the Sydney Conference, Australia, 21 to 25 August, 1967' International Union for the Scientific Study of Population (IUSSP), Canberra, Australia, p. 510.
2. McArthur, N., and Yaxley, J.F., 1967, op. cit p(viii) of Introduction
3. During 1946 to 1956 about 10 or 11 per cent of mortality in Fiji escaped registration. In Tonga between 1921 and 1939 mortality registration was about 80 per cent complete and between 1939 and 1956 it was a little over 80 per cent complete. Mortality registration in Western Samoa was less complete. It was 75 per cent complete between 1906 and 1911; a little more than 50 per cent complete from 1926 to 1936; only 65 per cent complete from 1936 to 1945; 75 per cent complete from 1945 to 1951 about 85 per cent complete between 1951 and 1956 and is said to have deteriorated since then. See McArthur, N., 1968, op. cit, pp. 46-54; 89-92 and 151-153.
4. Basavarajappa, K.G. and Tye Cho Yook, 1969, "Mortality" in "Population Change: Asia and Oceania" (ed) by Barrie, W.D. and Cameron, M., IUSSP, Australian National University Press, Canberra, p.51. The age-sex-specific rates of the countries mentioned for 1963 were used for the calculation of the standardized death rates.
5. In Tonga in 1957 epidemics of measles, whooping cough and poliomyelitis broke out, but the effectiveness of the medical services is illustrated by a rise of only 2 per 1000 people in mortality from 6.9 in 1956 to 8.9 in 1957. However, such success can be so fragile if there is no co-operation from the people. This was demonstrated in Western Samoa during the "Mau" period of civil disturbance when the work of the Health Department was greatly hindered and in 1931 the death rate for infants rose to the level of over 100 per 1000 live births, according to the inexact registration. According to Pirie, the standard of rural public health has deteriorated in the last 5 years (See Pirie, P., 1967, "Samoa: Two Approaches to Population and Resource Problems", prepared paper for the Symposium on the 'Geography of Population Pressure on Physical and Social Resources', Pennsylvania State Univ., Sept. 17-23, 1967, p.21)
6. Compare the low crude death rates for western Samoa in this period 1925-1939, with the information in Footnote (3) and it appears that W.Samoa's crude death rate in the period 1925-1935 should be almost double that shown in the Table 2.1.
7. McArthur, N., 1967, op. cit p.78
8. Kennedy gave crude death rates of 17 per 1000 in the 1920s for Tonga and 9 per 1000 in the 1930s, and infant mortality rates of 110 and 57 per 1000 live births for each decade respectively (See Kennedy, T.F., 1961, "Land, Food and Population in the Kingdom of Tonga", in Economic Geography Vol. 37. pp. 63 and Simkin, C.G.F., 1945 "Modern Tonga" in 'New Zealand Geographer', Vol. 1, No. 2, October. pp 99-118.
9. See Oliver, D.L. 1961, "The Pacific Islands" (Revised Ed.) The Natural History Library, Doubleday & Co. Inc., New York, pp. 371-390 for a brief description of the war and the involvement of the islanders in the Pacific War.
10. McArthur, N, 1967, op. cit p.78. The age-specific rates were applied to a standard population of 200,000 contributed to equally by Tonga, Fiji, the two Samoas, Cook Islands and French Polynesia in 1956. Standardized mortality rates for Western Samoa in 1950-2 was 7.8 and 6.8 per 1000 in 1955-7. (p.136). In American Samoa the standardized death rate was 16.9 per 1,000 in 1939-41, 9.9 in 1949-51, and 8.5 in 1955-57 (p.155). For French Polynesia the Standardized rate was 11.3 per 1000 persons in 1955-7 (p.344).

11. For a brief account of mortality decline in the Cook Islands, see Beaglehole, E., 1957, op cit. pp 135-136. Like other anthropological records of the Pacific, he gives a fairly accurate picture of the changing health conditions.
12. Naval Intelligence Division, 1945; op. cit Vol. I. p.349.
13. Keesing, F.M., 1945; op. cit, p.309 and 61.
14. The figure for the 1930s differs from Kennedy's figure of 57 but closer to Simkin's figure of 87 infant deaths per 1000 live births for 1934 to 1938. See Footnote (8) above.
15. A lot of literature has been written about the Pacific which conveys the picture of the dangers of childbirth, e.g. Hogbin, I. 1934 "Hill People of Northeast Guadalcanal", in 'Oceania', Vol. 4. pp.77-83; Grimble, A. 1963, "A Pattern of Islands", John Murray, London to name only two.
16. The higher female mortality for the Indo-Fijian population in Fiji is similar to that seen in India and Pakistan.
17. Pool, D.I., 1968, op. cit p.520. Pool showed the following differential change in mortality distribution in percentage for each age-group of the New Zealand Maori population between 1945 and 1956. See Table Below

NEW ZEALAND MAORIS: CHANGE IN PERCENTAGE OF DEATHS' DISTRIBUTION WITHIN AGE-GROUPS
5-70+ YEARS, 1945-56

Age-group	Males		Females		Both Sexes	
	1945	1956	1945	1956	1945	1956
5-19	21.4	12.0	20.8	8.7	21.2	10.8
20-39	21.6	17.0	25.9	16.3	23.8	16.7
40-59	21.4	25.8	20.2	32.3	20.8	29.1
60-70+	35.3	45.0	33.0	42.9	34.2	44.0

18. McArthur, N., 1967 op. cit p.124.
19. This estimate is based on the experience of other countries both industrially developed and developing prior to their demographic transition take-off. Also see estimates given by Thomlinson for various historical periods in Thomlinson, R., "Population Dynamics: Causes and Consequences of World Demographic Change" 1965, Random House, New York. p.75.
20. Taeuber, I.B., 1965. op. cit p.230.
21. Scragg, R.F.R.; 1968, "Mortality Decline in a Sample Population in New Guinea" in 'Proceedings of the Sydney Conference, Australia, 21 to 25 August, 1967' IUSSP, Canberra, Australia. p.563
22. Pool, D.I., 1968, op. cit p.519
23. The estimate is based on Vielrose's contention that if the crude death rate is between 20 and 30 per 1000 persons than life expectancy at birth should not exceed 55 years but lower if the crude death rate is above 30 and higher if it is less than 20 per 1000. Vielrose, E., 1965 "Elements of the Natural Movements of Population", Translated from Polish by J.Dobosz, Pergamon Press, Poland, p.219
24. For the Indo-Fijian and probably Melanesians except Fijians the overtaking of the life expectancy of males by females came somewhat later. In 1956, life expectation at birth for the Indo-Fijian males was 64 years whereas for females it was 62 years, because of the higher death rate of women. But in 1966 the situation was reversed and the females enjoyed a life expectancy at birth of 67 years whereas the males had a life expectancy of 65 years. See Brookfield, H.C. & Hart, Doreen 1970, "Melanesia: A Geographical Interpretation of an Island World",

Methuen & Co. Ltd, London. p.293.

25. McArthur, N & Yaxley, J.F., 1968. op. cit p.viii

26. McArthur, N. 1967, op. cit p.97; 66. In 1956 the population of both Samoas had a life expectancy at birth of over 60 years for males and females, probably 65 years. For the Polynesians in French Polynesia they enjoyed a life expectancy at birth of 54.4 years for males and 58.5 years for females.

27. McArthur, N. 1967, op cit. p.231

28. McArthur, N. & McCaig, J.B., 1964 op. cit p.62

29. Pool, D.I., 1967, op. cit p.513

30. McArthur, N., 1967, op. cit p.94. Also see pp.231, 344 for the probability of survival in the Cook Islands and French Polynesia.

31. The words 'island group' are used with two different meanings implied within the context. It is used to refer to an administrative territory and also sometimes to a group of islands within a territory, for instance, Tonga is comprised of 3 main groups, Tongatapu, Ha'apai and Vava'u Groups, French Polynesia of the Marquesas, Australs, Tuamotus, Gambier Islands and Tahiti, Fiji of the Lau Group, and the Yasawas besides the main islands, and so on.

32. In the Gilbert and Ellice Islands, Tokelau and the United States Trust Territory of the Pacific Islands the islands are so numerous but all of small area, so that large concentrations of population as seen in Polynesia and Melanesia are not really possible.

33. Many territories still rely on locally trained dressers, dispensers and nurses to staff the dispensaries. An example of the disparity between the islands can be illustrated by Tonga where the Tongatapu Group averaged 3423 people per physician, Ha'apai averaged 2648 per physician, Vav'au averaged 4511, 'Eua 3,391, Niuatoputapu 1,395 and Niuafu'ou 599 per physician. Although the average per physician is high for Tongatapu but the best trained men, nurses, and other personnel are there as well as the main hospital. In the outer islands all the physicians are either Fiji trained or locally trained.

34. For more information on the difficulty of inter-island transport: see. Couper, A.D., 1967 "The Island Trade: An Analysis of the Environment and operation of Seaborne Trade among three Island Groups in the Pacific". Unpublished Ph.D. Thesis, A.N.U. Canberra or Annual Reports for various territories such as "The Premier's Report" in Tonga, Annual Reports for the Gilbert and Ellice Islands Colony, Annual Reports for the British Solomon Islands Protectorate and Reports for the Cook Islands.

35. Islanders, like all primitive societies, believed that illness and deaths, except deaths at old age, were caused by supernatural powers and, therefore, they tended to be fatalistic in their outlook. See such anthropological works as Firth's, R. 1967 "Tikopia Ritual and Belief" 2nd ed., George Allen and Unwin Ltd, London; Firth, R., 1957 "We The Tikopia" 2nd ed. George Allen and Unwin Ltd, London, and Fischer, J.L., and Fischer Ann M., 1966, "The Eastern Carolines" Human Relations Area Files Press, New York. Firth, R., 1957, op cit., p. 139, also gives a very good description of artificial feeding of babies which was still widely used up to the 1950s in the more advanced islands in the Pacific.

36. Except the figures published in the annual reports about mortality, the censuses make no reference or very limited reference without any figures to the mortality in the island territories.

37. McArthur, N., 1967, op cit. p.217. See also Tables 1.6 and 1.7 in Chapter I. Also Naval Intelligence Division, 1945, op. cit Vol. IV p.326.

38. Tudor, Judy (ed), 1968, "Pacific Islands Yearbook 1967", Pacific Island Publishers, Sydney. p.48.

39. Cochrane, D.G., 1969, "Choice of Residence in the Solomons and a focal land model", in Journal of the Polynesian Society, Vol. 78, No. 3. p.335
Also Brookfield, H.C., and Hart, Doreen, 1970, op. cit p.72. Also Brookfield and Hart contended that the distribution of malaria affects distribution of population and the building of artificial off-shore islands in the Solomons and New Hebrides before the intensification of the white men's influence and the spread of malaria to formerly malaria-free areas.
40. See Chapter I p.84 for definition of 'urban' area.
41. All complicated cases are sent to the Colonial War Memorial Hospital in Suva from all territories in the Central and South Pacific.
42. Cash incomes per head vary but in Malaita in ^{the} Solomons it varies from \$17 to \$41. See Brookfield, H.C. and Hart, Doreen, 1970, op cit. p.303-4. In Tonga, according to a survey by Walsh in Nuku'alofa in 1963 cash incomes from a bush allotment ('api tukuhau) is about \$T200 and very much less in the outlying islands, See Walsh, A.C., 1969(a), "Patterns and Problems of Urbanization and Population Movement in Tonga", unpublished paper. p.5.
43. In the villages fishing depends on the weather and fish is not too plentiful as often believed by outsiders. In fact the reefs are over-fished. Demands for meat is great and even imported meat cannot satisfy demands. Villagers in Tonga and in most other islands depend heavily on starch food and meat may only be consumed on feast days and Sundays. For the towns the taste and the eating habits of the people are closer to that of Europeans. See Cunningham, G. 1961, "Food for Tahiti" in 'Economic Geography', Vol. 37, No. 4. pp. 347-352. See Walsh, A.C., 1969 ~~(a)~~ op. cit. p.3. for description of the types of housing in Tonga or Kennedy, T.F. 1957, op. cit.
44. Zwart, F.H.A.G., 1968 'Report on the Census of the Population 1966' Council Paper No. 9, Suva, Fiji. p.6.
45. Morrell, W.B., 1960 "Britain in the Pacific Islands", Clarendon Press, Oxford p.425, 433.
46. Atolls of Melanesia have been inhabited by Polynesians for long periods, e.g. Wallis Islands in New Caledonia; ~~Ony~~ Ontong Java, Rennell Island and Tikopia in the Solomons and artificial islands off-shore from the main islands in the New Hebrides.
47. Because of the lack of capital in the public sector, private doctors and dentists are in practice ^{only} in the more cosmopolitan, urbanized towns, i.e. Suva, Noumea and Papeete.
48. Ward, R. Gerard, 1959, "The Population of Fiji", in 'Geographical Review' Vol. 49, No. 3. p.324
49. McArthur, N., 1967, op. cit. p.56.
50. McArthur, N., 1967, op. cit. p.337.
51. ~~Although~~ The islanders' first contact with European medical knowledge, such as they were at the time, was through visiting ships' doctors, e.g. in the island of Nomuka in Tonga Captain Cook sent the ship's doctor to dress the wounds of a man who had been shot stealing muskets from his ship, in 1773 during his second voyage. Luke, H., 1954 "Queen Salote and Her kingdom", Putnam, London, p.32.
52. There are numerous writings by missions in the Pacific during the early period of missionising the natives. See Hilliard, D., 1970 "Bishop G.A. Selwyn and the Melanesian Mission", in 'New Zealand Journal of History', Vol.4., No.2, pp 120-137.
53. McArthur, N., and Yaxley, J.F., 1968, (op.cit. p.6) cited that during an epidemic in the 1860s in Tanna in the New Hebrides, the natives refused medical treatment offered by the missionaries but dig holes where they laid themselves to be cool and literally died in their graves.

54. Until the Makogai Island Leprosarium, to which lepers from all over the Pacific islands were formerly sent, was moved to Suva it was run by nursing nuns of the Roman Catholic Order of St. Mary under the direction of a senior medical officer. Today in Polynesia and Micronesia the Catholic nuns act only in a consultative capacity, though they sometimes sell medicines to the natives.
55. Keesing, F.M., 1945, op. cit p.200.
56. In the Solomon Islands the Methodist mission, Seven Days Adventist Mission, Catholic mission and the Melanesian^{Mission} all run hospitals and in the New Hebrides they are joined by the Presbyterian and the Church of Christ missions.
57. For more information on the health conditions in Fiji in the last decade of the nineteenth century and early twentieth century see Thomson, B, 1968 Reprint, "The Fijians: A Study of Customs in Decay", Colonial History Series, Dawsons of Pall Mall, London, pp. 207-277.
58. Maude, A., 1965, "Population, Land and Livelihood in Tonga", Unpub. Ph.D. Thesis, ANU, Canberra, Australia. p.48.
59. In the 1920s and 1930s Tonga was said to be the most advanced in providing latrines for each dwelling. These were crude outhouses call the 'pit' latrine. In the Pacific today this is the most widely used latrines though somewhat modified and improved in the line of the types used in the Philippines. In the two Samoas latrines were built on stilts on the sea shore and today they are still a feature of the Samoan landscape. As for water supply problems in the atolls, this is only appreciated when one has experienced the unreliability of rainfall and the wells become saline and brackish - a breeding place for mosquitoes.
60. During the outbreak of the 1918 pandemic, American Samoa was one of the few places in Polynesia which were not affected and its being free from influenza was the result of quarantine measures taken by the administrative authorities.
61. Samoa was partitioned in 1900 between the United States and Germany. Tutu'ila and Manu'a were given to the U.S.A. where they built a naval base, and Savai'i, 'Upolu and the western islands were taken by Germany when Britain gave her consent once Germany had given concessions to Britain in South Africa.
62. L.M.S. London Missionary Society.
63. Pirie, P., 1967, op. cit p.3.
64. Before the construction programme for new dispensaries in Tonga went into operation in the late 1950s, the dispensaries in Nomuka and 'Eua, typical of other island dispensaries, were old single-room buildings with holes in the walls, floor and roof. The medical practitioner also acted as the dentist and he often used rusty, unsterilized instruments which caused the patients more pain rather than relieving it. Supplies of medicine were not regular and more often spoiled by the rain that dripped through the roof and walls.
65. Brockfield, H.C. and Hart, Doreen, 1970, op. cit p.73.
66. Wives of European administrators in the past, and even today, helped in forming women's committees through which better knowledge about child and maternity welfare were disseminated; e.g. the work of the wife of the American Consul in Western Samoa and Fiji in the 1920s and the work of Mrs. Grimble in the Gilbert and Ellice Islands during the period 1913 to 1920.
67. Traditionally the natives of the Pacific islands cook their food in earth ovens but when Europeans came with their cooking utensils the natives began to boil their food in pots and use plates, cups, etc. which helped to save time from the laborious traditional way of preparing and cooking food. However, they used it most unhygienically at first but gradually improved as a result of increasing acculturation. Similarly, the way clothes were worn, even when too dirty or wet, often caused sickness. The new modesty introduced by the missionaries turned women into mother hubbards.

68. Today the Suva Medical School is closely affiliated with the new University of the South Pacific, established in 1967, as well as the training of other health personnel. In 1965, a medical school was opened in Port Moreby, in Papua-New Guinea, to which all Western Melanesia could send natives to be trained as medical practitioners. Except for the sisters who are trained in either New Zealand or Australia, all nurses are locally trained and though there is a quick turnover as they marry, this helps the dissemination of ideas of better health for they often help as midwives in villages.

69. A great force in promoting better health in the Pacific is the South Pacific Commission (S.P.C.) which was started after the war by the United States, New Zealand and Australia with its headquarters in Noumea. All the island territories are members except Tonga which only send an observer to the conference though benefits equally from it as the full members.

70. In the French and Japanese territories the health campaigns organized during the interwar years were not used in any extensive scale.

71. Only aliens not employed by the governments of the islands are expected to pay for the health services but recently there have been moves to charge patients for the cost of hospitalization. In Tonga it is hoped that it will help reduce the use of the 'attendant system' whereby relatives of the patient become squatters on the hospital grounds to be close to the patient and to bring him food and comfort, not realising that their presence lead to the hindrance of the work of doctors and nurses. Moreover, they often smuggle in herb medicine or smuggle out their patient in defiance of the law. There is no national health insurance or social security tax in the islands.

72. The Cook Islands spends 25 per cent of her annual budget on health services and the Gilbert and Ellice Islands spends 13 per cent of her budget.

73. The Japanese campaigned against bad housing in their mandate territory in Micronesia, i.e. the Marshalls, Marianas and Carolines, so successfully that the decline in mortality was attributed to this. See Freeman, O.W. (ed); 1951, "Geography of the Pacific", John Wiley & Sons Inc., New York. p.249. In Tonga the average number of persons per dwelling in 1956 was 6.53 for the Tongans and 2.51 for Europeans, which was comparable to an average of 2.86 for Europeans in Fiji in 1946. By 1966 the average number of Tongans per dwelling had increased to 6.7. Although the population in the islands are now growing at a faster rate than housing, the quality of housing has improved, for it has become a status symbol. The alarm caused by the lack of housing, often considered before merely as shelters, has led to the development of housing schemes in some territories such as ~~the~~ American Samoa and Fiji.

74. In Tonga there is a police squad whose duty it is to enforce this regulation and destroy livestock illegally reared in the town. Such moves are important in the attempt to destroy possible carriers of disease. For more information on the vector carriers of diseases as well as the importance of animals as carriers, see May, J.M. (ed), 1961, "Studies in Disease Ecology" Hafner Publishing Company, Inc., New York. May, M. 1958 "The Ecology of Human Disease", M.D. Publications, Inc., New York or any other Medical Geography Book.

75. In Easter Island TB is poorly controlled, especially when those infected continue to live with their families and drugs were administered only at random intervals. This case may be an extreme one but it illustrates the room for improvements as well as the difficulty of improvements in remote outlying islands. Beighton, P. 1966, "Easter Island People" in Geographical Journal, Vol 132, No. 3. pp. 355.

76. Stolintz, G.J., 1967, "Recent Mortality Declines in Latin America, Asia and Africa: Review and Some Perspectives" in 'World Population Conference, 1965' II. New York. pp 379-382.
77. Pool, D.I., 1968, op. cit, p.510. One-fifth of all deaths in Tonga in the 1930s was caused by TB closely followed by deaths from pneumonia and typhoid fever. Simkin, C.G.F., 1945; op cit p.105.
78. In Melanesia, as everywhere else, malaria is carried by the anopheles mosquitoes and high rainfall in Melanesia helps its survival, but the filaria is carried by the nocturnal-biting culex mosquitoes though anopheles is sometimes a carrier. In the malaria-free islands of Polynesia, New Caledonia, and Micronesia filaria is carried by the non-periodic aedes mosquitoes.
79. Those who contact yaws, according to the medical men, are immune to syphilis. The eradication of yaws in many islands has caused some anxiety about a possible increase of the cases of syphilis which is very rare.

CHAPTER THREE

FERTILITY

Whereas mortality, (the occurrence of deaths), when it is excessive can bring about the extinction of a population, fertility (the occurrence of live births) determines the survival of the population. Hence, fertility normally exceeds mortality and migration. Therefore, it is the major determinant of population growth, though not independent but closely interwoven with other social, economic, political and psychological factors as well as migration and mortality. Although fertility is voluntary and can be more controlled than mortality; man as a rational being has always been reluctant to change his fertility habits while, on the other hand, he is more than willing to accept measures that reduce mortality. In contrast to mortality which is 'essentially individual, inevitable and involuntary, fertility is none of these, and is far less constant and predictable'¹. It is more influenced by many complex and intricate factors inspite of the fact that women give birth to children only during a short period of their lives, whereas death may occur at any age. In this chapter an attempt is made to discuss the levels and trends in fertility, the main factors causing high fertility, the differentials in fertility, the effects of the recently introduced family planning programmes and the future prospects for fertility decline in the Pacific island territories.

1. LEVELS AND TRENDS IN FERTILITYCurrent Levels of Fertility

As a region, the crude birth rate for the area under study is probably about 35 per thousand. However, apart from Norfolk and Pitcairn Island, the crude birth rate ranges from 28.7 for Guam to 45.6 in French Polynesia. In the absence of up-to-date birth statistics we may take the fertility data for the second half of the 1960s, and in circumstances where such data are lacking the statistics for the first half of the 1960s will be used to represent the present day fertility in the islands. A warning should be given that the

statistics given have limitations because of the incompleteness of birth registration in the islands.

In comparison with low fertility countries with birth rates below 20 per thousand the various island territories have high birth rates. On the other hand, there are many other developing nations in Africa, Asia and Latin America with birth rates much higher than those of the island territories². So in order to avoid any sweeping statement about fertility in the islands as expressed in crude birth rates it has been necessary at this stage to divide the crude birth rates into three categories of quite high (over 35 per thousand) moderately high (30 to 35 per thousand), and very low (under 20 per thousand). Island territories in Eastern Polynesia and Western Melanesia fall under the first category. In Eastern Polynesia, the Cook Islands have a crude birth rate of 41, French Polynesia 45, Niue 38, and Western Samoa between 36 and 40³. Both the New Hebrides and the Solomon Islands, in Western Melanesia, have crude birth rates estimated by McArthur and Yaxley in 1967 to be about 45 per thousand⁴. Nauru has qualified, in the last five years, with a crude birth rate of about 43, to join this group. Except in French Polynesia, the child-woman ratios for these island territories are over 1,000, i.e. children under 5 years of age per thousand women aged 15-44 years. In the Central Pacific the Tokelau Islands may also come under this category. Although no recent statistics are available, in the late 1950s, Tokelau had a crude birth rate of 46 per thousand and there is no reason to believe that the crude birth rate is below 35 today even if it has declined.

The island territories with moderately high birth rates are mainly in the central Pacific: in Micronesia, Eastern Melanesia and Western Polynesia. In the late 1960s, Fiji's crude birth rate was about 34 (30.2 in 1969), and it may be slightly lower than that in 1970 because of the vigorous implementation of birth control programmes. The present crude birth rate in Tonga and American Samoa is just over 30 per thousand and in Guam it is about 29. In New Caledonia the recorded crude birth rate for the period 1965 to 1969 was

Table 3.1 CRUDE BIRTH RATES FOR SELECTED PACIFIC ISLANDS, 1920-69

Island Territory	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965
	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69
American Samoa	-	-	28.3	28.0	34.1	42.8*	40.8	40.1	42.1	35.5
Cook Islands	-	36.9	38.0 ^x	40.9	39.6	41.4	41.5	47.1 ⁺	46.1	41.4*
Fiji Islands ¹	32.0*	32.5	35.8	37.1	38.8	40.2	40.0	40.7	39.2	33.8 ^x
French Polynesia	-	-	-	-	-	39.8	42.4	45.5*	45.3 ⁺	45.6 ^x
Gilbert & Ellice Is	-	-	37.8 ^x	34.9*	32.1 ^x	34.3	34.1	34.0	33.4 ^x	23.8*
Guam	-	-	-	-	-	57.6 ⁺	29.3	33.9	37.6	28.7
Nauru	-	-	-	-	-	28.3*	29.0	32.0	31.6	42.8*
New Caledonia	-	-	-	-	-	-	26.9 ["]	34.0*	32.4	35.1 ^x
Niue	28.1*	29.0	32.9	36.6	32.5	37.5	41.7	45.0	44.5	34.9
Norfolk	-	-	-	-	-	15.0 ^x	15.1	18.9	11.9	20.2
Pacific Is. T.T.	-	-	36.0 ^x	36.7 ⁺	-	32.7*	31.4 ^x	31.8	33.9	34.4 ^x
Pitcairn	-	-	20.0 ⁺	13.0 ^x	16.3	19.2*	31.4	34.4*	5.0	11.3 ^x
Tokelau	-	-	-	-	-	34.2*	-	46.3	-	-
Tonga	-	36.7	36.2	37.9	36.7	39.7	39.3	36.5	33.4	33.2 ^x
Western Samoa ^a	51.2 ⁺	39.4	30.2	34.0	37.4	38.0	37.1	38.9	33.0	28.6
Australia	24.4 [/]	21.6 [/]	17.6	17.2	19.5	23.1	23.0	22.6	21.9	19.6
New Zealand	23.0 [/]	20.2 [/]	18.1	18.8	22.8	26.5	25.8	26.3	25.8	22.6

Source: 1. U.N. Demographic Yearbooks 1965, 1966, 1968 and 1969 pp 298, 216-200 pp. 94; 133

2. Annual Reports of the Department of Justice, Tonga.

Symbols: 1. Prior to 1949 crude birth rate included late foetal deaths.

a Birth registration estimated to be 75 per cent complete.

/ Europeans only and Maoris excluded.

* One year only.

" One year only and include late foetal deaths.

+ Two year average.

* Three year average.

x Four year average.

about 35. Meanwhile, in the Trust Territory of the Pacific Islands the crude birth rate was about 34 although if registrations were complete it would be closer to 40 per thousand. Two island territories, which are exceptions in the region, are Norfolk Island and Pitcairn in which the crude birth rate has been variable though often well below 20 per thousand.

The crude birth rate does not show that reproduction is near the biological maximum of about 55 live births per thousand⁵. However, the crude birth rate is not a satisfactory index for measuring fertility. The gross reproduction rate is a much more satisfactory measurement of fertility because it is not influenced by the age structure of the population like the crude birth rate and fertility ratios. The gross reproduction rates range from about 2.0 in Fiji and New Caledonia to about 3.6 in the Cook Islands. In Norfolk and Pitcairn the population is not replacing itself and the total fertility rate is well below 3,000. All the island territories in East Polynesia and West Melanesia have gross reproduction rates of 3.0 and above. The total fertility rates are about 6,000 and in Tokelau, and the Cook Islands they are over 7,000. The general fertility ratios for these islands are over 200. Some idea of the fertility in the island territories may be seen in the crude birth rates in Table 3.1 and the child-woman ratios, total fertility and gross reproduction rates in Table 3.2.

Most human populations in pre-modern times had gross reproduction rates which ranged from about 2.5 to 3.5 and most of the Pacific islands have gross reproduction rates that fall within this range. Most high fertility countries today have an average gross reproduction rate of more than 3.0 (the maximum level possible is about 4.0). In the low fertility nations the gross reproduction rates range from about 0.9 to 1.8⁶. Thus, for the Pacific islands as a region the average gross reproduction rate will be close to 3.0, with the total fertility rate around 6,000 and the general fertility ratio about 200. This is high fertility and in Figure 3.1. the age-specific fertility rates for various island territories are shown. The average age-specific fertility rates for American Samoa for the period 1955-60 were quite typical of the age-specific

Table 3.2 CHILD-WOMAN RATIOS. TOTAL AND GROSS FERTILITY RATES FOR SELECTED PACIFIC ISLANDS FOR VARIOUS YEARS

Island Group	Census Year	Child-Woman Ratio	Total Fertility	Gross Fertility
American Samoa	1920	722	N.A.	N.A.
	1930	809	N.A.	N.A.
	1940	836	5585	2.714
	1950	895	6235	3.030
	1960	947	6688	3.257
British Solomons ^x	1959	766+	N.A.	N.A.
	1955-60	N.A.	5678	2.762
Cook Islands	1936++	794	6510	3.163
	1945	777+	6090	2.091
	1951 ^N	873	7170	3.091
	1956	940	7503	3.485
	1955-60	N.A.	N.A.	3.653
	1961	1026+	N.A.	N.A.
Fiji	1966	1180	N.A.	N.A.
	1946	814+	N.A.	N.A.
	1956	832+	5577	2.710
	1961	N.A.	5697	2.769
	1964*	N.A.	5101	2.479
	1966	843	N.A.	N.A.
French Polynesia	1968*	N.A.	4001	1.948
	1946	597	N.A.	N.A.
	1951	657	5235	2.544
	1956	784	6035	2.933
Gilbert & Ellice Is.	1962	865	N.A.	N.A.
	1947	539+	N.A.	N.A.
	1963	913	N.A.	N.A.
Guam	1968	878	N.A.	N.A.
	1950	776+	5352	2.607
	1960	951	5887	2.861
Nauru	1961	1127	N.A.	N.A.
New Caledonia	1956	600+	N.A.	N.A.
	1955-60	N.A.	4901	2.381
	1963	715	4475	2.179
Niue	1945	588+	N.A.	N.A.
	1951	623+	N.A.	N.A.
	1956	800+	N.A.	N.A.
	1961	986+	6669	3.241
	1966	1089	N.A.	N.A.
New Hebrides	1967	875	N.A.	N.A.
Norfolk Island	1947	340+	N.A.	N.A.
	1954	495+	N.A.	N.A.
	1961	446+	N.A.	N.A.
	1966	455	N.A.	N.A.
Pacific Islands T.T.	1958	868+	4469	2.172
	1963* 4	N.A.	4842	2.368
	1968* 4	N.A.	5998	2.921
	1969	795	N.A.	N.A.
Tokelau Islands	1951	741+	N.A.	N.A.
	1955-60	N.A.	7038	3.428
	1961	941	N.A.	N.A.
Tonga	1939	790	N.A.	N.A.
	1956	843	N.A.	N.A.
	1955-60	N.A.	5749	2.800
	1966	924	N.A.	N.A.

Island Group	Census Year	Child-Woman Ratio	Total Fertility	Gross Fertility
Western Samoa	1951	852	N.A.	N.A.
	1956	969	6425	3.129
	1961	1064	N.A.	N.A.
	1966	1086	N.A.	N.A.

- Sources (1) UN Demographic Yearbooks, 1965, 1967, 1968, 1969.
 (2) Zwart, F.H.A.G., 1968. op. cit.
 (3) McArthur, N., and Yaxley, J.F., 1968 op. cit
 (4) FieFia, S.N. 1968, 'Report on the Census of Tonga, 1966' Tonga, and Tupoumia, M.U. 1957, 'Results of the 1956 Census, Tonga' Tonga.
 (5) McArthur, N. & McCaig, J.B., 1964 op. cit.
 (6) McArthur, N., 1968 op. cit.

- Symbols: N.A. Not available
 x Ratio calculated from sample survey covering 100 per cent of the population of Honiara and non-Melanesian population outside Honiara and 27.7 per cent sample of Melanesian population outside Honiara
 ++ Ratio and Rates for Lower Group only
 N Natives only
 * Non-census years
 + Ratio calculated from children 0-4 years old per 1000 women aged 15-49 years. All others are calculated from children aged 0-4 years per 1000 women aged 15-44 years

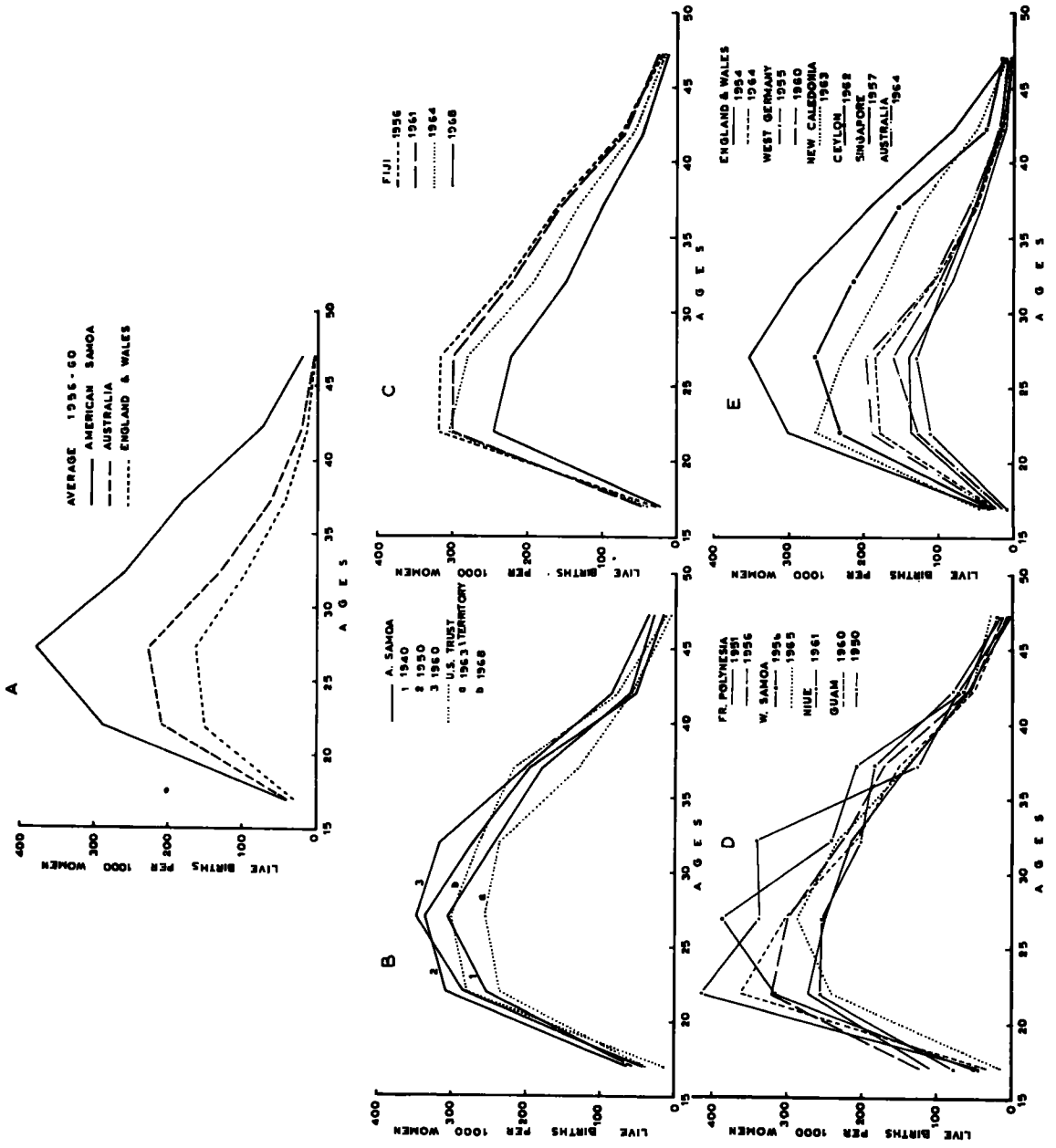
rates for other territories and in Figure 3.1(A) they are compared with those of Australia and England and Wales. In Figure 3.1 (B to E) the age-specific rates for Germany, England and Wales, Australia, Ceylon and Singapore have been shown for the purpose of comparison with rates for some of the Pacific island territories. It may be concluded from these illustrations that fertility in the Pacific islands is about twice as high as the fertility in the developed countries. This is confirmed by the figures for the net reproduction rate. In the islands, there are slightly less than 3 girls ready to replace every female that passes her reproductive life whereas in low fertility countries, with few exceptions, the net reproduction rate is around 1.2 and 1.3. Thus, apart from Norfolk and Pitcairn, the current fertility in the various island jurisdictions is high and it is in a position where it is capable of either increasing or decreasing, although all the island governments anticipate a downward trend.

Fig.3.1 Age-Specific Fertility Rates for selected Island Territories compared with those for selected developed and developing countries.

Sources: (1) 'Demographic Year Books, 1960-69', Dept. of Economic and Social Affairs, U.N., New York.

(2) McArthur, N., 1967, op.cit., p.61.

AGE-SPECIFIC FERTILITY RATES



Trends in Fertility

Unlike mortality which has declined rapidly, fertility has not shown any downward trend until the last decade. In fact, when mortality decline was accelerating in post-World War II years fertility appeared to be rising and thereby escalating natural increase. Like other developing countries, high fertility has long been the norm apart from temporary annual oscillations. In the following paragraphs we will digress a little to discuss the reasons for the long- and short-term fluctuations in fertility.

Fluctuations in Fertility

It is unlikely that in every year similar numbers of women in the reproductive age-groups will produce live births. In fact, more women may give births in any one year and subsequently fewer births take place in the following year. However, it should be noted that it is not as simple as this, for other factors like the annual marriage rates, birth intervals, food shortages, etc. also influence the number of births in a year. Moreover, illegitimacy, which is high in many island territories, also varies annually and therefore affects any fluctuations in fertility. Random variations in fertility are more marked if the base populations are small like those of the Pacific islands. Within any one year fertility is known to oscillate seasonally, usually slightly higher in spring and summer than in autumn and winter. This is probably more marked in temperate countries than in tropical and sub-tropical countries where the seasons are less distinct. Nevertheless, according to the chief registrar in Tonga there are slightly more recorded marriages and births in spring and early summer than in any other season⁷. Very often people refer to all short-term fluctuations as random fluctuations because the causes are often hard to comprehend.

Fluctuations in fertility may be the result of faulty registration of births or the variations in the completeness of birth registrations. Therefore, fluctuations in the recorded crude birth rates in the Pacific islands will be partly ascribable to the variability of under-registration. Even if one

relies entirely on the censuses, fluctuations may still be noticeable though probably less marked because the highest number of non-responses to any question has been to those on fertility. Many island territories do not possess efficient birth registration machinery and this is at its worse in Western Samoa where it is estimated to be about 75 per cent complete, not to mention the British Solomon Islands and the New Hebrides where birth registration is a recent innovation to most of the inhabitants. Only American Samoa and Guam have birth registrations of good quality which are only about 5 per cent incomplete. Most of the territories have birth registrations which are between 85 and 95 per cent complete. However, increasing demands by schools and employers for birth certificates have stimulated improvements in registration which is likely to continue. As a result birth registrations in the islands are more complete than death registrations⁸.

Long-term or cyclical fluctuations in fertility are caused by extraordinary events such as economic depressions, famines, wars, epidemics and migrations. These events are disruptive to fertility and often cause delayed marriages and postponement of having babies, thereby producing temporary recessions in fertility. But as soon as the conditions are back to normal fertility starts to rise, as delayed marriages and births begin to take place. In 20 to 25 years, as the reduced cohorts enter their reproductive lives, it would be expected, all things being equal, that the birth rates would again be depressed. The classic examples of this kind of cyclical fluctuations are the populations of the developed nations whose age pyramids show the distortion effects of World War I, the depression of the 1930s, the Second World War and the 'baby boom'. In the Pacific islands, as in other high fertility nations, the effects on the age structure of extra-ordinary events are less conspicuous although the crude birth rates may fall or rise. According to Norma McArthur, famines in the Cook Islands, especially in East and South Aitutaki and Northern Rarotonga, in 1931 and a hurricane 4 years later in the Lower Group seemed to have affected the performance of the 1912-16 birth cohorts who had fewer children than the

five-year cohorts on either side⁹ (See Table 3.7)

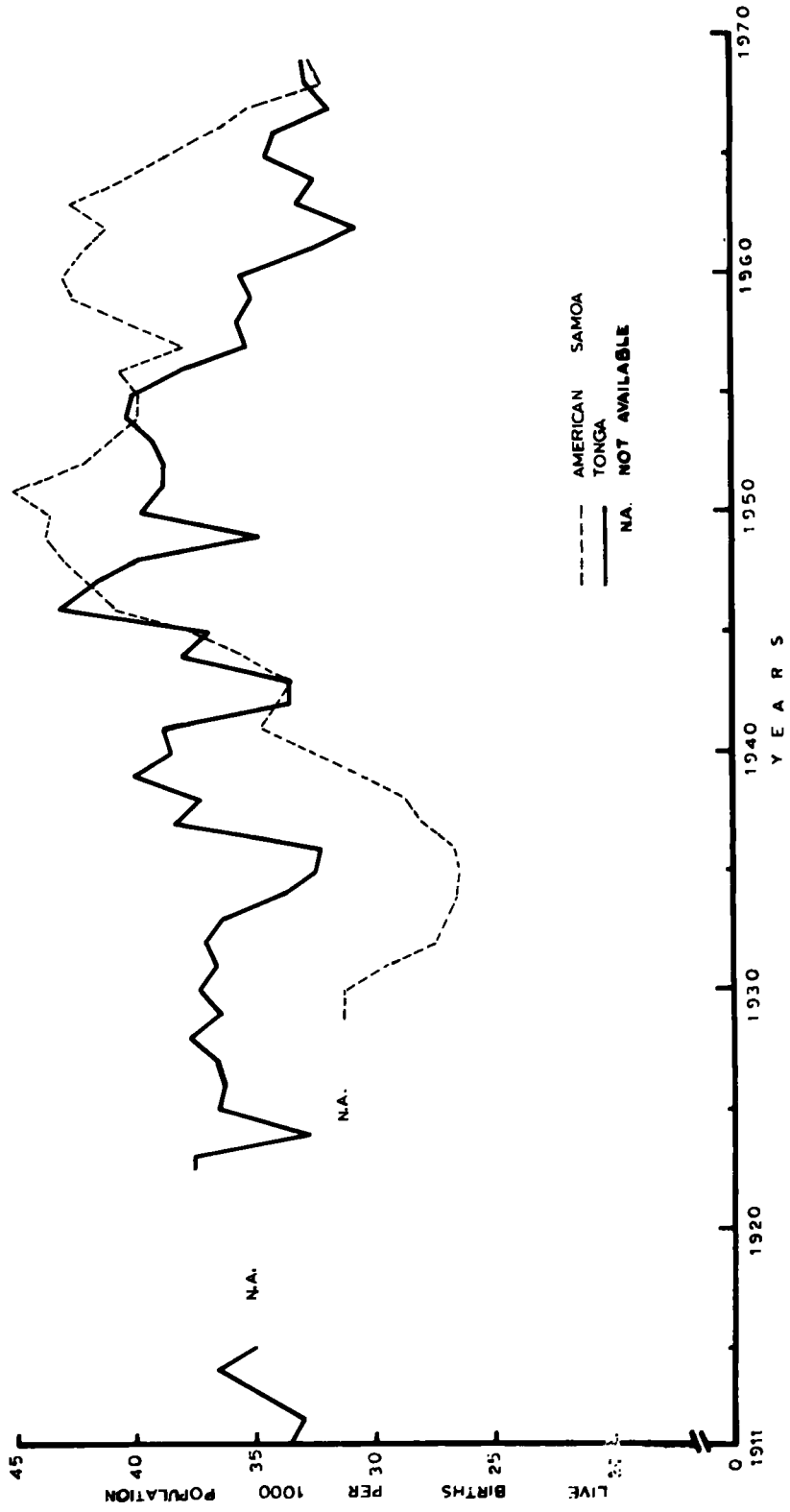
The effect of migration on fertility depends on whether migration is a continuous process or only for a short period. Furthermore, migration is mainly selective. In Australia and New Zealand the crude birth rates rose in post-Second World War years to 23 and 26 in the decade 1945-54 from 17 and 19 respectively in the late 1930s. This rise was partly due to the influx of young European migrants and the return of soldiers after the war although in New Zealand the high birth rates of the Maoris further inflated the birth rates. Both countries today still exhibit birth rates slightly higher than most low fertility countries after the 'baby boom' because of the higher risk of pregnancy among the young immigrants. On the reverse side, emigration has slightly raised the fertility in the Cook Islands and American Samoa, particularly noticeable in the general fertility and child-woman ratios since most emigrants are young adults with fewer children than those who remain. Often this sort of effect may only be temporary if the stream of emigration is continuous and the volume large enough to deprive the area of the ~~second~~ young adults. The result may be a subsequent fall in fertility. Moreover, the migration of eligible males may help to relieve the pressure on women to marry and reproduce. Many women, whether married or single, often deliberately avoid pregnancy in order to enhance the prospect of emigrating¹⁰.

Short-term fluctuations are typical of the island territories whether merely by chance or caused by some other factors such as variations in the marriage rates. In Table 3.1 the fluctuations in the crude birth rates are still quite marked even when averages for five-year periods are taken. Figure 3.2 shows the annual oscillations of the crude birth rates in Tonga and American Samoa from 1911-69 and 1930-69 respectively. Had statistics for earlier periods been available we may be able to observe long-term fluctuations as well which seem to be indicated by a general rise in the birth rates from about 1936-1962 in Tonga and from 1940 to 1968 in American Samoa¹¹. Incidentally this rise coincided with the intensification of campaigns to improve the

Fig.3.2 Crude Birth Rates for Tonga, 1911-68, and American Samoa, 1930-69.

- Sources: (1) Tonga, 'Reports of the Department of Justice'.
(2) Bogue, D.J., 1969, 'Principles of Demography', John Wiley, New York, p.84.
(3) 'Demographic Year Book 1969', Dept. of Economic and Social Affairs, U.N., New York.

CRUDE BIRTH RATES FOR TONGA, 1911-69, AND AMERICAN SAMOA, 1930-69.



health and welfare of the people in these islands. When catastrophic events were more frequent and more severe in the last century the range of fluctuations may have been greater as well as being more abrupt.

Trends in Fertility

Generally high fertility has long been the norm in the Pacific islands. However, in spite of the paucity of the data, sub-trends are also discernible. Although it is still speculative it seems that under the conditions in post-contact years fertility may have declined slightly. Circumstantial evidence hints at this but only more research will help to throw light on it. During the present century fertility has risen slightly in most territories from the recession throughout most of the last century¹². However, in the last decade, particularly in the late 1960s, some island territories have shown a decline in fertility.

In pre-contact times the crude birth rate in the islands, despite the existence of social and other physical checks, was most probably over 40 per thousand persons. A resident missionary in the island of Manu'a in the Samoan archipelago kept careful counts of the births during 1854-55 and recorded a crude birth rate of 42 per thousand¹³. The condition in the island was probably similar to that in the rest of the Pacific islands in pre-contact years since it was relatively free of epidemics and native troubles. Even in the epidemic and war infested islands, after the arrival of the white man, the birth rate frequently exceeded 40 when there were no epidemics and famines and the islands were relatively trouble-free. Nonetheless, the pattern of fertility was probably far from uniform although one expects it to be high in order to ensure survival.

From this high fertility the islands began to experience a decline in post-discovery years as a result of the various ill-practices such as the internecine warfates, blackbirding and labour-recruiting, diseases, famines and poor health, which all had disruptive effects on normal family life. Consequently the child-bearing performance of fecund women was reduced by ill-health, venereal diseases, separation from husbands, malnutrition,

over-work and possibly a lack of interest in having children. Therefore, the number of still-births and sterile women may have increased. For most of the last century the crude birth rate in the islands was only moderately high and probably oscillated widely between 30 and 40 per thousand. But the decline may have been less in Polynesia than in Melanesia and parts of Micronesia where it extended into the first half of this century, especially during the first quarter.

Between 1889 and 1899 the crude birth rate in Tonga, as estimated by McArthur, was 26 per thousand although the birth register showed only a rate of 18 per thousand which was due to the haphazard way it was kept. At the same time in Fiji the crude birth rate has been estimated to be between 35 and 40¹⁴. For the island of Futuna in the New Hebrides the births reported in the 1870s and 1880s represented rates of about 24. In Aneityum in the 1870s the birth rate was about 29 although in the 1820s when the first missionaries arrived it was reported to be about 44. It was about 30 per thousand in 1861 and about 35 in 1868. Reports on family size in Erromango also point to this decline in fertility when there were fewer children in a family and a family of 4 children was considered to be large¹⁵. However, such reports probably under-stated the existing fertility because not all births that occurred were known to the missionaries who kept records of it and infanticide was still widely practised, preferably in secret from the missionaries who denounced it¹⁶. The average total fertility per fertile woman was probably not very different from what it was in the past and what it is today, i.e. between 5 and 7 children. So the reduction of the crude birth rates and the fertility for the total population was probably largely accounted for by the reduction of the cohorts of women which survived epidemics. In some islands where women formerly constituted 40 per cent of the adult population they were often reduced to about 30 per cent after a few epidemics.

With the concerted efforts to improve health and reduce mortality, which

intensified after World War II, the birth rates in some islands began to rise again, though part of this increase may be attributed to better registration. The rising fertility was very noticeable in Polynesia in the 1940s and later in West Melanesia. In American Samoa the crude birth rate has risen from about 28 in the 1920s to over 40 in the late 1940s. Similar rising crude birth rates are shown in Table 3.1 for the Cook Islands, Fiji, French Polynesia, Niue, Western Samoa and Tonga (see also Figure 3.2). This rise in fertility is confirmed by the increase in the child-woman ratios, total fertility and the gross reproduction rates shown in Table 3.2 for selected island territories. The rise of the crude birth rates in Polynesia is not similarly exhibited by the figures for Micronesia and New Caledonia in Melanesia. In fact, the island territories of Micronesia seem to have shown a slight decline in their crude birth rates since the 1940s. This, however, is not confirmed by the figures for the total fertility and the gross reproduction rates which have shown a slow increase (see figures in Table 3.2 for Guam and the Trust territory of the Pacific Islands). The slight decline in the crude birth rates may have been only superficial because of the preponderance of males and a possible deterioration of birth registration during the war years and the decade that immediately followed; especially in the Gilbert and Ellice Islands and the Trust Territory of the Pacific Islands where birth registrations are unreliable.

The failure of the islands of Micronesia to show any increase in fertility comparable to that in Polynesia may be partly due to the disruptive effects of the Pacific war on the lives of the islanders and partly the result of a longer and staunch adherence to the practice of abortion and infanticide, in spite of conversion into Christianity. For example, in Saipan the crude birth rate rose from 31.6 in the late 1920s to 36.4 in 1935, and traditional fertility checks had been long given up. But in Yap, where traditional methods of family limitation were still continued in spite of the dwindling population, the birth rates continued to decline and fell from 14.4 to 12.0 during the same period. Moreover, Micronesians are mostly

atoll dwellers and they may have had smaller average family-size than the Melanesians and Polynesians because of greater demographic pressures on the available resources¹⁷. For instance, in the Gilbert Islands in 1963 the average completed family size was just over 5 children whereas in Polynesia it was about 6.4 children in the early 1960s. Other main islands in Micronesia showed intermediate birth rates between those of Yap and Saipan in the second half of the 1920s and 1935, for example in Palau it was 24.4 and 24.3, Truk 23.8 and 30.1, Ponape 25.5 and 27.1 and Jaluit 17.0 and 20.8. Thus, prior to the Pacific War the birth rate was increasing in most of Micronesia, although the rate of increase was far from uniform.

In Guam, where birth registration is reliable, the birth rates have not increased in post-World War II years probably because of the presence of a large contingent of American military personnel, their dependents and contractor employees with low fertility who all contribute to just less than half of the total population of the island. But the indigenous people have high fertility as indicated by the rise of the child-woman ratio from 798 in 1940 to 1004 in 1960. Similarly, the settlement of large numbers of French people in New Caledonia, nearly half of the total population, has helped to deflate the high fertility current among the indigenous inhabitants. Because Norfolk and Pitcairn Islands have no indigenous inhabitants the fertility trend deviates from that of other Pacific islands. The present populations of both islands are mostly descendents of the 'Bounty' mutineers and some 12 Tahitian women who settled in Pitcairn; and in 1856 some of those who migrated from Pitcairn to Norfolk stayed among the 'mainlanders' from Australia and New Zealand. Probably because of their part-European ancestry and the overpopulation of their small island the Pitcainers soon adopted low fertility habits during the late nineteenth century. In the 1890s the average completed family size in Pitcairn was reported to be 2.5

whereas at earlier periods it was nearly double or more than double this number¹⁸. In Norfolk the 'islanders' (descendants of Pitcairners) soon followed the low fertility habits of the 'mainlanders'. An almost continuous emigration of young people from both islands has also helped to keep fertility down to very low rates.

Some island territories, especially in the Central South Pacific, have shown a sharp decline in fertility in the late 1960s. In American Samoa the crude birth rate dropped from 42 in the early 1960s to 32.4 in 1969 and in Tonga it declined from about 40 in 1955 to 32.6 in 1969. The crude birth rate in Fiji declined from about 40 in 1960 to 34 in 1966 and 30.2 in 1969. The Cook Islands have also exhibited some decline in their birth rate from about 47 during the late 1950s to 40.9 in 1968 and, likewise, Niue's crude birth rate has also been lowered to about 35 in the late 1960s whereas it was about 45 in the early part of the decade. The recorded birth rate for Western Samoa has also been declining; however, no more can be said because of the under-registration of births. The declining fertility of about 25 per cent in the last decade in Fiji is confirmed by a drop in the gross reproduction rate from 2.7 in 1961 to 1.9 in 1968 (see Table 3.2). The age-specific rates (Figure 3.1) in Fiji has fallen since 1961 as well as the specific rates for Western Samoa between 1956 and 1965. This recent decline in fertility in islands where it increased since the 1940s, except French Polynesia, has been the result of (a) raising the age at marriage, (b) postponement of first births irrespective of marital status in order to enhance the prospect of emigrating, especially in the Cook Islands and American Samoa¹⁹, (c) the upheaval of traditional attitudes towards family size upon the impact of changing socio-economic conditions and education, and (d) the implementation of family planning programmes.

2 MAIN CAUSAL FACTORS OF HIGH FERTILITY

Age at Marriage

The age at marriage of females is an important determinant of fertility since marriage is the sanctified institutional arrangement within which most

child-bearing takes place. Low age at marriage and almost complete absence of any means of birth control means a longer exposure of women in the reproductive ages to the risk of pregnancy provided nothing disrupts family life such as the death or long separation from their husbands. However, 'any delay in the age of marriage, say after 15 years of age, truncates the period of fecundity of its most active part'²⁰.

The age of marriage in the Pacific islands has been gradually raised, particularly in post-1945 years. No precise information on the age of marriage for either sexes in pre-contact times or for most of the nineteenth century is available. Therefore, one can only postulate that more females married shortly after puberty, probably 3 or 4 years younger than they do today at an average age of about 20.5 years²¹. Such early marriages appear probable in view of the high adult mortality and the low expectation of life at birth²². For women to attain a reproductive span exceeding 20 years they need to marry young and some early records convey this implication. A missionary's wife in Tanna, New Hebrides, in 1869 commented that 'the young girls around Port Resolution were all wives and the children betrothed'²³. Missionaries condemned child marriages wherever it existed. In the 1890s when the population of Tonga appeared to be declining Thomson blamed 'the grim social code of the missionaries' which led young girls to defer marriage until the last possible bridegroom had left them for a younger generation²⁴. Yet in the first half of the present century, even in the 1950s the most common age of marriage for females was 18 years. In the Solomon Islands and in parts of Micronesia it was also typical for women to marry at 17 or 18 years of age in the 1930s though it was contended that such young marriages often ended in divorce, both partners quickly remarrying²⁵.

Today the median age of marriage for women has risen to over 20 years in most island territories. In Tonga, according to the 1966 Census Report, the median age at marriage was about 20.5 years for women and 4 years later for men. The age by which half of the women in the island territories in Micronesia marry is about 20.5 years. Half of the women in the Ellice Islands marry by the time

they are 21.5 years old. The 1967 census of the New Hebrides reported that about half of the females in the territory marry by the time they are aged 21 years. For all component populations of Fiji in 1966 the median age at marriage for females was about 20 years whereas in 1956 it was about 19.5 years. While the age of marriage for women has been raised, the median age for males has hardly changed. The late physical maturation of males, the slow acceptance of responsibility and their preponderance meant that men normally marry at higher ages than females and in the Pacific island territories the median age varies from 23.5 years in the Gilbert Islands to 27 in Polynesian inhabited territories such as the Ellice Islands.

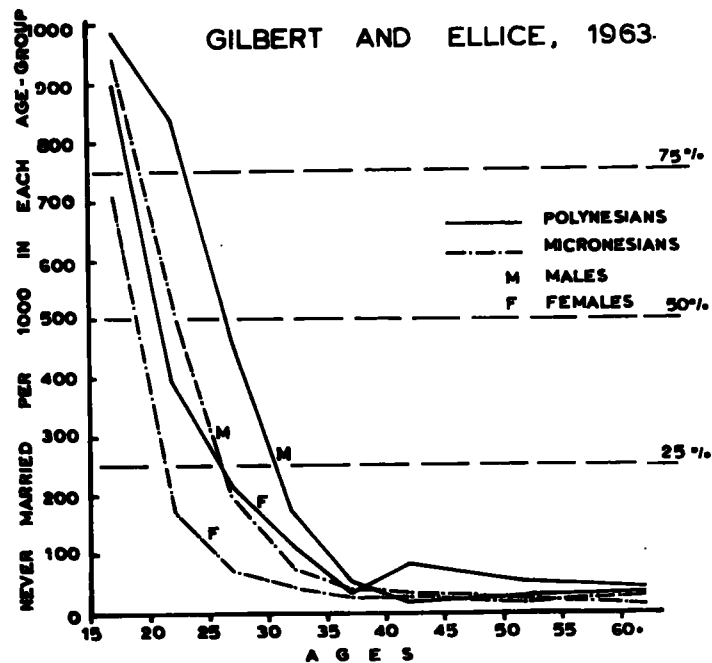
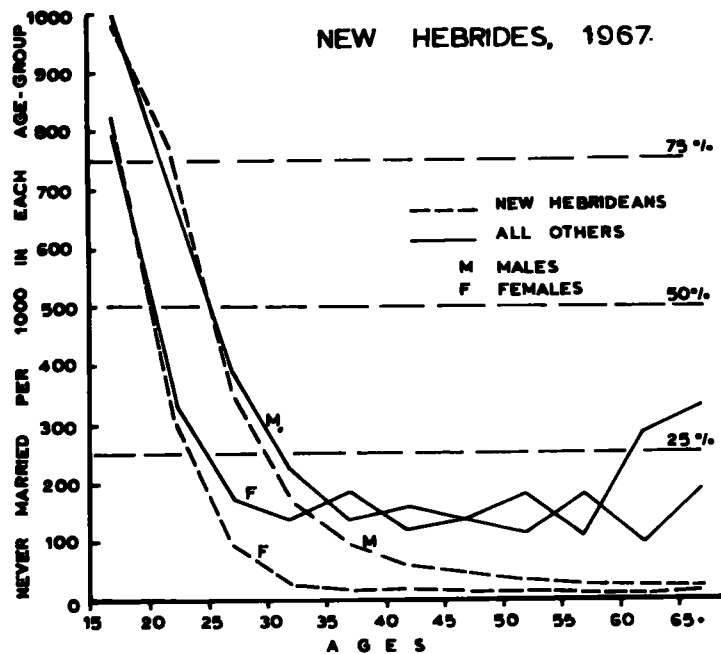
Despite the raising of the age at marriage for females the completed family size has not really changed from the average of 6 or 7 children. Social attitudes towards procreation, reinforced by introduced religious zeal, and the economic and political organization still favour high fertility. Anyway, the rising age at marriage for women has been brought about by the changing socio-economic conditions and more education for women, besides any personal consideration. More and more girls are now completing secondary education, and when they leave at the age of 18 or 19 years many prefer to stay single for a few years before they marry²⁶. However, women still prefer to marry before they are 25 years old otherwise potential bridegrooms will pass them by for younger brides. Nevertheless, they do not want to marry before they are 20, as girls younger than this are often considered now to be too young. This present upheaval in the attitudes towards the age at marriage for females may be partly attributed to the rising life expectancy at birth and the reduction of mortality which has greatly diminished the urgency to marry young. Young potential husbands are also becoming increasingly aware of the expenses of family life under the changing economic conditions. Likewise, a young prospective wife no longer marries the first man who comes along but rather waits for the one with the right qualifications which almost inevitably includes a job and a home. Apart from

Fig.3.3 The proportion of females over 14 years of age never married per 1,000 females in each 5-year age-group in the New Hebrides, 1967, and the Gilbert and Ellice Islands Colony, 1963.

Sources: (1) McArthur, N., and J.F. Yaxley, 1968, *op.cit.*, p.42.

(2) McArthur, N., and J.B. McCaig, 1964, "A Report on the Results of the Census of the Population, 1963: Gilbert and Ellice Islands Colony", Suva, Fiji, p.26.

MALES & FEMALES NEVER MARRIED PER 1000 IN EACH 5-YEAR AGE-GROUP



the more remote islands and villages where the traditional social values and family ties are more cohesive the extended family system is slowly breaking up and the usual security it provides young married couples before they establish themselves on their own is wearing thin²⁷. Increasing education and modernisation will continue to erode the traditional way of life and normal attitudes towards age at marriage will continue to change which may help to further raise the age at marriage by a year or two within the next decade²⁸.

Social Attitudes and the Age at Attainment of Motherhood

In pre-literal times social attitudes and the communal ways of life favoured large families. Today, the lowering of mortality rates and the changing socio-economic life has removed the initial desire for large families but the inertia of deep-rooted habits and attitudes toward family formation have continued to produce large families²⁹. The advent of Christianity in the islands has made religion a very strong pro-natalist force even when the former pre-white pro-natalist forces are waning. Marriage is almost universal and, generally, less than 7 or 8 per cent of the women pass through their reproductive life without ever marrying (see Figure 3.3A and B, and Figure 3.9). Since marriage is the desired union within which begetting of progenies should take place, it is therefore very stable as well as being very desirable in order to produce children who are needed for various purposes apart from being one's life insurance policy and social security against old age. Anyone who fails to marry, let alone being childless, is to be pitied. Children are welcome into every family and the prevailing system of adoption has ensured that off-spring who cannot be cared for can always be adopted by relatives, particularly those who are childless or have few children. Thus there is still little or no consideration of costs and future expenses in bringing up one's own children or adopted ones. Large families are still regarded as a blessing, partly because one has more helpers to alleviate the burdens of family and kinship obligations³⁰. Both husband and wife have pride and prestige in a

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Fig. 3.4 The Proportion of Childless Women aged 15 years and over per 1,000 women in each 5-year age-group. A.Tonga and Fiji, 1966.
B. New Hebrides, 1967 and Gilbert and Ellice Islands Colony, 1963.

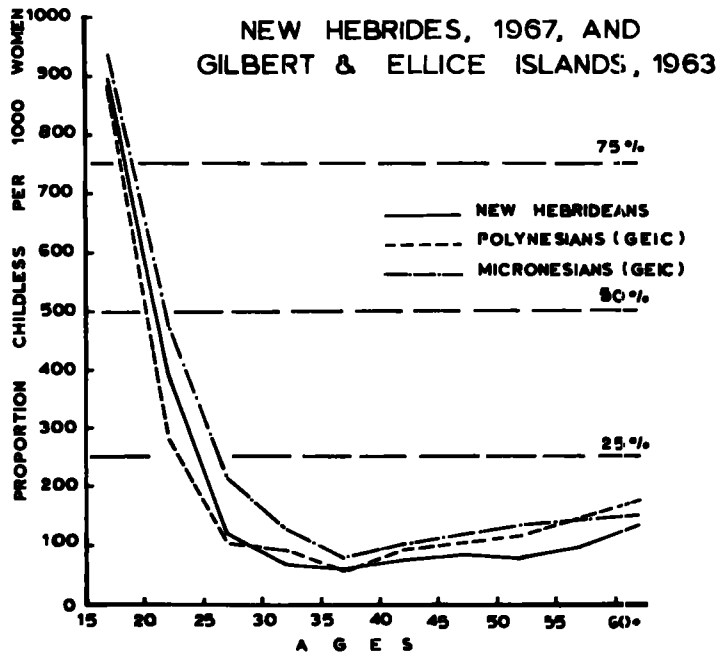
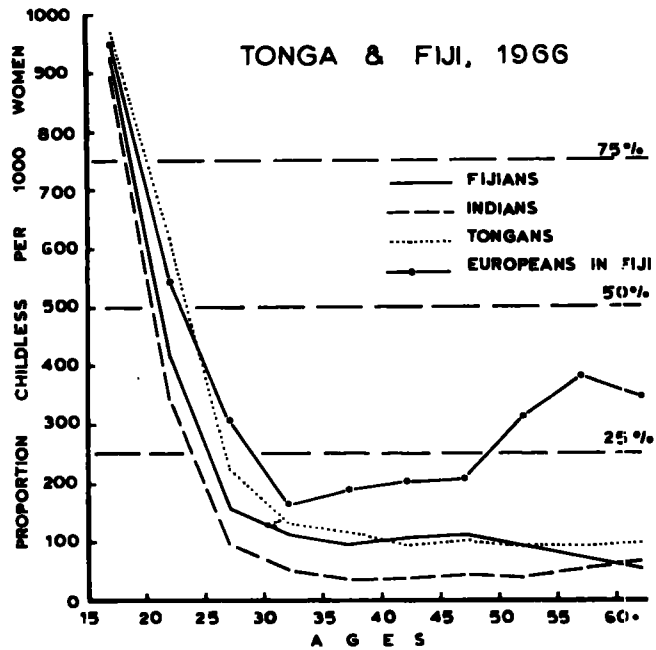
Sources: (1) Zwart,F.H.A.G., op.cit., p.37.

(2) Fiefia,S.N., 1968, "Report on the Results of the 1966 Census : Kingdom of Tonga", Nukūalofa, Tonga, p.19.

(3) McArthur,N., and J.F.Yaxley, op.cit., p.45.

(4) McArthur,N., and J.B.McCaig, op.cit., p.32.

PROPORTION CHILDLESS PER 1000 WOMEN
IN EACH 5-YEAR AGE-GROUP



large family for it is a proof of virility and to be a married sterile person is often comparable to being a freak³¹.

Because of the emphasis placed on child-bearing, motherhood is normally attained shortly after marriage, usually a year later. For instance, in Tonga in 1956 the median age at marriage was 20.5 and the median age when a mother bore her first child was 21.5 years³². In 1966 mothers, on the average, attained motherhood at the age of 21 years. In Fiji, in the same year, half of the mothers have had their first child after about 10 months of marriage. The relatively short interval between marriage and the birth of the first child reflects the enthusiasm and lack of planning with which young couples enter married life, almost totally indifferent to the welfare and future of their off-spring.

Any female who reaches the age of 30 years without ever being married has rather poor chances of doing so in future. Expectedly, the chances of attaining motherhood for a woman beyond 30 years of age follow the same pattern (see Figure 3.4A and B). By the age of 45 years only about 4 to 6 per cent of the females in any birth cohort have failed to bear a child. The probability of attainment of motherhood before ages 20, 25 and 30 years for Western Samoa in 1956 is shown in Table 3.3 as an illustration since this pattern does not vary greatly between the island territories, even today. About one-third of females in any five-year birth cohort have borne at least one child before the age of 20 years. Half of the remainder have their first child before they are 25 years and about half of those who still have not have a child attained motherhood before they are 30 years old. This implies that 85 to 90 per cent of the females in any cohort have had at least 1 child before the age of 30 years about 75 per cent before 25 and 30 per cent before 20 years (see also Figure 3.4 A and B).

The lack of distractions and diversions in the comparatively tranquil married life of islanders has enhanced the frequency of sexual intercourse. In a society which practises birth control the frequency of coitus will have limited effect on the chances of conception but in one which does not fancy birth control and eager to get on with the all-important task of procreation the greater frequency of sexual intercourse only enhances the possibility of conception³³.

Fig.3.5 The proportion of widows and widowers per 1,000 males and females ever married, and the proportion of divorcees per 1,000 ever married in each 5-year age-group, Fiji, 1966.

Source: Zwart, F.H.A.G., op.cit., p.28.

PROPORTION WIDOWED & DIVORCED, FIJI, 1966

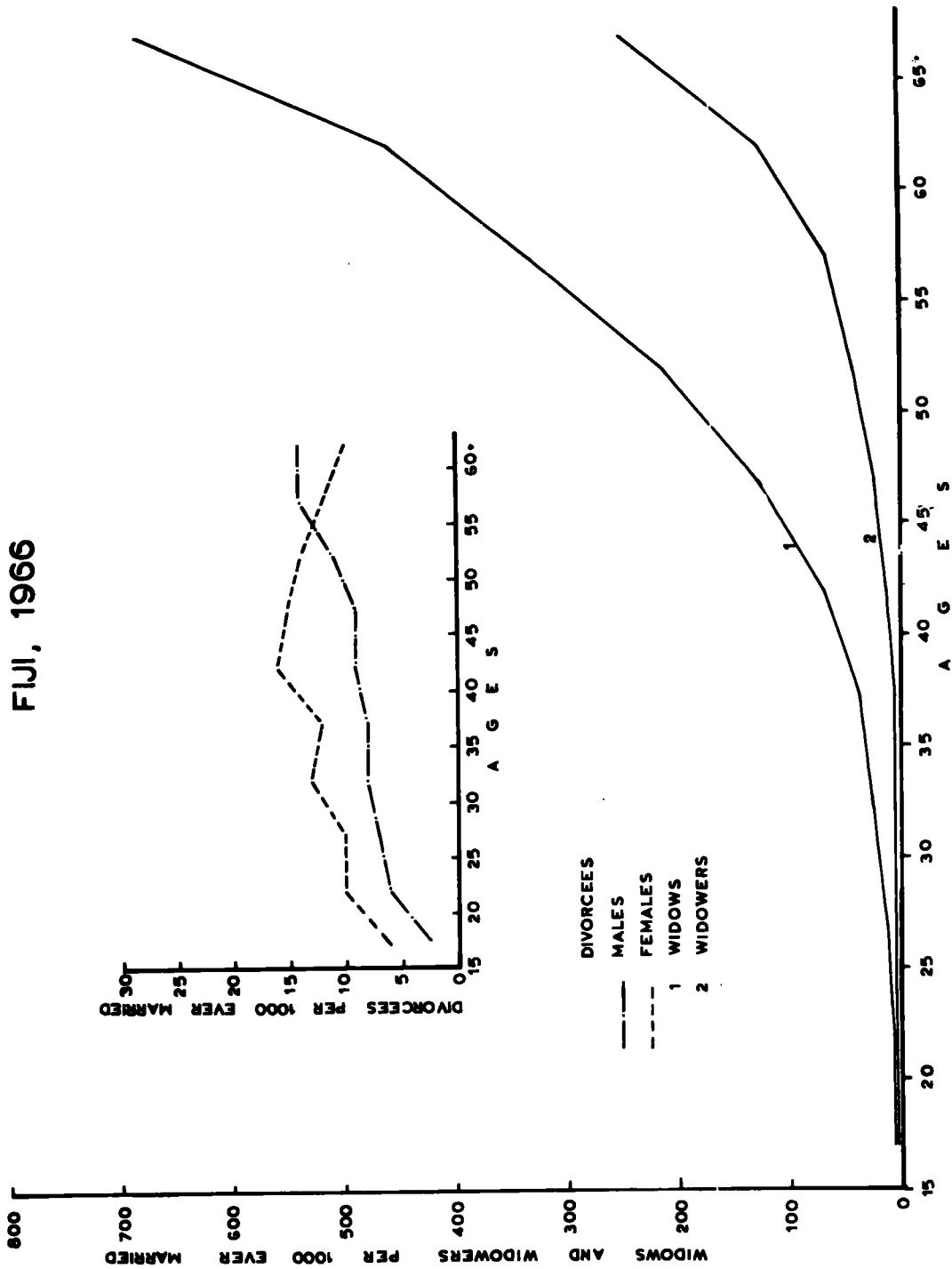


Table 3.3 ATTAINMENT OF MOTHERHOOD AT SPECIFIED AGES: RATE PER 1000 FEMALES AT RISK IN GROUPED COHORTS IN WESTERN SAMOA, 1956

Age in 1956	Age at first birth		
	Before 20 years	20-24 years	25-29 years
20-24	362	*	*
25-29	344	606	*
30-44	351	594	525
45-59	299	571	545
60+	171	489	502

Source: McArthur, N., 1968, op. cit. p.140

Note: * Experience incomplete for these women.

The variation from cohort to cohort is partly the result of age mis-statements and partly because of the comparatively small numbers in the older cohorts.

There are existing social checks against fertility, as in every society, for example, the wife often spends long periods with her parents, especially after parturition and sexual intercourse with a nursing mother is still frowned upon³⁴. Furthermore, separations, divorces and the death of either husband or wife also help to check fertility but counteracting against these are the chances of a quick remarriage³⁵ and improved health. Widows and widowers in the Pacific island societies usually mourn for the death of a partner for at least one year and social attitudes forbid a quick remarriage, particularly of widows. Moreover, there is always security within the kin group for the support of children, particularly in the case of widows and female divorcees though young childless ones and those with only a few children may still want to remarry. All this partly accounts for the poor chances of remarriage among divorced and widowed women; apart from any personal reluctance to find a new partner. Figure 3.5 shows the proportions of widowed and divorced males and females in Fiji for 1966, New Hebrides for 1967 and Gilbert and Ellice Islands for 1963. In the fecund age-groups, 15-44 years, there are always more widows and female

divorcees than their male counterparts which reflects the poor chances of remarriage for females³⁶. On the whole, these checks on fertility are not enough in themselves to reduce fertility effectively³⁷. Even the postponement of first births still fails to depress the high fertility because once motherhood is attained, subsequent births occur regularly. It therefore follows that postponement of first births only alters the spacing of births throughout the reproductive span without reducing the total number of children born to each female.

Completed Family Size and Frequency of Births

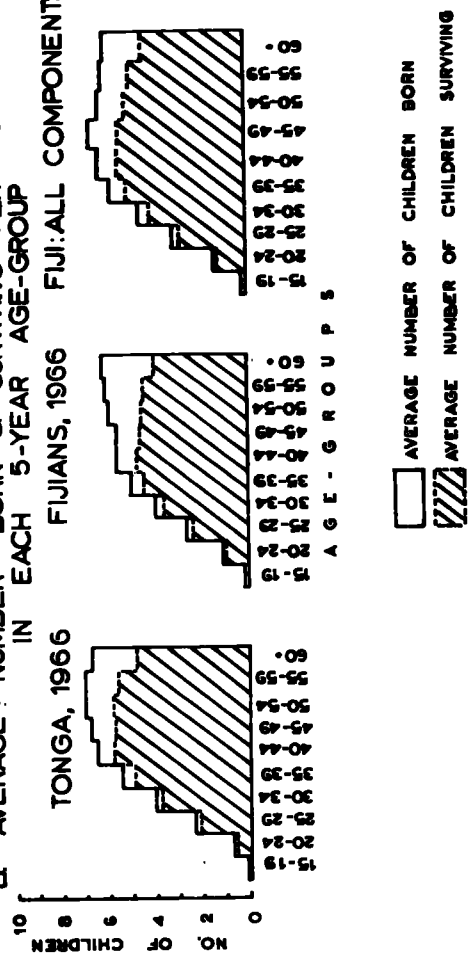
The completed family size varies from one island territory to another as well as among the different ethnic components of any territory. On the whole, however, the variation is not so great between island territories as between Europeans and the indigenous people. Therefore, whatever variation exists the impression that fertility is high in the Pacific islands is not altered. It may also be mentioned that the completed family size has one disadvantage as an index of fertility pattern, i.e. it concentrates on past fertility 20 to 25 years ago.

The average completed family size ranges from about 5.6 in some parts of Micronesia to 7.2 children in Western Samoa and some parts of Polynesia and Western Melanesia. Most territories have average completed family sizes that fall in between these two extremes, for example, in Tonga it is about 6.7, Fiji 6.4, New Hebrides 6.7, American Samoa 7.0, Cook Islands 6.9, and Gilbert and Ellice Islands 6.1 children. The average completed family sizes, children ever born and children surviving, for selected island territories for various dates are shown in Figure 3.6A and B. (Incidentally, the average completed family size increased by almost an average of 1.0 children during the early 1960s and 1950s which confirmed the increased fertility during this period referred to earlier.) The completed average family size suggests that the average birth interval is just over 3 years. However, among different age-groups the spacing of births differs but the normal pattern is for births to

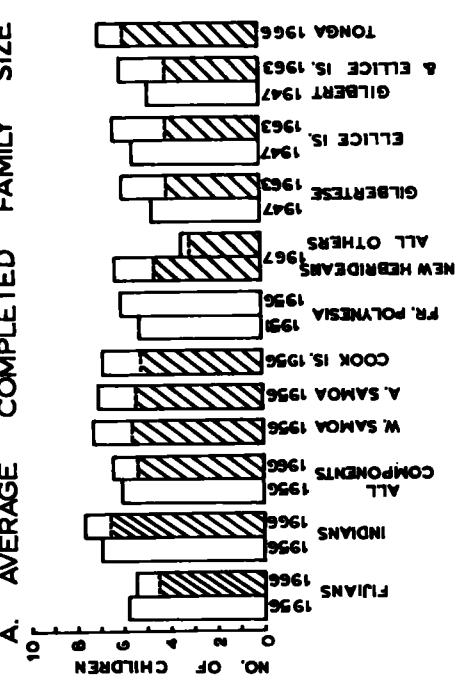
Fig.3.6 A. Average completed family size for selected island territories for various years. B. The average number of children ever born and surviving per woman in each 5-year birth cohort for Tonga, 1966; Fiji, 1966; Fijians, 1966; Indians in Fiji, 1956 and 1966; New Hebrideans (indigenous), 1967; American Samoa, 1956 and Europeans in Fiji, 1966.

- Sources: (1) McArthur, N., 1967, op.cit., pp.38-39; 138; 158; 223; 343.
(2) McArthur, N., and J.F. Yaxley, op.cit., pp.45-6.
(3) McArthur, N., and J.B. McCaig, op.cit., p.36.
(4) Fiefia, S.N., op.cit., pp.18-19.
(5) Zwart, F.H.A.G., op.cit., pp.38-9.

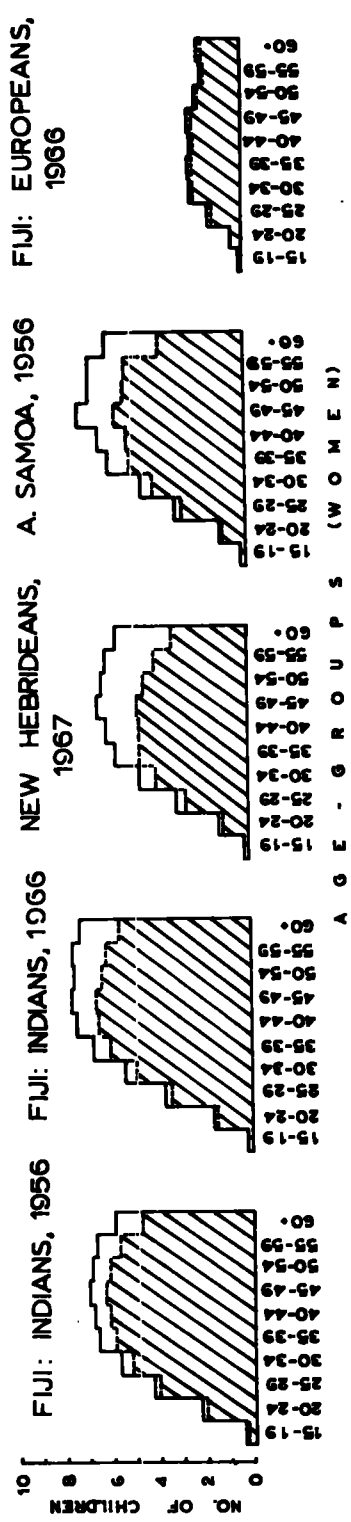
B. AVERAGE: NUMBER BORN & SURVIVING PER WOMAN IN EACH 5-YEAR AGE-GROUP
 FIJIAN, 1966 FIJI: ALL COMPONENTS, 1966
 TONGA, 1966



A. AVERAGE COMPLETED FAMILY SIZE



FIJI: INDIANS, 1956 **NEW HEBRIDEANS, 1967** **A. SAMOA, 1956** **FIJI: EUROPEANS, 1966**



occur at intervals of 1.5 to 2.5 years among women aged 15 to 34 years and at 35 years of age the birth interval lengthens³⁸. As sub-fecundity starts at the age of about 35 years the average birth interval increases to 4 or more years before menopause is attained, especially among those 40 years and beyond.

The average number of children surviving to every women of completed fertility depends on the rate of mortality among infants, children and adolescents. As the mortality rate is lowered the average number of survivors increases. In American Samoa in 1956 only 5.0 children survived from an average of 6.9 children ever born to every woman of completed fertility. In 1963 in the Bilbert and Ellice Islands an average of about 1.7 children had died~~d~~ out of the average completed family size of 5.6. By 1966, in Fiji, only an average of 1.0 children had died out of the average total fertility of 6.4 children whereas in 1956 almost an average of 2.0 children had died in an average total fertility of 6.1 children. Child and infant mortality are still high in the New Hebrides and as a result only an average of 4.6 children survive out of an average total fertility of 6.7 children. Most Pacific islands today have an average surviving family size of 5 to 6 children which is still large by any standard and the average size is expected to increase during this decade because of the increasing reduction of mortality in the late 1950s and the 1960s.

Compared with women in the reproductive age-groups in the low fertility countries, the Pacific islands' fertile women have births more frequently as well as being slightly younger on the average when they attained motherhood. Moreover, child-bearing among European women virtually ceased by the age of 35 years³⁹ whereas in the islands the existing pro-natalist forces exert pressure upon fecund women to keep reproducing until natural sterility arrives. As a result it is quite usual for mothers to have 10 or more children. One-third of the women of completed fertility in Western Samoa in 1956 had borne at least 10 or more children. This pattern is similar throughout all the islands and it has not changed yet. In Tonga in 1966, about 5 per cent of the females in the 1921-26 birth cohort have had 14 or more children and over 10 per cent of the same cohort have had 10 or more children⁴⁰. Although the most popular age for

first births is between 20 and 24 years these are also the most common ages for second births and almost as many have had their third child during these years as those who did so 5 years later. Before the age of 30 years more than 75 per cent of the females in any five year birth cohort have had their fourth child. Over one-half of all Tongan women in the 30 to 39 years age-group in 1966 have had at least 7 children. The most popular age for having the eighth or ninth child is between 35 and 39 years. Thus for one-third of the women in Tonga who completed their fertile period with 9 or more children in 1966 the average birth interval is between 1.5 and 2.0 years.

Premarital Fertility

In many societies, the single status of women is not a barrier to reproduction because there are no social and moral obstacles, and very often under the unstable socio-economic and political conditions, as in the Caribbean and the countries of Central and Tropical Latin America, loose consensual unions are more preferable than the stable marital unions⁴¹.

Disadvantages in such societies against being born illegitimate are almost totally absent. The United Nations Demographic Yearbook defines illegitimacy as 'births that occur out of legal wedlock as determined by the laws of each country. Therefore, illegitimate births are assumed to include births to persons in consensual unions or unions celebrated in such a manner, other than the legally prescribed one which include extra-nuptial births and adulterine births'⁴². Pacific island societies, like those of developed countries or societies where a developed religion like Christianity plays an important part in formulating morality, do not tolerate adulterous behaviour and when no humane legal system prevailed in the past adultery was punishable by death of either one or both partners who had committed the crime⁴³. Therefore, virtually all illegitimate births in the islands occur outside of wedlock. Illegitimate birth rates are largely determined by the social attitudes towards premarital sex, illegitimate births and the availability of birth control devices. Where the society does not tolerate illegitimacy, such births would be avoided at all

costs, but where it is tolerated and consensual unions preferred, the illegitimacy rate is high.

The percentages of all births which are illegitimate in selected island territories for certain years are given in Table 3.4, and these vary considerably from one territory to another; in American Samoa and Guam the percentage being illegitimate births was respectively 8.0 and 10.0 in 1967 whereas in Western Samoa it was 41.5 in 1962, 41.2 in Niue in 1964 and 53.2 in the same year in French Polynesia. In spite of the wide variation of the rates of illegitimacy in the Pacific territories, all generally have rates that are higher than European and Islamic countries where the rates of illegitimacy rarely exceed 5 per cent. However, higher rates of illegitimacy are known and recorded in the Caribbean, Central and Tropical Latin American countries where they are as high as 60 and 70 per cent. In the Pacific territories as a whole approximately 1 out of every 5 or 6 live births is illegitimate, therefore premarital fertility has an important role in determining the average total completed fertility.

Premarital fertility is not encouraged in the islands although it is still high and missionaries have long fought against its high frequency among their flocks with only limited success. In any case, once a girl of single status has become pregnant it is accepted with resignation as inevitable and she will only be regarded as being silly and careless⁴⁵. No social stigma is attached to being born illegitimate, neither is there any discrimination. If an unmarried mother does not want her child she will allow either her parents and relatives or the child's father's parents and relatives to adopt the child. This system of adoption corresponds to the fostering system in Western countries although no certificates are signed. Normally, grandparents indulge illegitimate grandchildren just as much as legitimate ones.

There are two main lines of attitude toward premarital sex among girls in the Pacific islands. In Micronesia, except the Gilbert and Ellice Islands, and in parts of Western Melanesia virginity is not prized⁴⁶, whereas in Polynesia and most of Melanesia virgin brides are highly desirable, since any man who

Table 3.4 ILLEGITIMATE BIRTHS AS PERCENTAGE OF TOTAL BIRTHS IN SELECTED ISLAND TERRITORIES FOR VARIOUS YEARS

Island Group	Year	% Illegitimate	Island Group	Year	% Illegitimate
American Samoa	1955	13.3	Norfolk	1962	16.7
	1956	13.2		1963	12.3
	1960	8.5	Tonga	1956	11.0
	1961	9.0		1960	9.4
	1963	9.9		1965	7.7
	1964	8.6		1968	7.0
Guam	1967	8.0	Western Samoa	1958	45.2
	1956	7.4		1960	43.5
	1960	8.7	1962	41.5	
	1964	7.6	French Polynesia	1965	55.6
1967	10.0	1964		53.2	
Niue	1957	26.7	Australia	1955	4.1
	1959	33.5		1964	6.5
	1961	30.5		1967	7.7
	1963	28.5	New Zealand	1955	4.5
1964	41.2	1964		9.9	
Norfolk	1955	5.9		1968	13.0
	1959	28.6	Belgium	1964	2.3

Source: U.N. Demographic Yearbooks 1965, 1969 pp. 529-30, 420

Note: It is possible that the illegitimate rate is slightly higher than the statistics indicate since the parents may not bother to register the child, as a legitimate child would normally be.

becomes the husband of a promiscuous woman would 'have to face the embarrassment of meeting other men who had taken sexual liberty with his spouse'⁴⁷. Nevertheless, it is common to all island communities that premarital pregnancy should be avoided though many girls may desire pregnancy in order to trap their lovers into marriage. Once a girl has had an illegitimate child her chances of ever having a husband diminishes but if women are scared in any island their chances are not so bad⁴⁸.

In the islands of Polynesia, people often lead lives of double standards and this certainly applies to attitudes toward premarital sex among boys and girls.

Whereas girls are closely chaperoned to be virgin brides in order to save the kinship group from ridicule, boys are required to prove their machismo and virility by having experienced premarital cohabitation which often leads to the idealization of those with many illegitimate offspring and with the ability to coax virgins into cohabitation⁴⁹. Because contraception is not normally practised, except perhaps among a few of the most acculturated persons, in most communities the risk of pregnancy is quite high. Once a single woman has had an illegitimate child or known to be promiscuous she is regarded by every young man as fair game. As a result it is not unusual for a single woman to have a large family, supported by her relatives as well as relatives of the children. According to Schmitt, 25 per cent of all births recorded in French Polynesia in 1956 were illegitimate. The average family size for single women aged 45-49 years in 1956 was 2.77. Of all illegitimate births reported 16 per cent were to women with at least 10 children⁵⁰.

Curson calculated that 36.8 per cent of all live births reported in Rarotonga, Cook Islands, in 1965-66 were illegitimate. The average size of an unmarried mother's family was 1.83 children in 1966 and in 1961 it was 1.90 children. Of course, many women had not completed the child-bearing period and the averages do not include children of mothers who have found husbands. In the 40-44 age group, 5 unmarried mothers in 1966 had between them a sum total of 27 children. Moreover, Curson found that premarital births are more frequent among younger girls, for example in Rarotonga in 1966 77 per cent of all illegitimate births were to females aged between 15 and 19 years⁵¹. Howard and Howard found their hypothesis that illegitimacy increases with the age of the mother in Rotuma to be negative, rather more younger unmarried mothers had illegitimate children even when it was considered that older unmarried mothers have had a longer chance to marry⁵². Another feature of premarital fertility is its higher frequency among immigrant girls from villages and outer islands in the main towns who lack the parental control and restraint⁵³. The increasing stream of young people migrating to the main towns and a changing attitude towards

female chastity could bring a rise in the illegitimacy rate or a continuation of the existing high premarital fertility in some territories. Counteracting the possible trend outlined above will be the increasing use of contraceptives by single males and females and the changing socio-economic milieu. Education does not really help, however, in reinforcing the puritanical morals and virtues of the early missionaries since educated people tend to question such morals, but rather it may help to educate the public in the need as well as means to prevent such births for economic and social reasons⁵⁴.

3. DIFFERENTIALS IN FERTILITY

Geographical Differentials

Fertility, as we have seen varies from one island jurisdiction to another although nearly all are experiencing birth rates of over 30 per thousand. Current fertility seems to be higher in less acculturated areas of each island territory. Within each territory, therefore, inter-island and urban-rural differentials in fertility exist. Limitations in the tabulation of the census data do not enable one to analyse in any depth such probable fertility differentials but one expects no great deviation in areal fertility differentials in the Pacific islands from those in other developing countries. In the smaller outlying islands fertility is subject to greater random fluctuations because the size of the population is smaller than in the main islands. Inter-island migrations, especially from smaller to larger islands, deprive the outer islands of the young population while these fecund young people are added to the main islands' populations. Those who remain behind are usually the ones with family commitments which make it harder for them to emigrate, especially if they have many children below 10 years of age.

In a study of the populations of the Cook Islands it was found that inter-island fertility differentials do exist even if the variation is not great⁵⁵. In Table 3.5 the average annual fertility rates per thousand women aged 15-44 years recorded in 4 successive censuses of the Cook Islands are given. Except for

the 1945 and 1951 censuses in which the annual fertility was lowest in the Northern Group, the outer islands normally have higher fertility than Rarotonga where the fertility ratio is below the average for all the Cook Islands.

Table 3.5 AVERAGE ANNUAL FERTILITY RATES PER 1,000 WOMEN AGED 15-44 YEARS RECORDED IN SUCCESSIVE CENSUSES OF THE COOK ISLANDS 1936-56

Population	1936	1945	1951	1956
Rarotonga	188	210	207	217
Lower Group excluding Rarotonga	217	220	226	254
Northern Group	N.A.	159	189	266
Cook Islands	N.A.	203	212	239

Source: McArthur, N., 1968 op. cit. p.220

Note: Rates cited for all censuses except 1945 may be a little too high because the Non-Maori population would not be included in the denominator of the rates for this whereas the births from this section of the population could not be excluded from the numerators. Fertility rates for Rarotonga only would be likely to be much affected by this inconsistency and those for the Northern Group scarcely at all. (See also p.330 for figures on French Polynesia, and again the main island of Tahiti showed lower fertility rates.)

N.A. Not Available.

The greatest change in fertility occurred in the population of the Northern Group where the frequency of births increased from 1 for every 6 women of reproductive age in 1945 to more than 1 for every 4 such women in 1956. Part of the increase in fertility is ascribable to the selective effects of migration and part would be due to more complete registration. From the numbers of women recorded at ages 15-39 years in 1951 and 20-44 in 1956 it seems that these birth cohorts in the Northern Group showed a decrease of 1 in every 6 between 1951 and 1956, whereas in the Southern Group excluding Rarotonga there was a decrease of 2 in every 9. Moreover, in 1956 it also seemed that women in the reproductive ages had been having more births on the average than did their counterparts of 10 or 15 years earlier, and this lends support to the

speculation that women who don't migrate are those who are most susceptible to births.

The age composition of the various island populations at earlier censuses than 1956 suggested that females in the Northern Group had fewer children than those in other islands and this is confirmed by the average numbers of children born and surviving to women of completed fertility on each island shown in Table 3.6. Regional differentiation in family size is also apparent among women

Table 3.6 AVERAGE NUMBERS OF CHILDREN BORN AND SURVIVING TO WOMEN OF COMPLETED FERTILITY ON EACH ISLAND IN THE COOK ISLANDS, 1956

Island	Number of Women	Average Number Born	Average Number of Children Surviving
Rarotonga	460	6.26	4.35
Mangaia	129	7.31	N.A.
Aitutaki	142	6.83	N.A.
Atiu	73	7.34	N.A.
Mauke	47	6.51	N.A.
Mitiaro	9	7.56	N.A.
Manuae	-	-	N.A.
Lower Group excluding			
Rarotonga	400	7.06	4.75
Palmerston	3	10.00	N.A.
Pukapuka	65	4.57	N.A.
Nassau	15	2.60	N.A.
Manihiki	53	5.38	N.A.
Rakahanga	28	6.29	N.A.
Penrhyn	52	6.15	N.A.
Suvarrow	-	-	N.A.
Northern Group	206	5.52	3.99
Cook Islands	1066	6.42	4.43

Source: McArthur, N., 1968. op.cit. p.223.

nearing the end of their reproductive life in 1956. The average numbers of children born to women in each age-group in the three sectors of the population are shown in Table 3.7, and there is a striking difference between the average performance of women aged 35-44 years in the Northern Group and women of the same age elsewhere in the Cook Islands. The average number of births to women aged 35 years and over is relatively uniform throughout the population, although the younger Rarotonga women had had slightly fewer

births on the average than women of the same age elsewhere. One of the factors contributing to the smaller averages for women aged 30-44 years in the Northern Group was undoubtedly the greater frequency of childless women in these particular age-groups. Further support for the existing inter-island differentials in fertility is seen in the average crude birth rates of 42.3 and about 50 per thousand for ~~the Cook Islands~~ and Aitutaki respectively during 1950-56. Moreover, juvenility was slightly higher in Aitutaki than in Rarotonga, for instance in 1951 47.2 and 45.6 per cent of the population were under 15 years respectively and in 1956 50.6 and 43.6 per cent respectively⁵⁶.

Table 3.7 AVERAGE NUMBERS OF CHILDREN BORN TO WOMEN IN EACH AGE-GROUP IN EACH AREA IN THE COOK ISLANDS, 1956

Age-Group	Rarotonga	Lower Group excluding Rarotonga	Northern Group	Cook Island
15-19	0.12	0.13	0.19	0.13
20-24	1.08	1.39	1.28	1.23
25-29	2.88	3.31	3.36	3.14
30-34	4.67	5.05	4.67	4.84
35-39	6.03	6.63	4.74	6.11
40-44	5.41	7.15	4.11	5.91
45-49	6.60	7.57	5.81	6.85
60-74	6.17	6.84	5.01	6.14 ₃
75+	5.52	5.62	5.75	5.91

Source: McArthur, N., 1968, op. cit. p.223

The lower fertility among the under 30 years old adult females in Rarotonga in comparison to the Lower and Northern Groups is due in part to the ages at which women in the various sectors of the population began child-bearing. In the islands of the Lower Group, in particular, more women were having their first child before 20 years of age than in Rarotonga. In 1956, for example 26.8, 69.2 and 76.8 per cent, cumulatively, of adult women in Rarotonga were having their first child before the ages of 20, 25 and 30 years respectively whereas the corresponding percentages in the Lower Group were 37.5, 75.0 and 83.4 and in the Northern Group 29.9, 68.4 and 74.1 per cent. The tendency to

postpone first births in the main islands, especially in the towns and ports in the Pacific islands, is a recent trend and this is conspicuous only among the younger age-groups. The declining fertility in the main islands is due to a number of factors which include the rising cost of living, the postponement of first births, especially among the immigrant populations from outer islands, the influence of education and the cheap transmission of new ideas which help many to shake themselves free from their customs and aspire for higher goals and the better things of life, and the greater freedom of women from their traditional place in the home. Not the least important is the greater impact of the recently introduced family planning campaigns among this more sophisticated sector of the island populations.

Further supporting evidence of a slightly lower fertility in the more acculturated main islands can be seen in the Gilbert and Ellice Islands where the island of Tarawa, centre of government and focus of contact with the outside world, had a child-woman ratio of 823 in 1963, i.e. children 0-4 years of age per 1,000 women aged 15-44 years. Only 3 other islands had lower ratios than Tarawa, and in the northern islands, Phoenix and the Liue Islands the child-woman ratios exceeded ^{ed} 1,000. In the New Hebrides, the two main islands where the two main towns of Vila and Santo are located show child-woman ratios generally lower than the surrounding islands apart from a few exceptional ones. The child-woman ratio in 1967 in Santo Island was 879 and in Efate, where Vila is situated, it was 815 whereas most islands except the off-shore islands from the mainland, exhibited ratios of over 900 and some even exceeded 1,000. In Fiji the Lau Group had a higher child-woman ratio of 1,090 than any other province, in 1966.

Within the main islands the fertility of young adult females aged less than 35 years is generally lower in the urban areas than in the villages which reflects the similarity of this recent trend in the urban areas to that in the main islands where they are situated. The child-woman ratio in Suva city in 1966 was 589 and in the two adjoining provinces which form Suva's immediate hinterland the ratio was 795 in Naitasiri and 801 in Rewa. In Ba province in

the northwest of Viti Levu where the three next largest towns of Nadi, Lautoka and Ba are located the ratio was 861. Ba, Rewa and Naitasiri are all provinces of in-migration. The only other province of significant in-migration is Serua which had a ratio of 848. All the remaining provinces had child-woman ratios well above those for the four provinces already mentioned, and these provinces were characterised by net out-migration⁵⁷.

Although Suva is an extreme example of the urban-rural differentials in fertility because it is the largest city in the territories under study and it has the features and functions of most cities in the developing and developed countries, it is probably safe to assume that such differentials also exist in other island jurisdictions. Moreover, the presence of many single adult males and females in schools or in occupations in urban areas partly explain the low fertility. In Honiara, most natives are only temporary residents during the time of employment and after a period, the length depends on the permanency of the job, the married native returns to his village where his wife and family have remained. The same sort of thing has been observed in New Caledonia's main urban centre of Noumea where most of the 40,000 odd Europeans live. Undoubtedly, it seems, lower fertility may also be the trend in Papeete, Apia, Pago Pago, Nuku'alofa, Ponape and Agana.

The increasing loosening of kinship ties and the emergence of individualism and materialism in the urban areas have shaken the former security in the traditional society that favoured large families. In Tahiti, Finney found that although parents in Papeete still look upon their children as a source of labour and security in old age they also find it more expensive to have many children in the light of the increasing demands of modern society for such responsibilities as education, clothing and entertainment. He also found that the emancipation of the women from the home has resulted in greater strained family relations where the customary authority of the husband and father is questioned by the wife and children⁵⁸. Moreover, the former religious zeal which favoured large families is waning in the urban areas which, being the focus of acculturation, come under the influence of the mass media, family planning and ideas of low fertility non-indigenous

inhabitants. However, it should be remembered that the fertility in these urban areas is still very much higher than fertility in the developed countries. Perhaps, the fact that a fair proportion of the island urban populations are still engaged in the primary industries and are still self-subsistent in their approach to life will help to give a better perspective of the distance in fertility decline which the urban areas in the islands still have to cover. Meantime, the initial fertility decline in rural areas has barely started.

Ethnic Differentials

Although racial differences in the reproductive capacity of fecund women is still a moot point, it is certain that such existing differences are also the products of cultural differences in ways of living, social organization and attitudes toward family formation. Between the three indigenous Pacific races, i.e. the Micronesians, Melanesians and Polynesians, there is very little variation in fertility behavioural pattern. Fecund women in all three races are very prolific in spite of the existing differences in the extent of acculturation. We have seen that neither the age of marriage nor the total completed fertility vary greatly among the island jurisdictions in general. Though the Micronesians appear to have slightly lower fertility than the Melanesians and Polynesians this tendency may be the influence of their poorer diets and the long awareness of the limitations of their atolls to support indefinite population growth. Thus this seemingly racial difference becomes only superficial when examined closely. For example, in the Gilbert and Ellice Islands Colony the completed total fertility in 1963 for the Micronesians and Polynesians was 5.7 and 5.5 children respectively and both ethnic groups are atoll dwellers subsisting on the same kind of food.

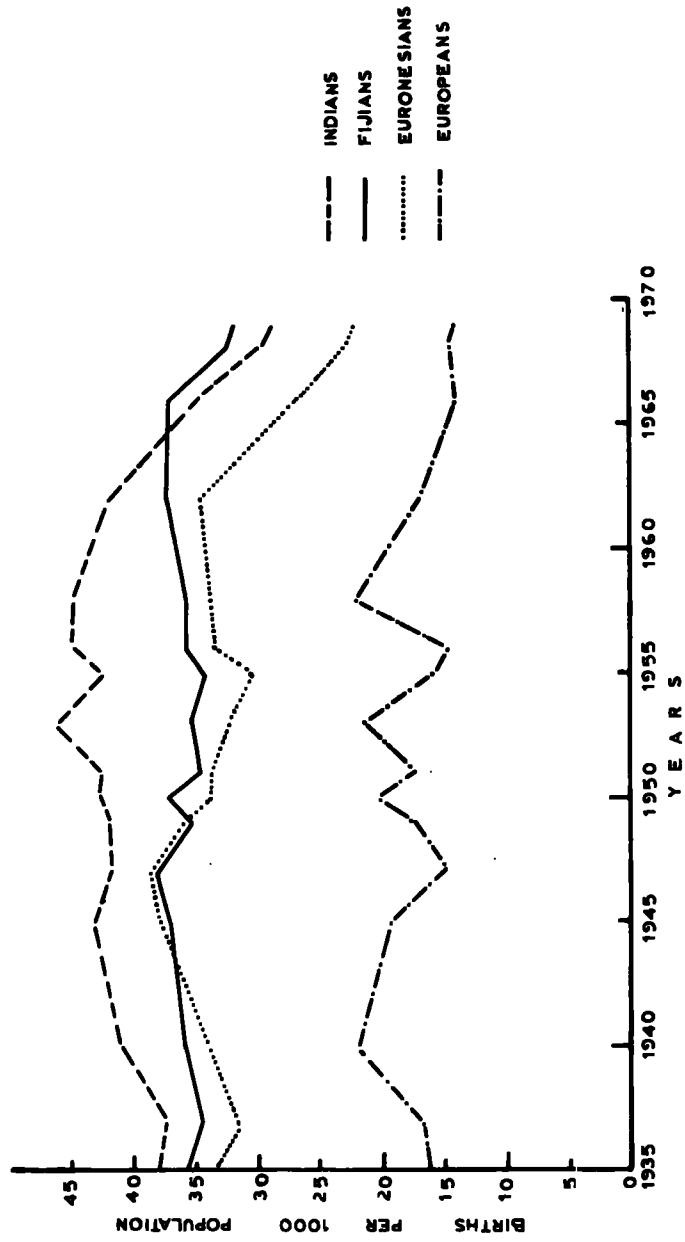
Among the inhabitants of any island territory, fertility appears to vary from one ethnic group to another. The native inhabitants of any island territory normally have higher fertility than the immigrant indigenous groups. However, the variation is only slight and it is probably the demographic effect of migration and the length of habitation that produce this variation

Fig.3.7 The Crude Birth Rates for selected ethnic groups
in Fiji, 1935-68.

Sources: (1) Tudor, J. (ed.) 1968, op.cit., p.267.

(2) Fiji, Bureau of Statistics; 1969, "Annual
Statistical Abstract Fiji, 1969", Suva. p.20.

CRUDE BIRTH RATES FOR ETHNIC GROUPS, FIJI, 1935-68.



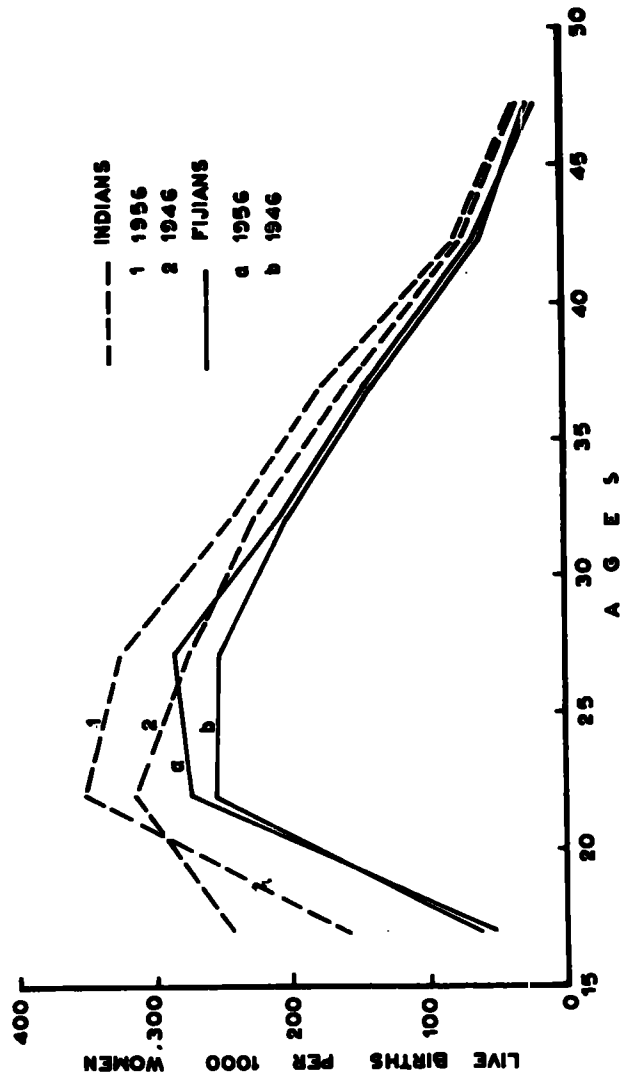
since attitudes toward fertility hardly differ among the native Pacific islanders. Even the Euronians have high fertility, although it may be slightly lower than most indigenous groups which is partly due to the greater acculturation of the mixed-bloods. On the other hand, the Europeans continue to conform to the lower fertility pattern of their counterparts elsewhere in developed countries. Thus their fertility rate is slightly less than half the indigenous people's fertility as suggested by their completed total fertility of 2.2 children in 1966 in Fiji in comparison to the Fijian's 5.5 (see Figure 3.6). The only non-indigenous population that has either equalled or surpassed the fertility of the most prolific islanders such as the Samoans and Cook Islanders are the Indians of Fiji. The Chinese, especially in Tahiti and Fiji, once had high fertility similar to that of the islanders particularly after the influx of new immigrants between 1924 and 1945 but since then they have shown greater acculturation than the natives, as well as more rapid fertility decline. In 1966 in Fiji the Chinese had a crude birth rate of 28.4 per thousand and a completed total fertility of 4.8 children.

The crude birth rates for four different component populations of Fiji from 1935-68 are shown in Figure 3.7, which indicates the higher fertility of the Indians than the Fijians until the mid 1960s when the decline in their fertility has allowed the Fijians to exceed the Indians' crude birth rate. At the other extreme are the Europeans with very low fertility. Throughout this century the crude birth rate for the Fijian population has risen slowly from about 30 per thousand to as high as 38 during most of the post-1945 years, whereas the birth rate for the Indian component rose in a more spectacular fashion from about 25 per thousand in 1892, when 70 per cent of the population were males⁵⁹, to exceed 45 during the 1950s as the sexes in the younger cohorts became more balanced. The higher fertility of the Indians until the last 5 years can be seen in the age-specific fertility rates for the two components during 1946 and 1956 shown in Figure 3.8. The rapid growth of

Fig.3.8 Average Age-Specific Fertility Rates for Indians and
Fijians, the three years centring on the 1946 and 1956
censuses.

Source: McArthur, N., 1967, op.cit., p.61.

AVERAGE AGE-SPECIFIC FERTILITY RATES



the Indian population which increased their numbers to exceed the Fijians' in 1945 is due to this high fertility and their lower mortality. In the last decade the crude birth rate for the Indian component has declined rapidly from 45.5 in 1961 to 29.7 in 1968, while the Fijians' birth rate has declined only from 37.8 to 32.1 per thousand during the same period. The 'Other Pacific Islanders' and Rotumans also exhibited some decline in the birth rates, similar to the rate of decline among Fijians⁶⁰.

The fertility differential between the component populations of Fiji is further evidenced by the differences in the age of marriage, age of attainment of motherhood, frequency of births and the numbers of children ever born to women of completed fertility. Indians marry at younger ages than the Fijians and there are relatively fewer women who remain unwed in all ages from 15-45 years than the Fijians. At the other extreme are the Europeans with the other minor component populations of 'Other Pacific Islanders' being similar to the Fijians. By the time they pass their reproductive span only 1 per cent of the Indians fail to marry but for the Fijians it is over 5 per cent (see Figure 3.9) and for the Europeans over 10 per cent. Although the median age of marriage for Indians has been raised considerably from 18 years for females in 1956 to 20.5 years in 1966, males from 19.5 years to 23 years respectively, Indians still marry earlier than the other component populations (see Table 3.8). In spite of the postponement of marriage and the first parturition by fecund Indian women, which partly explain their rapidly falling birth rate, the spacing of births had not been altered by the 1966 census. For the Fijians and other minor component populations there had been no profound change in the age of attainment of motherhood or of marriage (see Tables 3.8 and 3.9) since 1956.

At the 1956 census about 75 per cent of the Fijian women attained motherhood by the age of 25 years and in 1966 the pattern has not significantly changed. As for the Indians, over two-thirds of the women in all 5 year cohorts had had their first child before the age of 20 years in 1956 and about 90 per

Fig.3.9 The proportion of females, 15 years of age and over, never married per 1,000 females in each 5-year age-group for the various component populations of Fiji, 1966.

Source: Zwart, F.H.A.G., op.cit., p.27.

FEMALES OVER 14 YEARS NEVER MARRIED PER 1000 FEMALES IN EACH 5-YEAR AGE-GROUP, FIJI, 1966

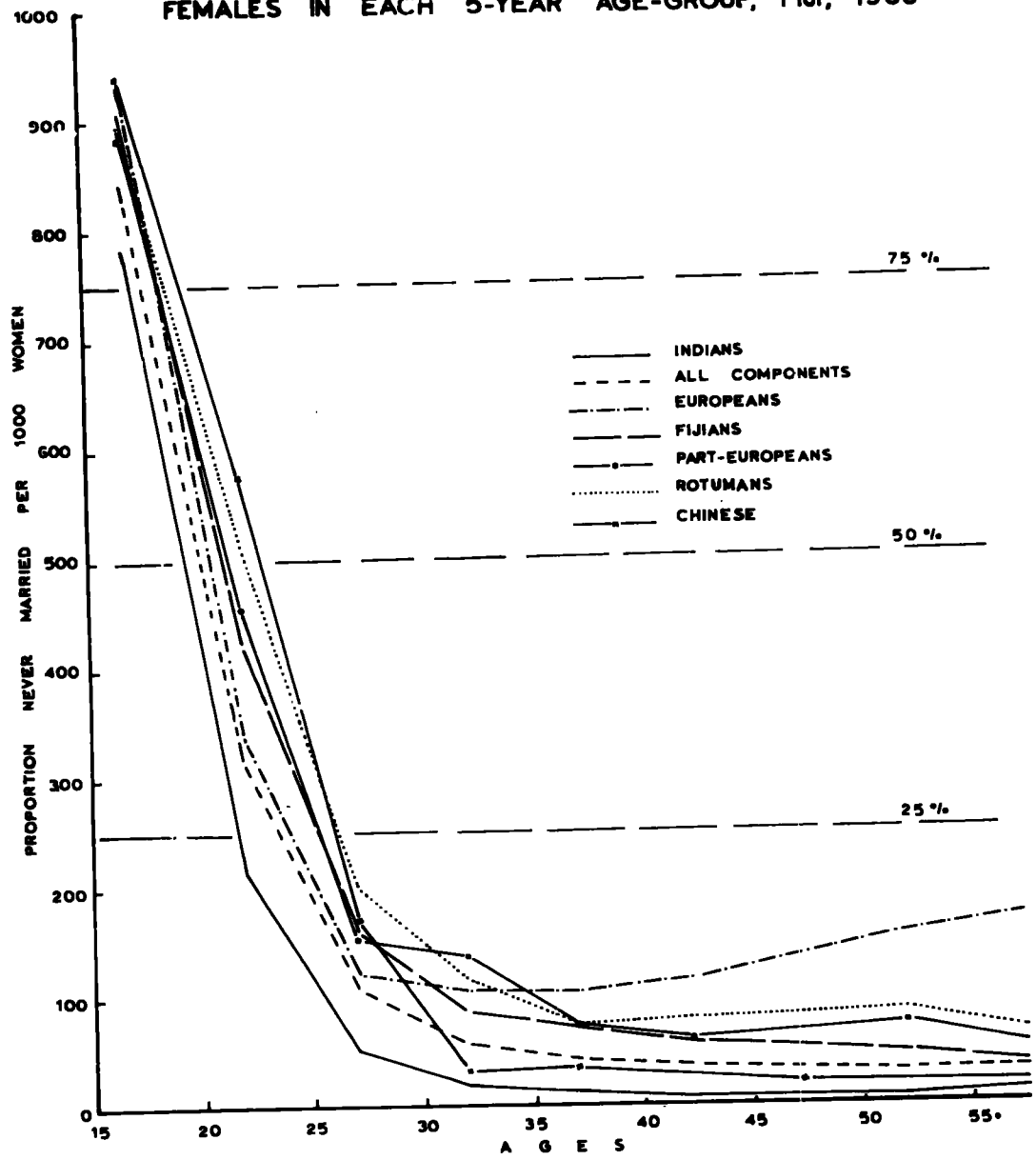


Table 3.8 MEDIAN AGES OF WOMEN AT THE BIRTH OF THEIR FIRST CHILD IN EACH COMPONENT POPULATION IN FIJI IN 1956 and 1966

Component Population	1956	1966	Component Population	1956	1966
Chinese & Part-Chinese	20.87	24.03	Part-European	20.62	20.63
European	25.30	25.00	Rotuman	20.31	20.82
Fijian	20.78	20.90	Other Pacific Islanders	19.66	20.63
Indian	17.63	18.51	All components	19.49	19.86

Source: Zwart, F.H.A.G. 1968, op. cit. p.37

Table 3.9 ATTAINMENT OF MOTHERHOOD AT SPECIFIED AGES: RATES PER 1,000 FEMALES AT RISK IN GROUPED COHORTS, INDIANS AND FIJIANS IN FIJI, 1956 AND 1966

Age of Women	Age at first birth											
	Before 20 years				Before 25 years				Before 30 years			
	Fijian		Indian		Fijian		Indian		Fijian		Indian	
	1956	1966	1956	1966	1956	1966	1956	1966	1956	1966	1956	1966
20-24	306	282	685	452	*	*	*	*	*	*	*	*
25-29	315	301	731	581	776	761	909	870	*	*	*	*
30-34	315	304	766	655	750	756	910	890	863	873	947	939
35-39	320	317	734	701	739	755	903	901	861	863	938	945
40-44	296	274	723	713	749	741	900	900	871	852	933	940
45-59	292	261	675	693	750	708	875	889	884	849	915	931
60+	231	242	503	572	716	721	757	834	876	876	833	891
All ages	298	283	702	604	749	739	888	884	872	861	922	934

Source: Zwart, F.H.A.G., 1968, op. cit. p.29

* Experience incomplete for these women

cent by the age of 25 years. The chance of having a child or finding a husband diminishes greatly for the Indian women by the age of 25, whereas for the Fijian women it comes 5 years later. By 30 years of age only about 6 per cent of the Indians still have not attained motherhood but for their Fijian counterparts the proportion who have not done so is about 13 per cent. Although the likelihood of the attainment of motherhood before the age of 20 years was still higher for the Indians in 1966, the pattern has changed for them in the 20-24 age-group where only 45 per cent had attained motherhood before the age of 20 years whereas no significant change had taken place for the

same cohort among the Fijians. The Indians completed total fertility has remained higher than the Fijians, for example in 1956 it was 6.9 and 5.8 and in 1966 it was 7.7 and 5.7 children respectively (see Figure 3.6). The Indians completed average family size exceed by about 1.5 children the next highest completed total fertility of 6.2 for the Rotumans in 1966.

The Europeans at the other extreme had an average completed family size of 2.2 children, an average birth interval of about 10 years and normally marry at the age of 23 years in the 1966 and 1956 censuses. This means that most European women attained motherhood 5 years later than the Fijians and other component populations. More European women remain childless to the end of their reproductive life than the other components, for example about 20 per cent of such women in 1966 whereas for the Indians it was about 4.2 and for the Fijians 11.2 per cent. As already mentioned, the minor component populations of indigenous Pacific islanders exhibited little variation from the fertility pattern of the Fijians. It may be accepted that the differential patterns of fertility between the natives of Fiji and the Europeans are similarly exhibited in other island communities.

Socio-Economic Differentials

The tabulations of the fertility statistical data in the censuses of the various island territories do not distinguish between the fertility performance of the various socio-economic groups. Hence, in the absence of any available data, much of what follows is only a conjecture based on the observations of the writer in some of the island territories. Moreover, the attempt made is also based on the concepts, authenticated by several studies in developing and developed nations, that such differentials do exist among the different socio-economic groups.

In primitive societies there are no sharp divisions of labour as exist in the industrialized, developed nations. Permeating the whole infrastructure of primitive societies is the understanding that every family or tribal unit should be self-sufficient and any existing labour division is very flexible and

less specialized. Furthermore, wealth is not based on a money economy but on property and the system of kinship often requires the sharing of wealth besides providing security for the members of the kin-group. Status is largely inherited and the absence of commercialism does not allow competition that stimulates the necessity of reviewing the existing fertility norms as it has done in developed countries in combination with growing urbanization. In the Pacific islands, religious differences among the Catholics, Protestants and non-Christians do not affect fertility as large families are the universal norm among the natives, irrespective of class and religion. Until the last decade or two, there were possibly no real socio-economic differentials in fertility. Factors which act as 'depressors', for instance education, urbanization, individualism, commercialism and the emancipation of women from their traditional roles, were just emerging and their impact on island behavioural patterns was hardly felt. In fact, what seemed to have occurred was a boosting of fertility among the few educated people who knew how to improve their health, and wage employment provided them with money to facilitate large families which brought additional prestige⁶¹. Thus economic and educational advancement per se did not automatically decrease fertility.

Recently, the fertility among the educated white-collar workers, with higher steadier incomes than the average islander has shown signs of declining whereas the agricultural workers continue to follow the norm⁶². Even if the uneducated desire fewer children it is often beyond their capacity and knowledge to achieve what is best for them. Educated⁶³ young adults are less inhibited by the laws of custom and being more knowledgeable are far-sighted and more receptive to the ideas favouring low fertility. Most live in the towns where they are employed, and the rising expenses of the modern, cash sector necessitates the limiting of family size. Moreover, they are more sceptical of the religious ideal of 'multiply and be fruitful' which is not in harmony with their personal aspirations. Being more acculturated they accept the use of contraceptives with little guilty

conscience. Finally, education has compelled them to marry at higher ages than the average islander, especially if their education has to be completed in metropolitan countries.

However, these people, mostly below 25 years of age, form only an elite minority group - probably not more than 10 per cent of the indigenous populations though the proportion varies from territory to territory depending on the availability of educational and occupational opportunities. If fertility is to be reduced among the remaining 90 per cent, they must be encouraged to practise family planning, and this is urgent in view of the increasing demographic pressure on the available agricultural land, the only easily utilized resource of most islands, jobs and the national economy, particularly in Micronesia and Polynesia.

4. FAMILY PLANNING AND FUTURE PROSPECTS

Family Planning

The publicity given to the dangers of 'population explosion' and the warnings by demographers, economists and census commissioners against the dire consequences of continued rapid population growth in the Pacific islands in post-World War II years prompted the island Governments, who are responsible for almost all developments, to investigate and propagate family planning in the late 1950s. Family planning programmes started off fairly quietly and few people were aware of the availability of such a service. Moreover, little money was spent on the programmes and the authorities were not very enthusiastic and often indifferent. This was particularly so because of the integration of the family planning programmes into the health services, as many other developing countries have done, and medical authorities were probably at first very suspicious of this trespass upon their traditional domain of healing, besides the practical fact that medical staffs and facilities were then very strained to meet the healing demands. By the mid-1960s it became quite clear that continued rapid population growth had jeopardized the economic advance and both government and health authorities were forced to advertise the availability of family planning

services. More revenue was allocated to family planning as well as stepping up the propaganda imploring the people to consider limiting their families for economic and health reasons.

In Tonga, family planning came into existence in 1958 but it was not until 1963 that it was widely publicised. Since then a part-time family planning officer, who is a native medical practitioner, has been appointed as well as assistants. Family planning has been incorporated into the 'maternity and child welfare' section of the health service. No Family Planning Association has been formed as in Fiji although attempts are being made. Subsidiary clinics have been set up in Vava'u in 1965 and in Pongai in 1967, besides the main clinic in Nuku'alofa. Radio broadcasts encourage the people to attend the clinics as well as motivating them to consider the advantages of family planning, not only for themselves but for the country as a whole. Lectures and films are being given in every village by a mobile team. Along the streets and in shop windows are posters imploring the public to limit their families to 2 or 3 children. Lectures on family planning are also given to the students in the secondary schools which reflects the vigorous efforts being taken by the authorities. Throughout the various administrative archipelagoes, particularly in Polynesia and Micronesia where the need is most acute, similar methods of educating the public on the necessity of family limitation are being undertaken.

But how have the people reacted to this call for family limitation? As expected in any place where new ideas are in ferment the reaction has been one of contempt against any attempted intrusion into their sex life and regulation of childbearing performance. So far the inertia of the societal fertility norm has proved very difficult to overcome ~~and~~ in spite of the intensive propaganda. In spite of generous offers such as free contraceptives in Tonga or a month's supply of contraceptive pills for only 20 cents in Fiji, native women are reluctant to visit the clinics even when they want fewer children⁶⁴. Except in the main towns the knowledge of fertility limitation is not sought. Pirie commented, for example, that outside of Apia the Western Samoan population has not accepted family planning⁶⁵. There are many obstacles which have prevented any

instantaneous success. The 'laissez faire' attitude of the islanders means that among those who are not prejudiced against family limitation many will not go to any trouble to do anything about limiting their childbearing performance when they so desire. The island way of life has prevented the natives from seeing the urgency to start family limitation. Moreover, religious belief of the early missionaries in large families is still strongly cherished by both Protestants and Catholics alike and many regard family limitation as a sin in preventing God's purpose in man to procreate⁶⁶. In Polynesia, particularly in Tonga, it is taboo to talk about the sex organs within hearing of relatives or other members of the family who are of the opposite sex. Therefore, attendance in public lectures in the villages where such taboos are rigidly enforced has never been high and many families turn off their wireless sets when it is time for the family planning radio programme. Among certain sections of the community there is a growing fear that the easy availability of contraceptives will erase the fear of pregnancy among single girls and thus encourage premarital sex.

However, there are also encouraging signs that all efforts are not in vain and the resistance is growing thin. One of these is the increasing number of women who are now practising family limitation as shown by the increasing attendance at clinics in Tonga and Fiji, 1959-68, in Table 3.10. The figures given do not include those who use contraceptives bought from stores. Moreover, the growing

Table 3.10 ATTENDANCES AT FAMILY PLANNING CLINICS IN TONGA AND FIJI, 1959-68

Island Territory	Attendances	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Fiji	First Visit	-	-	-	-	-	4129	4554	4208	5356	
	Return Visit	-	-	-	-	-	12950	18263	17281	23003	
	Total attendances	2242	2700	2256	2644	2732	17079	22817	21489	28359	
Tonga	Total attendances	-	-	-	-	196	464	149*	713	666	741

Source: 1. 'Annual Reports of the Minister of Health 1963-68', Tonga.
2. Bureau of Statistics, 'Annual Statistical Abstract: Fiji 1969' Suva, p.86.

* The low attendance during 1965 in Tonga was due to a shortage of contraceptive material

proportion of educated young people ready to enter or entering the reproductive span who have less traditionally regimented ideas about family-size will certainly encourage wider use of birth control devices. In 1963 only one-third of those who paid a first visit to the clinics in Tonga attended regularly for more supplies but in 1968 only 20 per cent failed to attend regularly. There are also increasing numbers of married women and men who are asking to be sterilized. In 1966, 117 women had their fallopian tubes ligated whereas before 1963 hardly anyone was willing to be sterilized. Just about 5 per cent of the fecund female population attended the clinics in 1963 but in 1966 the proportion increased to about 10 per cent and in 1968 about 12 per cent. The percentage of the entire fecund female population who effectively use contraceptives in Tonga has increased from about 2 per cent in 1966 to 9 per cent in 1968.

On the whole, the effect of family planning on fertility in Tonga, as in most other territories, is still minimal. Some of the clinical problems are the shortage of staff, lack of organization, hazy objectives, lack of tact on the part of officials during propaganda to a hypersensitive section of the community and shortage of funds and contraceptive supplies. International organizations, as in the struggle to lower mortality, are also doing very much appreciated work to help the authorities in the attempt to lower fertility. Such organizations as the International Planned Parenthood Federation, Pathfinder's Fund, World Health Organization and the South Pacific Commission help in providing contraceptive supplies, scholarships for the training of family planning officers, advice, and educational and propaganda materials. Unlike the developed countries, contraceptives are largely used in the island territories to limit large families rather than for planning or spacing of births until certain goals are achieved. For example, in 1968 in Tonga only 20 per cent of those who used birth control devices have 2 or fewer children while over 50 per cent have more than 5 children. Perhaps what is more revealing is the fact that less than 1 per cent of those who used contraceptives were childless women which reflects the lack of planning among young childless couples.

The only island territory where family planning has largely contributed to a remarkable decline in fertility is Fiji where the crude birth rate fell from 41.8 in 1959 to 30.2 per thousand in 1969⁶⁷. The impact of family planning has been greatest upon the Indian component as well as the Europeans. The birth rate for the Indians fell from 45.5 in 1962 to 29.7 in 1968. On the other hand, the Fijian women are quite reluctant to care about birth control and as a result their birth rate has declined at a slower rate from 37.3 in 1962 to 36.9 in 1966 and 32.1 per thousand in 1969. In Western Melanesia little effort has been done to implement any family planning programme because the growth is only recent after its prolonged arrest by high mortality. Moreover, the demographic pressure on available resources has not been felt there yet, though the less rigid customs may help in a quicker acceptance of family planning and it may be advisable to encourage family planning now rather than neglecting it until it may be almost too late, as in Polynesia and Micronesia.

Prospects for Future Declines

It is anticipated that in territories where family planning and other fertility depressing factors have brought about a decline in fertility they will continue to do so as the situation becomes less favourable to high fertility and that in territories where fertility has not been lowered more intensive education of the public may soon have some effect. Hope also lies in the fact that today's young people, of whom approximately 2 out of every 3 children will complete secondary education, will be more acculturated to see the need for family planning. Education has already motivated a changed outlook among today's young adults to favour small families. However, the inertia of the large proportion of young population, almost everywhere over 45 per cent are under 15 years, will continue to produce rapid population growth for the next 20 or 25 years, particularly when the rapid decline in mortality will mean that about 90 per cent of girls who reach the age of 15 years are likely to live to the end of their reproductive span. Today's young people, who receive better education, are becoming increasingly discontented with the lack of opportunity available for them and

a longer continuation of high fertility norms will continue to retard any concerted effort for economic advancement in territories which lack resources for industrialization. The growth of unemployed and underemployed discontented elements may also lead in future to other social and political complications.

A contributory factor that may help to reduce fertility would be a continued rising age at marriage which would help to truncate the fecund period of females. One hopes that the balancing of the sex-ratio, which will relieve the pressure on females to marry young will help raise the age of marriage for them. An illustration may be drawn from the New Hebrides where there are at present nearly 4000 males at ages 20 to 40 years available for marriage. There are 4,300 females aged 15 to 35 years, assuming that there is an average difference of 5 years between the ages of males and females at marriage and that few girls marry before they are 15 years old. As the number reported at younger ages are added in, the surplus of females increases progressively, and if there is no difference between the chances of survival for males and females in these ages, the ages at which men and women marry may have to change slightly to maintain the high proportion of females who are or have been married. Thus if males continue to marry at about 5 years older than females then the age of females at marriage will have to be further raised a little or otherwise the marriage age of males will have to be lowered if the present age of marriage for females is to remain unchanged. However, this is probably nothing more than a mathematical exercise, for social and economic factors are likely to have an increasing influence in future rather than just a sex-ratio equation.

Social and economic changes often cause changes in the cultural values of peoples which thereby help to decrease fertility, but the process is generally slow. Nevertheless, the smallness of the island territories and their populations will help in quickening the dissemination of new ideas favouring small-sized families. Unlike the large countries in the developing areas of the world, particularly ones like India and Pakistan, where the massive size of the populations will require a longer period to saturate the whole country with the doctrines of neo-Malthusianism the Pacific islands, helped by the absence of

civil strife, would easily be saturated with ideas against the current pro-natalist forces. It is expected that a continued and patient effort by the family planning authorities will soon crack the barrier of opposition within the next decade. Once this happens family planning will become almost universal and further substantial declines in fertility will come. The islands of Western Melanesia may find the prolonged high mortality and the stagnation of population growth and acculturation a blessing in disguise for these have allowed the administrative authorities time to learn from the problems of Polynesia and Micronesia before they formulate economic and population policies.

NOTES AND REFERENCES

1. Clarke, J.I., 1970 (Reprint), 'Population Geography'. The Commonwealth and International Library, Pergamon Press, Oxford. p.103.
2. See Clarke, J.I., 1971 'Population Geography and the Developing Countries' The Commonwealth and International Library, Pergamon Press, Oxford. pp. 16, 79, 81-84. 126-129; 160-161; 204-206; 262-265.
3. The figure for Western Samoa is only an estimate and therefore does not correspond with the figure in Table 3.1. Pirie estimated it to be close to 40 per thousand in 1967 and he expected a continuation of the fertility levels at the time. Pirie, P., 1967, op. cit. p.22.
4. McArthur N., and Yaxley, J.F., 1968, op. cit. p.21 and Brookfield, H.C., 1971, op. cit. p.219.
5. The birth rates recorded in the Cocos - (Keeling) by T.E.Smith is probably very close to the biological maximum. Smith reported a crude birth rate close to 60 per thousand. Smith, T.E., 1960 'The Cocos-(Keeling) Islands: A Demographic Laboratory' in 'Population Studies', Vol. XIV, pp. 94-130.
6. Durand, J.D. and P. Paillat, 1969, 'Demographic Transition' in 'Population Change: Asia and Oceania' eds. Borrie W.D. and M. Cameron, IUSSP, ANU, Canberra.
7. 'Annual Reports of the Department of Justice', Government Printer, Tonga.
8. For more information on birth registration in islands of Polynesia see McArthur, N., 1967 op. cit. pp 48-53; 89-92; 131-135; 151-153; 212-214.
9. McArthur, N., 1967, op. cit. p.228.
10. McArthur, N., 1964 'Contemporary Polynesian Emigration from Samoa and the Cook Islands' in 'Journal of the Polynesian Society' Vol. 73, No. 3. p.338.
11. Carlson found that during the nineteenth century factors like the changing rate of marriage and catastrophic events often distort the expected birth rate resulting in short-term fluctuations apart from the long-term, smoother fluctuation of about every 20-25 years. Carlson, G., 1970 'Nineteenth Century Fertility Oscillations' in 'Population Studies', Vol. XXIV No. 3, pp. 413-22
12. The crude birth rate for the Maoris also follow similar trends to that in the island territories. In the last decade of the nineteenth century it was about 28 per thousand and it rose to 34 in 1913 and 43.6 in 1955.
13. Pirie, P., 1967, op. cit. p.3.
14. McArthur, N., 1967, op. cit. p.76-79. The crude birth rate in the Cook Islands in 1892 was about 25.9 per thousand. Beaglehole, E., 1957, op. cit. p.135
15. McArthur, N. and Yaxley, J.F., 1968, op. cit. pp 6, 10, 3, 2, 9.
16. Melanesian women normally have their children born in a small hut in the bush before the influence of Europeans reduced the frequency of such actions. Therefore it follows that many births were unknown to the early missionaries who tried to keep a record of births within their communities.
17. Naval Intelligence Division, 1945, op. cit. Vol. II p.326.
18. Naval Intelligence Division, 1945, op. cit. Vol. II. p.83. Early decline in Pitcairn may also be the result of an attempt to limit the size of families because of overpopulation. In the 1830s the Pitcairn Islanders were moved to Tahiti because of overpopulation but they returned to the island after many deaths from diseases in Tahiti. For the same reason they were moved to Norfolk Island in the 1850s.

19. Almost half of the American Samoan women aged 20-24 years in the census of 1956 were unmarried. In 1955-57, only 7 per cent of the childless women of reproductive age gave birth to their first child and first-order births constituted only one-sixth of all births recorded. In 1960, between one-sixth and one-seventh of all births recorded were first-order births. However, once a child has been born the likelihood of successive births is still as high as before. See McArthur, 1964, op. cit. p.338.
20. Sauvy, A., 1969 'General Theory of Population' (Transl by Campos, C.) Weidenfeld and Nicholson, London. p.355.
21. Child-hood betrothal was very widely practised although marriage did not take place until after puberty, by which time the bridegroom has collected enough gifts for the bride's relatives. If he needed more time an agreement could be reached and cohabitation further delayed. This practice was stopped by the missionaries and government officials. In Nauru it has been reported that girls marry from the age of 12 to 14 years. See WEDGWOOD, C.H., 1936 'Report on Research Work in Nauru Island, Central Pacific' in 'Oceania', Vols 6(3) and 7(1) pp. 359-385; 1-33, Stephen, E., 1936, 'Notes on Nauru' in 'Oceania', Vol. 7(1) pp. 34-63.
22. See Davis K., 1970 'Population Policy: Will Current Policies Succeed?' in 'Population Geography: A Reader' ed. by Demko, G.J., Rose, H.M. and Schnell, G.A., McGraw-Hill Book Company, New York, p.256.
23. McArthur, N. and Yaxley, J.F., 1968, op. cit. p.6.
24. Thomson, B. 'The Diversions of a Prime Minister' Edinburgh, 1894, pp.373-4
25. Keesing, F.M., 1945, op. cit. p.98.
26. In Tonga during the 1940s and early 1950s most women's education ended in the primary schools for the general attitude was that women did not need education to be a housewife. All a women needed to know was how to write her name. Thus many girls, when they left primary school by the age of 17 or 18 soon marry and start a family. Today people look upon those who are still at school, both boys and girls, as too young to marry even though they may be 20 years old or older.
27. Young married couples, a decade ago, lived with either the husband's parents or wife's parents for sometime while they both gradually learned the responsibilities of parenthood. The idea was that they should not be saddled with too many decisions which may take the joy out of early married life.
28. On the contrary, Norma McArthur does not envisage any great change in future in the age of marriage for women, though it is based entirely on demographic calculations.
29. For further discussion on the inertia of cultural fertility norms and how cultural fatalistic and passive attitudes, prescriptions and proscriptions regarding sexual practices and conceptions prevent the reorientation of cultural values, see Freedman R., 1968, 'Norms for Family Size in Underdeveloped Areas' in 'Population and Society' ed. Nam, C.B., Houghton, Mifflin Company, Boston, pp. 215-230.
30. In Papeete, Tahiti, the parents often took their children out of school, as in other island populations, to help in the homes and other works. But when allowances were paid to parents for each child that stayed on at school parents were then reluctant to force their children to leave school at an early age. Finney, B.R., 1965, 'Polynesian Peasants and Protariats: Socio-Economic Change among the Tahitians of French Polynesia' in 'The Journal of the Polynesian Society', Vol. 73, No. 3., p.338.
31. Margaret Mead said of the Samoans in her work there in the 1920s that 'the barren woman is mildly execrated and her misfortune attributed to loose living'. Mead, M., 1969, 'Coming of Age in Samoa', Penguin Books, London p.153.
32. This attitude towards early child-bearing after marriage in Tonga is discussed further in Spillius, E., 1960, 'Report on a Brief Study of Mother-Child Relationships in WHO, Tonga.'

33. Although the frequency and type of sexual intercourse is highly variable among certain types of societies and socio-economic groups it is generally believed that the frequency of cohabitation is higher among preliterate societies than urban societies. Kinsey's survey in urban societies found that married couples normally have sexual intercourse from 1 to 3 times a week. On the other hand the Chagga men have been reported to have had sexual intercourse as often as 10 times a night. According to a medical informant the greater the frequency of heterosexual intercourse the less chances of conception since the testicles are not given enough time to manufacture sperms. In the light of this it seems that 1 to 3 times a week has better chances of conception than 10 times a night.

34. In Melanesia and Micronesia in the last century married men spent most of their time sleeping in the men's club house and as a result older men kept a watchful eye over young married men that this practice was observed strictly. However, missionaries discouraged this practice and encouraged wives and husbands to live together and as a result many older people complained that this taboo is no longer observed although a husband may be scolded by his wife's mother for having his wife pregnant before the baby is weaned. Thus, normally, abstinence on the part of parents may last for 2 years or 3 for most babies were kept at the breast until the teeth have fully grown since there was no artificial food for early weaning to be possible. The sign of a deterioration in the baby's health was often taken as a sign that the taboo has been broken and the mother was again pregnant. The taboo was essential in the spacing of births since, unlike European women who do not menstruate during the time of lactation, island women often start menstruating after 3 or 4 months from childbirth.

35. Divorce was relatively easy in the past before the legalization of matrimony and this easy divorce and quick remarriage is still observed today in the remote parts of the Solomon islands. All the wife has to do to terminate the marriage is by leaving the husband. See Chapman, M., 1969, 'A Population Study in South Guadalcanal: Some Results and Implications', in 'Oceania', Vol. XL. No. 2., pp. 119-149.

36. The better chances of remarriage for males are reflected in great number of divorced males remarried in Fiji between 1963 and 1966. Among the Fijians 204 males remarried and only 158 divorced females did so, Indians 145 and 91 respectively and in the All Component populations, 385 and 286 respectively.

37. Part of the rise in fertility in the present century could be ascribable to the abolition of infanticide and abortion, the failure to observe the sexual taboos and the strangling of wives, for example in the New Hebrides, on the death of husbands.

38. The frequency of births does not take into account the effect of still-births and miscarriages which will probably result in a shorter birth interval for some women. However, average birth intervals are 10 years between each birth for women aged 15-24 years, 3.3 years for women aged 25-34 years and 5.2 years for age groups 35-44 years.

39. In low fertility countries the age of marriage has fallen slightly in recent years with no increase in fertility. Moreover, since it is the style today for women in the developed countries to work many have their children young in order to be free to work without any more interruption to their careers.

40. In Tonga a few women are known to have had more than 20 children. At least one is known to have had 24 children.

41. In the West Indies illegitimacy is mostly over 60 per cent of all live births. In St. Vincent it is close to 80 per cent and Grenada, Jamaica and Panama have rates over 70 per cent. See Goode, W.J., 1960 'Illegitimacy in the Caribbean Social Structure' in 'American Sociological Review', Vol. 25, No. 1, pp 21-30 and Marino, A., 1970, 'Family, Fertility and Sex Relations in the British Caribbean' in 'Population Studies', Vol. XXIV, No. 2, pp. 159-172.

42. UN. 'Demographic Yearbook, 1965', Department of Economic and Social Affairs, U.N., New York, p.31.

43. In many island communities adultery by the wife usually leads to compensations paid in gifts to the aggrieved party. Many authors seem to have put much stress into a prevalence of adultery in the Pacific islands which the present writer does not agree with. If it was prevalent in the past it was so because of the system of marriage and divorce at the time.

44. In many Western European countries there have been recent rises in the rate of illegitimacy which may be the outcome of the present permissive society and the increasing number who seem to regard marriage as an old-fashioned institution in preference to consensual unions.

45. Although in the past century illegitimacy, as it is still today, did not bar inheritance and social mobility, the girls who were pregnant with an illegitimate child were often beaten up and their heads shaved. This treatment was probably not so much because of her being pregnant but rather because of losing her virginity which not only shamed her clan but also deprived them of the opportunity to match her off for many fine gifts or economic and political benefits. There was no moral rationale attached.

46. In Micronesia and parts of Melanesia before the establishment of European control, girls were required to serve a period of sexual apprenticeship in the men's club houses which enhanced their desirability as wives. This difference in attitudes towards chastity has also influenced marriage which is celebrated in Polynesia but in Micronesia and parts of Melanesia it was, and is, not celebrated. The ceremony in Polynesia was to honour the girl who marries as a virgin, and as a result virginity tests were carried out in almost every case; they were often very crude, for example in Samoa deploration was done in public to satisfy the husband's clan; and in Tonga a blood-stained fine mat was paraded around the village as a proof that the girl had not lost her virtue before marriage. These practices are now forbidden either by law or by the church probably to the delight of brides who had been promiscuous.

47. Howard, A. and Howard, I., 1964, 'Premarital Sex and Social Control among the Rotumans' in 'The American Anthropologist' Vol. 66, p.269. Such attitudes will be important in small populations where everyone is known to one another. See Benedict, B., 1967 'Sociological Aspects of Smallness' in 'Problems of Smaller Territories' ed. Benedict, B., Athlone Press, London, pp. 45-55.

48. Women of high rank have better chances of marriage after an illegitimate birth than commoners.

49. Virginity adds to a girl's attractiveness in Polynesia and to the young men the wooing of a virgin is considered far more of a feat than the conquest of an experienced heart. Probably, partly for this reason parents in the early period of contact and before then were eager to marry off their daughters young before they lost their chastity, but today there is no urgency for early marriage because deviations from chastity, as long as there is no pregnancy, do not lead to the clan's humiliation.

50. Schmitt, R.C., 1965 'Unmarried Parenthood in French Polynesia' in 'The Journal of Polynesian Society', Vol. 74, No. 3., pp. 356-59.

51. Curson, P., 1969 'Birth and Illegitimacy in Rarotonga' in 'The Journal of the Polynesian Society', Vol. 78, No. 1., pp. 112-122.

52. Howard A. and Howard I., 1964, op. cit. p.277.

53. Curson found that most of the fathers of illegitimate children born in Rarotonga were also born in Rarotonga as a marked contrast to the unmarried mothers. Fathers were found to be generally older and better educated than unmarried mothers. Many were employed in well-paid jobs and probably immigrant girls surrendered themselves to these men who gave them gifts, especially when migrants are found in the extremely depressed parts of the town. Curson, P., 1969, op. cit p.119. In

Tonga chiefs and sons of chiefs and men with well-paid jobs were well-known for having fathered many illegitimate children, rarely by the same mother twice.

54. Today in Tonga, having illegitimate children is increasingly becoming a disadvantage since unmarried mothers are becoming aware of their legal right to get the father to pay maintenance. For more information on illegitimacy in the Cook Islands see Beckett, J., 1964 'Social Change in Pukapuka' in 'The Journal of the Polynesian Society' Vol. 73, No. 4, p.426. Inter-island and urban-rural differences in illegitimacy rates may also exist-probably higher in the towns and main islands and lower in the outer islands and rural areas, where parental control and adherence to missionary morality is much more firm. Howard and Howard found illegitimacy to be higher among Rotuman residents in Fiji and in Suva in particular than in Rotuma. Also in Pukapuka from 1959-64 the average illegitimacy rate was 16.0 per cent whereas in Rarotonga in 1965-66 it was an average of 36.8 per cent.

55. McArthur, N., 1967, op. cit pp. 119-225.

56. Beaglehole, E., 1957, op. cit p.135

57. The following Tables A, B, C show the child-woman ratios for all Provinces in Fiji (1966), selected islands in the New Hebrides (1967) and the Gilbert and Ellice Islands Colony (1963). The child-woman ratio is computed as the number of children aged 0-4 years per thousand women aged 15-44 years. This is the only index of fertility that can be computed from the data tabulated for inter-island and urban-rural differences.

Table A. CHILD-WOMAN RATIOS FOR PROVINCES OF FIJI, 1966 CENSUS

Province	Ratio	Province	Ratio
Ba	861	Namosi	1079
Bua	950	Ra	867
Cakaudrove	966	Rewa (excl. Suva City)	801
Kadavu	977	Suva City	589
Lau	1090	Serua	848
Lomaiviti	894	Tailevu	869
Macuata	928	Rotuma	876
Nadroga & Navosa	867	Naitasiri	795

Source: Zwart, F.H.A.G., 1968, op. cit. p.92-3.

Table B CHILD-WOMAN RATIOS FOR SELECTED ISLANDS IN THE NEW HEBRIDES, 1967

Island	Ratio	Island	Ratio
Mota Lava	751	Ambrym	908
Vanua Lava	791	Paama	897
Gaua	940	Epi	833
Mere Lava	735	Tongoa	926
Santo	879	Emae	1155
Malo	1086	Efate	815
Aoba	856	Nguna	850
Maewo	1053	Emau	973
Pentecost	823	Erromango	943
Vao	1188	Tanna	852
Atchin	1181	Futuna	1031
Kolivu	1151	Aneityum	1321

Source: McArthur, N. and Yaxley, J.F., 1968, op. cit. p 152-58.

Table C. CHILD-WOMAN RATIOS FOR SELECTED ISLANDS IN THE GILBERT AND ELLICE ISLANDS, 1963

Island	Ratio	Island	Ratio
Ocean Island	1143	Nanumea	858
Makin	1092	Nanumanga	800
Butaritari	1037	Niutao	851
Marakei	1032	Nui	954
Abaiang	836	Vaitupu	818
Tarawa	823	Nukufetau	895
Maiana	973	Funafuti	837
Abemama	964	Nukulaelae	680
Kuria	1038	ELLICE ISLANDS	842
Aranuka	824		
Nonouti	871	Canton	1020
Tabiteuea	883	Hull	1051
Beru	913	Gardiner	1640
Nikunau	931	PHOENIX ISLANDS	1150
Onotoa	843	Fanning	1300
Tamana	748	Washington	1161
Arorae	772	Christmas	1242
GILBERT ISLANDS	893	LINE ISLANDS	1238

Source: McArthur, N., and McCaig, J.B., 1964; op. cit. pp. 102-05

58. Finney, B.R., 1965, op. cit. pp 289-291

59. Ward, R.G., 1959, op. cit. pp 322-24

60. The rates of decline in the crude birth rate of the various component populations in Fiji during the period 1961-68 is shown below:

Component Population	Rate of decline(%)	Population	Rate of decline(%)
Indians	53	Polynesians, etc.	17
Fijians	15	Rotumans	9
Europeans	20	Chinese	27
Euronesians	32	Total Population	26

The Indians and Chinese show the trend typical among them overseas, i.e. their birth rates declining faster than the aboriginal populations' birth rates. This is probably attributable to the fact that they are generally more urban, individualistic, materialistic and better educated than the natives.

61. Probably in pre-European times large families were almost synonymous with the wealth of the father, just in the same way polygamy was a practice that was almost entirely confined to wealthier men of high rank.

62. Until recently, when the increasing volume of work demands full-time preoccupation with their jobs and the wages have been raised in accordance, permanent wage-earners including most civil servants were part-time farmers and their wages were supposed to be supplemented by their own food grown in their gardens. Today, nearly all wage-earners have to buy their food-stuff from the local market, which is more similar to a bazaar than a European market.

63. 'Educated' here is used to refer to those who complete secondary education.

64. When the United States Armed Forces evacuated their garrison from Aitutaki, Cook Islands, at the end of the Second World War, the medical department left behind boxes of sheaths. These were given freely to older married women who

complained of having too many children and wished for a rest from childbearing. The women reported that their husbands refused to use the contraceptives, giving as their own additional justification: "Why, in any case, should my man waste his seed?" Beaglehole, E., 1957, op. cit p.180.

65. Pirie, P., 1967, op. cit. p.23.

66. Prominent Church leaders, apart from the Catholics, in Tonga are used in the radio broadcast sessions to encourage people to use birth control devices but their congregations feel that they are betraying the original doctrines of the mission churches.

67. In Fiji the family planning campaigns are now concentrated in the rural areas. The most used contraceptive is the IUD and this contrasts with the countries of South Asia and South east Asia where the oral contraceptive is most popular. The traditional contraceptives are not popular, partly because they are less safe. Many Catholics are known to use the safe period method instead, though many also use the mechanical contraceptives.

CHAPTER FOUR

MIGRATION

The third major component which affects population growth and change in composition is migration. The phenomenon of movement from one area to another has the effect of decreasing population in the area of origin and increasing it in the area of destination. Migration has therefore a double-barrelled effect on population distribution, as well as on areal differences in rates of population growth. It is a response of human organisms to economic, social political, demographic and natural forces in the environment. Unlike births and deaths which are terms used to define specific physiologic processes, there is no unanimity over the meaning of migration. However, in general, as many consider it to be the usual understanding of the term, migration refers in this chapter to 'movements which involve a shift in residence of substantial duration'¹, since only they exert a major effect upon population trends. Therefore, the movements of commuters and tourists do not come under consideration.

This chapter intends to trace the trends in migration, including its nature and other characteristics in the island territories of the Pacific. It is worth mentioning at this point that with regard to the sources of statistical data, island territories do not keep proper records of international and internal movements of population. However, the annual race or birthplace statistics of New Zealand, Australia and the United States give a reasonably accurate picture of net emigration from the Pacific islands to those countries. Because of the lack of vital records one has to rely largely on the examination of the place-of-birth statistics in conjunction with the place-of-enumeration. Nevertheless, not all persons enumerated outside their place-of-birth are migrants, for example only 20 per cent of those enumerated in the hospital island of Iririki in the New Hebrides in 1967 were in their place-of-birth. Unfortunately, the 'survival ratio method' cannot be used for calculating the direction and volume of the migration streams because of the unavailability of vital registrations and the insufficient tabulations of statistical data in the censuses.

Finally, data on migration in pre-war years are scarce and susceptible to error, though they probably show the trends at least.

1. EVOLUTIONARY PHASES OF MIGRATION TRENDS

It is common among the islanders today to find that the attractions of metropolitan countries, territorial main islands and port towns far outweigh the declining attractions of the islands of their birth. Population pressure, limited and unevenly developed resources, new demands for money, secure jobs and regular sources of income, the relative or imaged excitement of urban life and the growing desire for freedom from traditional communal activities have induced many islanders to resettle where the prospects seem better, even if it means adjusting to a totally unfamiliar environment. 'As a consequence, the demographic importance of different islands and settlements relative to one another is changing. This much is widely known, but it is sometimes seen as a phenomenon peculiar to recent years, although evidence is available to indicate that population movement is no new thing in the Pacific islands.'²

Generally, in the area under consideration, five phases of migration can be distinguished. These phases overlap in time and space as a result of the varying and interacting influences of European penetration, the differences in policies in and outside the island territories, the degree of reception of new ways and the extent of success among the islanders in their readjustment. However, the five recognizable phases are (i) Primitive migrations of the pre-contact era; (ii) Migrations of early post-contact years; (iii) Migrations related to resource exploitation; (iv) Migrations of interwar years and (v) Contemporary migrations.

PRIMITIVE Migrations

Scholars interested in the pre-history of the Pacific islands have tried, empirically, to reconstruct from archaeological, legendary, genealogical, linguistic, ethnological, cultural, vegetative and faunal evidences the

series and directions of pre-historic migratory movements which culminated in the habitation of numerous islands³. Although there is discord among them in regard to the source areas⁴, volume and directions of these early migration streams there is unanimity that the eventual colonization of the Pacific islands could only be the outcome of early erratic movements in search of new homes. Petersen classified primitive migrations of this type as 'marine wanderings'⁵ which often had no definite destination⁶ and were either instigated by an 'ecological push' of population pressure on the home island resources, or flight of political and war refugees or merely wanderlust.

Migrations of this sort appear to have involved family groups, though probably with a preponderance of youthful adults of both sexes who would be less attached to the home island besides being physically fitter to endure the hardships of possible long voyages into the unknown. These organized movements were characteristically 'conservative' for it seems that the intention of the migrants was to establish the traditional culture in their new homes, leaving later modifications to sheer necessity in response to the new environment. Counter-migration streams were probably almost lacking because of the distances to be traversed, lack of knowledge of direction and the unsophisticated means of transport. However, war refugees and political exiles, who probably would not venture too far from their home islands, usually returned when pardoned.

Between islands of similar social, cultural and political structures, usually within the same archipelago or neighbouring ones, the flow of migrants in either direction for various reasons was probably more regular⁷. For instance, 'regular canoe traffic between the 16 Gilbert Islands was sometimes stopped by warfare or other causes and in period of peace it varied in volume in rough proportion to the distance between islands'⁸. Early inter-island movements between and within neighbouring archipelagoes would no doubt be aided or hindered by the physical geography of the area, the relative isolation of islands and the cordiality of human relationships. 'Certain islands must have also served as navigation 'beacons' which lit up and signposted the

vast ocean highway'⁹ making deliberate contact a not uncommon happening. Anyway, in view of the self-contained nature of island life we may assume that in normal years the rate of migration was low because the 'pull' factors existing in any island would be weak. Thus the 'push' factors, such as overpopulation and natural disasters, would exert a stronger influence in determining the decision to move. Movements between islands over short distances were probably more individualistic and unorganized whereas long distance 'marine wanderings' were organized group affairs.

This phase of 'primitive migrations' had almost ceased by the time of discovery. Few islands still remain as possible outlets for any overspilling of heavily populated islands. Aotearoa, (Maori word for New Zealand which means 'Land of the Long White Clouds') was still underpopulated but contact with it has long been lost. The arrival of the Europeans began to set a new phase of migration into motion.

Early Post-Contact Migrations

Although the Pacific was first discovered in the mid-sixteenth century, the intensity of piecemeal discoveries came later in the last two decades of the eighteenth century and early in the next century, particularly after the 3 voyages of Captain Cook. This phase, therefore, did not really begin until the last decades of the eighteenth century and it lasted until about 1860. During this period traditional movements continued but at the same time primitive reasons for moving were increasingly fused with new motives which, in time, were to change the whole character of inter-insular migrations. This period also witnessed a trickle of European immigrants into the Pacific.

Immediately in the wake of the discoverers came the whalers, traders and missionaries. These were mostly itinerant workers who sowed the seeds of alien influence on primitive migrations. The civil wars generated waves of migrations in different directions. For example, in the early nineteenth century approximately over 3,000 Tongans were engaged in the Fijian wars from which Cakobau emerged victorious. Many of these Tongan warriors settled in the

Lau Group where they were joined by others who came as settlers. Meanwhile, contacts with the new civilization and its exchange economy created other waves of migrations, both beyond but more especially within each island group. As early as the third decade of the last century there was already a considerable flow of migrants to the points of contact. For instance, Queen Pomare of Tahiti was said to have restricted in-migrations from the other districts and outlying islands into Papeete. Young, adventurous men were flocking to the port towns, eager to earn a few trade goods and learn from the white men in order to enhance their prestige and status. The establishment of missions, schools and trading beachheads encouraged in-movements to these points¹⁰. From these movements emerged the present pattern and type of settlements.

Migrations and Resource Exploitation

Roughly, the third phase began in the 1860s and it continued to the outbreak of World War I. This was a time of further European immigration. The itinerant traders and missionaries were replaced by their resident counterparts. Europeans also came as planters and administrators and the immigrant community acquired some features of permanence. This period is dominated by the exploitation of manpower, mineral and agricultural resources, and is also characterised by the search in many islands for a stable cash crop along with the alienation of native land¹¹. The blackbirding and the labour recruiting reached their peaks during this period, i.e. in the late 1860s and the late nineteenth and early twentieth centuries respectively.

While many island populations were reduced by blackbirding others were affected by labour recruiting, especially the Solomons, New Hebrides and the Gilbert Islands. The populations of some islands either fluctuated or declined partly because of increasing out-migrations in response to the emergence of socio-economic differences between island Groups. European influences were increasingly reshaping the life styles and needs of the islanders. The increased knowledge of other places, the excitement of adventure and freedom from the dull communal activities and the prestige acquired by former

migrants inflamed the desire among young men to leave their home islands. The frequency of contacts also increased between island groups. Couper stated that the growing European influence led to "an increase in the frequency of indigenous trade in Fiji and Tonga, especially towards the close of the nineteenth century"¹². Evidence of this scale of out-movements from islands like Rotuma, Mangaia and Aitutaki is indicated by the imposition of restrictions on young men leaving the islands¹³. Sometimes so many young men left that the manpower was severely strained. For example, 561 people, almost all the youthful male population of Niue, were away in 1899 on phosphate islands or other islands. In the German colonies of the Carolines, Marshalls and Marianas settlements of peoples from the smaller islands were already growing in the main islands by 1911¹⁴. Many Cook Islanders were found living in Tahiti by the end of the last century. In 1895 18 per cent of those living in Rarotonga were from Tahiti and other Cook Islands and in 1901 the proportion of other Cook Islanders in Rarotonga was 20 per cent¹⁵. Labour recruiting from the Western Pacific Islands for the plantations in Fiji reached its peak in 1885 when over 5,000 were recorded in that year. About 61,160 islanders had been recruited for the sugar cane plantations in Queensland by the time recruiting stopped in 1903. However, over three-quarters of these were repatriated¹⁶.

Asians came, mainly as indentured labourers, during this period. Thus most of the ancestors of the Asians in the islands arrived during this time. They were brought to solve the labour problems of the Europeans who controlled the operations in mines and plantations¹⁷.

When the nineteenth century ended the Pacific Ocean had become fragmented into political spheres of influence. This fragmentation by the major powers was completed by about 1910¹⁸. As a result inter-island migrations became restricted; this time not by natural obstacles of distance, wind, sea and currents, or unsafe means of transport or hostilities but primarily by legislation. Canoe travels between islands, as in the Gilbert and Ellice Islands in 1910-30, were restricted because of the high casualties resulting from it. Also by the end of this period the declining prosperity of the mines and plantations slowed down European immigration as well as the recruitment

of Asians.

Migrations of Interwar Years

Before the Depression of the 1930s, the number of Europeans grew very slowly indeed, if not dwindling slightly. During the Great Depression there was a net emigration of Europeans in some territories¹⁹. Their numbers recovered slightly in the late 1930s. The recruitment of Asians declined during the Depression and in Fiji it had ceased in 1916 and all contracts were cancelled in 1920. It seems that European interests in the Pacific declined during this period partly as a result of the Depression and partly due to the post-war reconstruction. If European interests slackened, that of the Japanese increased. The number of Japanese in the Pacific increased at a phenomenal rate in the 1930s, especially in their mandate, the former German colonies in Micronesia. Internal troubles in China and conflicts between China and Japan led to waves of Chinese immigration, especially to Fiji and French Oceania.

Between the island territories movements were greatly reduced. However, within each territory internal movements continued, but at a slow rate²⁰.

Unfortunately, there are no records to verify this. In fact, it appears that during this period the islander was no longer bewildered by the changes that were taking place. He was now able to adjust himself more easily and accept changes. Schools were established, medical facilities were provided, sanitation improved and populations began to increase. The islander participated marginally in the commercial sector, yet he had peace in his new religion and all his needs were easily provided for. There was no real need to better one self by acquiring an education or accumulation of wealth and complacency was still very much the order of the day as all the excitements of a century of contact seemed to lose their glamour. Only the most adventurous and enterprising young men continued to move to the port towns and the main islands in order to take advantage of whatever opportunities were offered.

These years of quiet transition were shattered by the spread of World War II into the Pacific. The presence of army contingents in the islands and the

subsequent rapid developments of post-war years had a tremendous effect on the self-sufficiency of these societies. The awakening of this new epoch created a renewed pace in migration among today's generation of islanders.

Contemporary Migrations

The extension of the Second World War into the Pacific produced a renewed interest in the area in New Zealand, Australia and the United States while that of Britain seems to decrease as she realised the importance of her relationship with the European continent²¹. Following Japan's defeat, all Japanese in her mandate, which became a Trust Territory of the United States, were repatriated. Because of the strategic importance of Guam and Micronesia, United States military personnel increased rapidly in these islands, especially in Guam. Australians and New Zealanders who were numerically dominant in islands with connections with the United Kingdom, continued to increase their numbers. French immigration to French dependencies increased again. The increase of Europeans in the Pacific has been mainly due to the expansion of commercial, administrative and technical aid since 1945.

Internal troubles in the Far East led to the termination of recruiting Asians into the French territories. As islanders acquire the skills and willingness to work at regular hours they are increasingly preferred to the Chinese recruited for the phosphate works in Nauru and Ocean Island. Concentration of developments within territories inevitably leads to poles of attraction which are the main destinations of islanders who decide to move. Nevertheless, population pressure in the small islands, the result of rapid population growth, is forcing others to move, sometimes under official sponsorship.

Desires and aspirations have been rising after the war along with the rising standards of education and increasing commercialism. The growing socio-economic disparity between different islands and settlements has led to increasing population concentration in the port towns. Internal migration rapidly gathered momentum in the 1950s and by the 1960s it reached proportions

never before known in the Pacific. As the knowledge of the wider range of opportunities in comparatively prosperous developed countries increases more islanders are willing to emigrate to metropolitan countries. This is particularly evident in territories which have consitutional ties with countries who have less restrictive immigration policies. Meanwhile, large island territories with low population densities and with more scope for development have become the destinations of some Pacific islanders from territories where densities are high and development retarded.

2. INTERNATIONAL MIGRATIONS

Immigration into the Pacific Islands

Few Pacific island territories can really be reffered to as 'islands of immigration' in any time of their recorded history. Several factors seem to explain the small proportion of European immigrants and the virtual absence of Asians in several territories. First, the miniscule size of the fragmented insular territories, already heavily populated at the time of discovery, disappointed those who were interested in finding the lost southern continent of "Terra Australis ^I Incognita" with all its mythical wealth. The islands usually lacked natural resources to draw any influx of immigrants and prospectors. Large scale farming or industrialization is not possible. Plantation agriculture needs large acreages of land and natives were either protected by the foreign power in control or that plantation agriculture was just not practical. Second, the great distance between the colonial powers and the Pacific islands made contact in eary years difficult. Between the Pacific and the colonial powers were other territories which were less isolated, larger in area with plenty of land to spare, Underpopulated but with mineral wealth, and either on the shipping routes or less distant. Third, the natives in the larger Pacific islands were often hostile to Europeans²² and diseases, mosquitoes and hot, humid climates were not the best features to attract would-be immigrants to islands which have nothing much to offer. Fourth, the policies of the colonial powers, apart from the French, were often protective and paternalistic. Anthropologists and missionaries helped to foster this kind of attitude. As a result land

alienation and immigration were carefully controlled, or so it seemed at the time²³. Therefore, apart from those who felt obligations to civilize and convert the heathen, those who came to trade or offer their labour and those who merely wanted to escape from their society, none but the really adventurous were attracted in the last century to this remote oceanic frontier.

Immigrants of European Origin

Before 1860 there were relatively few Europeans in the Pacific islands. For example, in 1840, Wilkes, having been led to expect a European population of about 40, found only 12 white^s, all of whom were married to Fijian women, living in Levuka, the centre of European population in Fiji²⁴. In 1860 there were only about 50 Europeans in Fiji. In New Caledonia, few individuals had dug themselves in before its annexation by France in 1852. The cotton boom and the prospects for plantation agriculture brought a flood of immigrants to the main islands of Fiji, New Caledonia, Samoa and French Polynesia.

Following rumours that Fiji might be ceded to Britain, the number of Europeans, mainly from New Zealand and Australia, increased from about 50 in 1859 to over 200 in one year²⁵. By 1868 there were approximately 862 whites²⁶. In New Caledonia, the French Government's encouragement of immigration led to the increase from 420 persons in 1862 to over 2,000 in 1870. However, part of this increase was the result of sending convicts to the colony²⁷.

Although cotton plantations were no longer a prosperous proposition after the American Civil War, prospective planters continued to come to the Pacific islands. In addition, more traders came particularly those who were interested in the coconut oil trade. The discovery of guano in some islands brought others, although it was a short-lived extractive industry. The depression of the 1880s ruined many planters and, as shown in Figure 4.1, there was a temporary decline in the number of Europeans in the islands. Optimistic planters who remained experimented with certain alternative crops like coffee, cocoa, vanilla and sugar cane. However, most stuck to coconut plantations. The civilizing efforts of missionaries and administrative officers continued

to expand. Other Europeans in the area were convicts in the penal colonies in New Caledonia and Norfolk. About 40,000 prisoners were transported from France to New Caledonia between 1868 and 1897, most of whom were France's long-term prisoners, particularly socialists, following the collapse of the Paris Commune²⁸.

After the setback of the 1880s the number of Europeans began to increase again until the outbreak of the First World War. Between 1860 and 1893 the number of traders in the Solomon Islands grew until there were 50 white residents, 46 traders and 4 missionaries, by the time of the proclamation of British Protectorate. Since then the numbers of Europeans have been increasing as the Protectorate became safer for European settlers and expatriates. In New Caledonia nickel mining brought many more French and the 16,558 whites in the Colony in 1887 increased to 23,500 in 1901, the largest European population at any time before 1958²⁹. Early in the first decade of this century there were over 2,500 whites in Fiji which increased to about 3,750 just before World War I³⁰. In the Marshalls there were 100 Europeans at the same time, half of them Germans³¹. About 870 whites, mostly French, were estimated to be in the French Establishments of Polynesia early in the century. By 1911 there were probably over 25,000 Europeans in the island territories. Probably this number had not changed very much for the area as a whole during the first decade of this century because the Europeans in New Caledonia declined by over 4,000 between 1901 and 1911 while Europeans in other territories increased (see Figure 4.1). The decline of Europeans in New Caledonia was due to the return of former convicts and a slump in the nickel industry.

During the First World War some Europeans in the islands volunteered and enlisted in the armies of their countries. However, the war probably have little effect on the total European population of the area, although most of those who originated from Germany were repatriated and replaced by others from the victorious Allies, especially from New Zealand and Australia. If the war had no great effect on the numbers of Europeans in the islands then the Great Depression certainly did.

The number of Europeans in the islands during the interwar years either

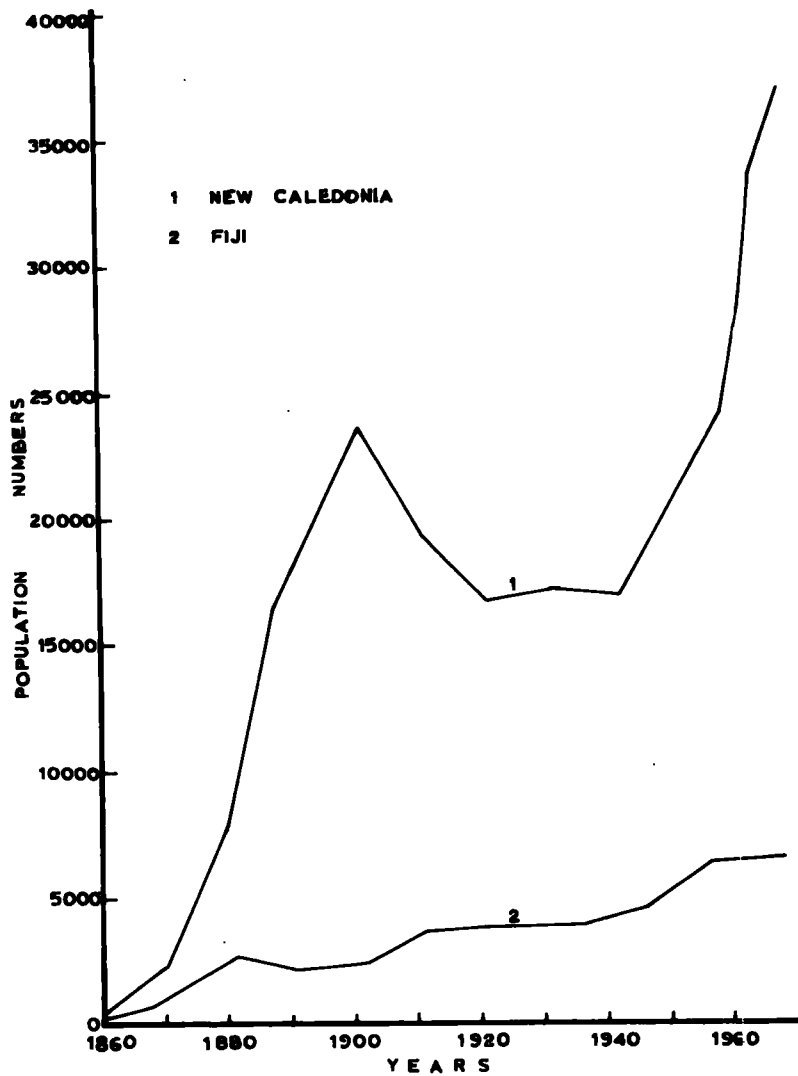
Fig.4.1 Growth of the European (i.e. all white) populations of
Fiji and New Caledonia, 1860-1968.

Sources: (1) Zwart, F.H.A.G., *op.cit.*, p.1 Appendix.

(2) Tudor, J. (ed.) *op.cit.*, p.476.

(3) Ward, R.G., 1965, "Land Use and Population in Fiji",
H.M.S.O., London, p.53.

EUROPEANS IN NEW CALEDONIA & FIJI, 1860-1968



increased very slowly or declined (see Table 4.1).

A fairly large proportion of the European population at this time were temporary immigrants. The era of permanent settlement had clearly ended by the time of the outbreak of World War I. Native land courts were already established in most territories, partly to protect native lands from prospective buyers. Most early European settlers have not done too well although trading companies were able to make some profit. In fact, many settlers began to emigrate from the islands, especially during the 1930s. From a total of over 35,000 in the 1920s the number of Europeans in the islands declined to a figure of about 27,000 in the late 1930s. In Fiji, the European population rose by over 50 per cent through immigration in the second decade of this century when land was made available for European occupation and plantations were relatively prosperous³². This, however, was not the story in either Fiji or other islands during the interwar years. During the 25 years, 1921-46 the European population of Fiji increased by 18.5 per cent most of which came in the 1940s whereas during 1946-56, it increased by 39.4 per cent.

Many European settlers and other expatriates were evacuated from the islands during World War II to either New Zealand or Australia and many settlers never returned³⁸. In the post-war years the number of Europeans again increased rapidly, mainly as a result of the expansion of commercial interests and the administration with its related development projects³⁴. However, nearly all immigrants are now coming to the islands for no more than a limited period of duty, probably an average of 5 years or less. In the opposite direction many former residents and their descendants, especially mixed-bloods who have not done well in the islands, continue to emigrate if they have the opportunity. Today there are probably more than 91,000 Europeans in this area which comprised about 6.2 per cent of the total island populations. About one-third of these are American military personnel and Peace Corps and their dependents. Another third may be transient residents of less than 5 years. In the non-indigenous island population of Norfolk recent increase in the population has been partly due to recent immigration

from Australia and New Zealand.

TABLE 4.1 THE NUMBER OF WHITES IN SELECTED ISLAND TERRITORIES, 1911-1968

Territory	1911	1921	1926	1931	1936	1938	1946	1956	1961	Latest
New Hebrides	850	903	924	1245	947	935	+	+	+	3350(1967)
Guam	+	+	+	+	+	785(1940)	+	+	+	32343(1962)
U.S.Trust Territory	+	+	+	+	+	119	+	+	+	1500(1967)
Solomons	+	+	+	478	+	500	500	+	+	1600(1966)
Fr.Polynesia	+	+	+	+	1550	+	+	+	+	3000(1967)
Nauru	+	+	+	+	+	187(1939)	272(1950)	+	+	482(1968)
N.Caledonia	19319	16794	17015	17215	17312	+	+	+	28454	37500(1968)
Fiji	3707	3878	4480	5058	4028	4188	4594	6402	+	6590(1966)
Tonga	380	571	530	482	342	407	+	277	+	402(1966)
W.Samoa	500	835	446	425	367	412	+	662	668	+
Niue	+	+	+	+	+	20(1939)	23(1945)	57	81	134(1966)

Source: Keesing, F.M., 1945 p.308; Brookfield, H.C. and Hart, D., 1970 p. iv; Fiji census, 1968; Tonga Censuses 1956 and 1966; New Hebrides Census, 1967; Pacific Islands Yearbook, 1967.

Note: Only Tonga has a European population in the 1960s which is still exceeded by the pre-Second World War figures. This is probably due to the Government's policy of increasing localisation of posts, even with less qualified Tongans in order to reduce the costs of administration and probably partly pride in never becoming a colony. The census officer of the 1966 census felt that "at this stage of Tonga's development, it is most likely that more Europeans will be recruited to help in the various development plans of the Kingdom" (Fiefia, S.N., 1968, p.8)

What began as a spontaneous immigration of individuals has gradually changed. Early immigrants were single, youthful adult males but since World War II the number of females and children has increased among European migrants. European immigration has now become almost wholly temporary. For instance, the percentage of Fiji-born Europeans fell from 20 per cent in 1956 to 14 per cent in 1966. Annual net immigration or emigration in Fiji in post-war years have never exceeded 2,000 and always over 75 per cent of these involved in any one year are Europeans³⁵. During the intercensal years, 1956-66, Europeans experienced a net increase of only 188 persons. At the same time, among those 15 years of age and beyond, there was a decrease among the Fiji-born Europeans by 112 males and 129 females which was concentrated in the age-range 15-44 years. The small percentage of local born Europeans

is common to all territories, except New Caledonia. In the New Hebrides only 7.2 per cent were local born Europeans. Although the proportion of local born Europeans in Tonga increased from 13.0 to 18.1 per cent between 1956 and 1966, the proportion is still very small and part of the increase could be due to the changing of status by part-Europeans in order to acquire the advantages of full-blood Europeans, particularly in respect to the opportunities of emigration.

Port towns have changed from their frontier and less permanent appearance to one of increasing sophistication where most luxuries and entertainment facilities of urban life are easily available. An aura of romanticism is still associated with the South Seas, partly perpetrated by tourist brochures and anthropologists. Speedy air communication has made travel faster, more comfortable and easier. Island governments and foreign-owned companies still recruit most of the skilled workers and top officials from overseas offering them paid passages, allowances and chances of promotion. Many other developments are intended to attract these people. Among immigrants today there is always a mixture of adventure and the chances of improving one's economic and occupational status in the decisions to emigrate. Married persons are often accompanied by wives and children. For example, in Tonga 58 per cent of Europeans above 14 years of age in 1966 were married and in Fiji for the same year the proportion was 72 per cent.

The source areas of European immigrants depend largely on colonial bonds. Thus almost all Europeans in the French dependencies are of French origin. In New Caledonia less than 1,000 are non-French³⁶. Most Europeans in territories which have connections with Great Britain are of New Zealand and Australian origin, mainly because of the closeness of these two countries. In American territories nearly all whites are Americans. About 45 per cent of all Europeans in the Pacific Islands are of French origin and probably 35 per cent are Americans. Australians and New Zealanders probably make up 75 per cent of the remainder. Before World War I the majority of Europeans in Western Samoa, Carolines, Marianas^a, Marshalls and Nauru were Germans. There

were also many German traders in other colonies. Today the Germans make up a very small proportion of all Europeans since most left or were repatriated after Germany's defeat in 1918. In these former German colonies New Zealanders, Australians and Americans predominate among Europeans. In territories with connections with the Commonwealth the majority of women are from New Zealand and Australia which supports the hypothesis that distance reduces the proportion of women migrants. A fair proportion of temporary immigrants since the late 1960s are under volunteer service organizations from Australia, New Zealand, Great Britain and the United States. Over 2,000 Peace Corps arrived in the various territories in 1968 and in the U.S. Trust Territory 450 Americans were Peace Corps,³⁷ probably one-third of all whites there.

Almost all European immigrants are well-educated with qualifications for either professional or highly skilled jobs. Although the educational status of the early immigrants cannot be ascertained it seems most likely that the majority were fairly well-educated, according to the standards of the time. This was particularly true of traders, administrators and missionaries.

Temporary European immigration seems likely to continue in the future though their numbers may not increase greatly from that of the late 1960s. In most territories there seems to be a slowing down in the increase of Europeans during the last 5 years. In spite of the present drive for a take-over by trained islanders, it seems improbable that all gaps will be quickly filled because of the tendency for a 'brain drain' from the islands. Island governments are faced with the dilemma of reducing recruitment of expatriates in order to reduce the costs of administration by paying lower salaries to the natives, while it is still necessary to attract expatriates by offering higher pay and allowances in order that the administration may function before a complete localisation. As a result of this persistent disparity and discrimination, educated islanders are discontented and tend to emigrate or remain after their studies in metropolitan countries which have less need for their services. As the disparity between poor and rich

countries increase educated islanders will emigrate in increasing numbers. Even if the administration is fully localized, it seems that Europeans will continue to participate in the expanding commercial sector, particularly when the expansion of this sector relies largely on European investments. Thus the nature of European immigration and activities in the island territories may have changed but, to be realistic, it will be some time before the islanders can do without their investments and skills.

Asian Immigration

The presence of a large Asian population in the Pacific islands was largely the result of the importation of indentured labourers by Europeans. Today they make up 17.6 per cent of the area's total population and of these 94.3 per cent are the Indians in Fiji. Like the Europeans, the numbers of Asians have fluctuated up to the present day. Fluctuations in Asian immigration are caused by the following factors: (i) the labour demands in the islands; (ii) the willingness of Asians to migrate; (iii) the political, economic and social conditions in their homelands in Asia; (iv) the changing immigration policies in the island territories (v) Knowledge of opportunities in the islands of destination and (vi) the availability of fares and means of transportation. In contrast to the spontaneous, pioneering and individualistic immigration of early Europeans most Asians were assisted and, typical of labour importation, they came in large groups.

Indians: The growth of plantation agriculture and the increasing mining activities in the Pacific islands more or less corresponded with the growth of Asians in these territories³⁸. Before 1865 only a handful of Asians, nearly all Chinese, had made their way into the islands. These people had been working on ships in the Pacific before they finally decided to stay, usually as household servants. The first batch of indentured Asians arrived in French Polynesia in 1865. They were Chinese who were brought to work in the cotton plantations. Most were repatriated in the 1870s when the cotton plantations were no longer profitable. The need for labour in the growing

sugar cane industry in Fiji led to the importation of the Indians which began in 1879. However, by the early 1880s it is doubtful whether the Asians numbered 2,000. The plantations were still relying heavily on "Kanakas"³⁹. For example, the "Polynesian"⁴⁰ labourers in Fiji in 1881 totalled 5,352 while Indians were only 442. The recruitment of "Kanakas" for the plantations reached its peak in 1885 in Fiji and then it declined. To compensate for the reduction of the number of islanders recruited the importation of Indians increased. Moreover, by this time as many more Indians heard of the successes of the former recruits and Indians in other parts of the world there was more willingness to join~~y~~ indentured labourers.

The indenturing of Indians ceased in 1916 as a result of the complaints by the Indian Government, against the system. All Indians still under contract to planters were released in 1920. By then there were about 60,000 of them in the Colony. Under the indenture system Indians were to serve for a 5 year contract which could be renewed for a further 5 years after which they could exercise their right for a free passage back or alternatively remain as free settlers. Of all those indentured only 40 per cent exercised their right to repatriation and many of these returned later as free immigrants⁴¹. Whereas the number of Indians under indenture kept fluctuating from year to year the total in the Colony kept increasing. Variations in crop conditions and food prices in India were the main causes of the short-term fluctuations in the number registering at recruiting centres; for example there were only 824 registrations in 1898 but in 1900 registrations rose to 3357 and in the following year it was 3630⁴². Because many did not return the number of free Indians, in addition to free immigrants, kept increasing and even in 1904 nearly half of all 20,000 Indians were free Indians.

Altogether 60,965 Indians left for Fiji as indentured labourers and only 60,537 arrived. The flow of free immigrants is estimated to be at least 250 per annum between 1901 and 1911 as against an average intake of 2,316 indentured persons per year during the same period. The peak of the indenturing

of Indians was reached in 1910 and 1911 when 8,085 arrived in Fiji⁴³. Free immigration continued at a reduced rate up to 1937 when it virtually ceased following the imposition of restrictions on Indian immigration.

Chinese: The success of the use of Indian labourers in Fiji (and Asians in other parts of the world) encouraged planters in Samoa, French Polynesia and New Caledonia as well as mining companies to use recruited Asian labourers. Recruited Asians in these territories were generally denied the option of staying after serving their contracts. In French Polynesia and Samoa indentured Asians were Chinese, but their number was never very large at any time, partly because the plantations there did not require very intensive labour as in the sugarcane plantations in Fiji and partly because these plantations were not very prosperous. Therefore, the number of Chinese in French Polynesia declined from over 1,100 in 1866 to less than 400 in 1902.⁴⁴ In fact the indenturing of Chinese in French Polynesia almost ceased after the failure of the cotton plantations and those recorded in most years up to 1920 were mostly free residents.

In Western Samoa the use of Melanesian labourers from the German Solomon Islands was the exclusive privilege of the German firm of Godeffroys⁴⁵. The result of this monopoly was the importation of Chinese coolies by other planters in 1902. About 300 arrived in the first group. When New Zealand took over the operation from the Germans in 1914, there were over 2,000 indentured Chinese absorbed in plantation work, in private employment as domestic servants, in trade and in shipping in and around Apia. Opposition to the indenture system in New Zealand led to the reduction of the number indentured as well as increasing repatriation. By August 1931 there were only 916 Chinese left in Western Samoa. When the Labour Party secured control of the New Zealand Government in 1935, it took immediate steps to remove the Chinese from the mandate; and in 1936, despite the strenuous protests of planters, order were given for total repatriation. By mid-1938 the number of Chinese had been reduced to 300. Repatriation was disrupted by the outbreak of the Second World War. In September 1948, half of those who remained were sent back to China leaving only 159. The 1961 census showed a total of only 108.

To compensate for the loss of Chinese labour the Government in 1938 gave permission to recruit labourers from neighbouring Niue and Tonga. Thus the number of 'Other Pacific Islanders' in W. Samoa increased slowly again and in the 1961. census 522 of them were enumerated⁴⁶.

Only 305 Chinese were recorded in Fiji's 1911 census. Most of these were free immigrants who had become permanent settlers. In French Polynesia in the same year there were about 975 Chinese. Unrest in China, during the interwar years sent great waves of emigrants all over the world. Some of those who left China came to Fiji and French Polynesia. So in the 1920s the number of Chinese in both territories rose perceptibly through immigration. Almost twice as many that came to Fiji went to French Polynesia, where they were received as free settlers until 1949 when the Communists took over mainland China and emigration ceased. In Fiji, immigration was more difficult and it almost ceased by the late 1930s. The Chinese population of French Polynesia increased by over 3,000 in one decade, 1911-21. In the same decade Chinese in Fiji increased almost threefold. Between 1911 and 1946 over half of the 2,874 Chinese were immigrants. Since then the increase to over 5,000 Chinese in 1966 has been mainly through natural increase. The same is true of the 10,000 Chinese in French Polynesia. For example, between 1946 and 1956 only 24 per cent of the increase of Chinese in Fiji was due to immigration⁴⁷. In fact among the immigrants since the Second World War there was a slight preponderance of females as former male migrants send for brides and wives from China or Chinese settlements elsewhere.

In other island territories the number of Chinese is very small, partly due to lack of opportunities and partly because of immigration restrictions. In 1938 there were about 23 Chinese in the New Hebrides and 29 years later there were only 252 of them. In Guam in 1938 there were 324 Chinese. The Chinese population in the Solomon Islands increased from 164 in 1931 to 660 in 1968. Increase in these territories is almost totally accounted for by natural increase⁴⁸.

In Nauru Chinese were first brought in 1906 to work the phosphate deposits, thus replacing Japanese and Gilbertese. In 1920 the use of Chinese in the phosphate industry was adopted in Ocean Island and again they replaced Gilbertese and Japanese. The number of Chinese in both islands fluctuated yearly, though for most of the time before World War II it was over 1,500 in Nauru and over 750 in Ocean Island. In post-war years, though still showing yearly fluctuations, the number of Chinese in both islands has declined. Meanwhile the number of Gilbertese and Ellice Islanders has been increasing and since the mid-1960s there were more of these islanders than the Chinese (see Table 4.2). This reflects the changing attitude among foreign-owned companies towards the use of the local labour.

Table 4.2 COMPONENT POPULATIONS OF NAURU FOR VARIOUS YEARS 1939-1968.

Date	Chinese	Other Pacific Islanders	Europeans	Nauruans
1939	1,516	29	187	1,651
1947	1,163	31	192	1,379
1950	1,491	81	278	1,580
1956	696	935	286	1,976
1961	712	1,094	324	2,409
1966	1,158	1,445	441	3,011
1968	924	1,715	482	3,065

Source: Keesing, F.M., 1945, op.cit., p.307.

"Report of the Territory of Nauru 1 July 1966 to 30 June 1968"
Government Press, Canberra, Australia. p.62.

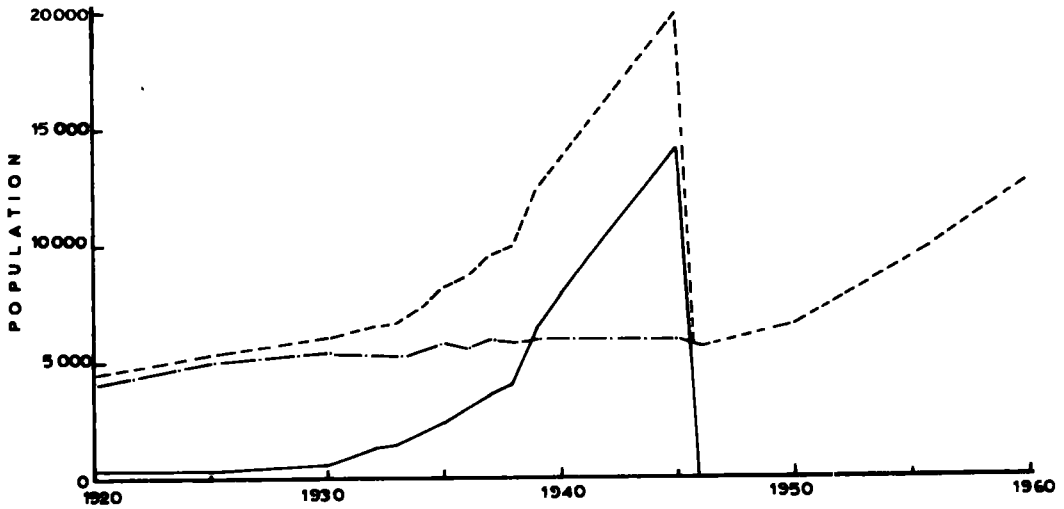
Japanese: Nickel mines in New Caledonia had relied on the penal colony for cheap labour until 1892 when all convicts were freed. To get cheap labour the French Nickel Company first used Japanese labour. So by 1918 there were some 2,458 Japanese in the territory, mostly in the interior of New Caledonia Island. However, by 1921 the number of Japanese began to decline and after 1933 they were about 1,110. For the next few years their numbers fluctuated around that figure⁴⁹. The growing Japanese interest in her mandate, the former German colonies in Micronesia, was probably the main reason for the decline of their interest in working for the French in New Caledonia.

Prior to receiving her mandate from the League of Nations a small number of Japanese had been living in those islands and in Guam. However, Japanese

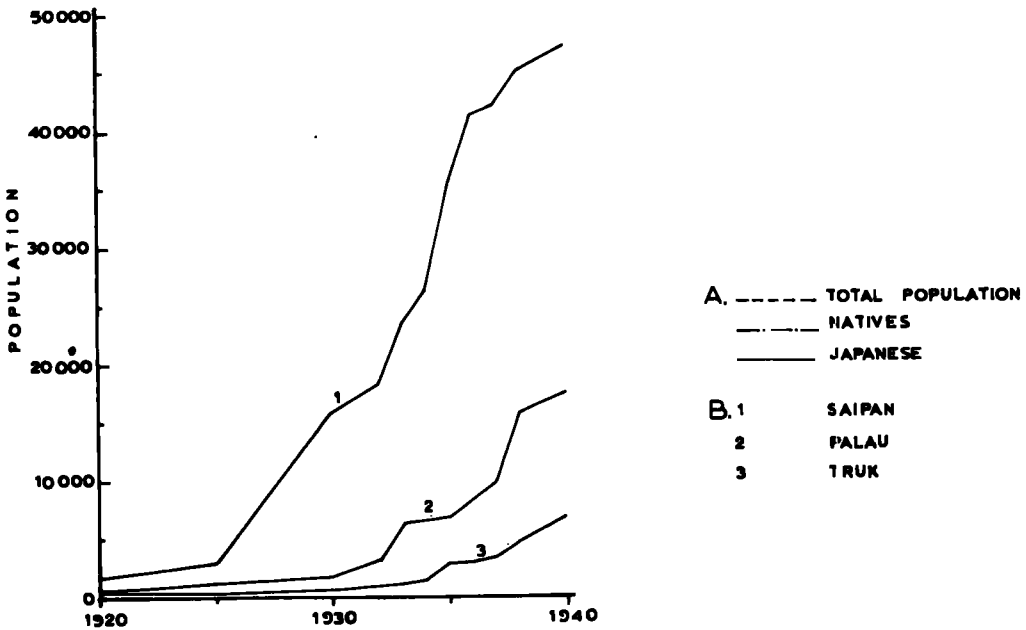
Fig.4.2 Growth of the Japanese population in her mandated territory,1920-40.
A. Japanese, Native and Total populations of Ponape, 1920-60.
B. Increase in the number of Japanese in the districts of Saipan,
Palau and Truk, 1920-40.

- Sources: (1) Bascom,W.R., 1965, "Ponape : A Pacific Economy in Transition", Anthropological Records, No.22, Univ. of California Press, Berkeley and Los Angeles.
- (2) Great Britain, Admiralty, Naval Intelligence Division, 1943-5, "Pacific Islands", Vol.IV, p.324.

A JAPANESE, NATIVES & TOTAL POPULATION, PONAPE, 1920-60



B JAPANESE POPULATIONS OF SAIPAN, PALAU & TRUK, 1920-40



A. ----- TOTAL POPULATION
 - . - . - NATIVES
 _____ JAPANESE

B. 1 SAIPAN
 2 PALAU
 3 TRUK

expansionism in the interwar years led to the subsidized Japanese colonization which began after the withdrawal of their garrison in 1922. The largest groups of Japanese settlers came in the 1930s. Japanese settlements were established in the larger islands of Tinian, Saipan, Truk, Ponape, Kusaie, Yap and Jaluit⁵⁰. The growth of the Japanese population in some of these islands is shown in Figure 4.2.

The number of Japanese in the mandate rose from 3,671 in 1920 to almost 75,000 in 1940. Over half of the Japanese were concentrated in the sugar plantations of Saipan. The Japanese in this island increased from 1758 in 1920 to 44,991 in 1938. There were 15,669 of them in Palau, 4,201 in Ponape, 3,657 in Truk, 1,119 in Yap and 504 in Jaluit in the same year. As immigration increased more women and children became involved. Large scale increases clearly followed the economic development of fishing, mixed farming and bauxite mining in Yap and Palau, starch manufacturing in Ponape, and the sugar cane industry and breweries in Tinian, Rota and Saipan. Most of the growth in the Japanese population in her mandate during these two decades, 1919-39, was from immigration and between 1930 and 1937 natural increase was estimated to be about 10,000 and net migration about 30,000. As the number of Japanese increased, the number of Koreans, whom they brought also increased. From only 5 in 1932 in Ponape, the Koreans increased to 778 in 1940⁵¹. The flow of Japanese immigrants continued until shipping was completely cut off by American submarine warfare while in other Pacific territories they were immediately repatriated once Japan was in the war. At the end of the war, the former Japanese mandate became a Trust Territory of the United States and all Japanese were repatriated within a year.

Vietnamese and Javanese: The decline in the number of Japanese recruited to work in New Caledonia, consequently forced the French Nickel Company and planters to import labourers from Indo-China and Java⁵². In the New Hebrides the expansion of the French plantations after 1920 was largely responsible for the introduction of Tonkinese workers. The number of Tonkinese and Javanese recruited in any one year fluctuated in relation to the demand for labour, and

the economic conditions in these two territories and their homelands. There were 2,250 Tonkinese in the Condominium in 1925 and in 1929 there were about 5,000. However, during the years of depression in the 1930s their number declined; for example, in 1932 there were only 813 Tonkinese but in 1938 they had increased again to 2,023. In New Caledonia the number of Javanese and Tonkinese fluctuated from year to year but generally it increased to over 10,000 in 1930 when the demand for labour slumped as a result of the depression⁵³. Consequently, the number recruited declined although it rose slowly again after the Second World War.

The importation of labour from Vietnam and Java ceased in 1951 when nationalist movements and political turmoils were breaking out in Southeast Asia. Repatriation began in a small scale until 1954 when it was disrupted by the fighting in Vietnam. Those who remained behind were mainly from the areas now known as North Vietnam and authorities there refused to permit their return, probably in the hope that these Vietnamese will help to establish a communist bridge-head in New Caledonia. Vietnamese began to organize communist activities and as a result some were deported. By 1959 about 5,000 Vietnamese still remained and these soon demanded repatriation to North Vietnam. This led to some arrangements with North Vietnam and repatriation was resumed in 1960 but diplomatic difficulties in 1961 caused another stoppage. Repatriation, however, was resumed again in 1963, and towards the end of 1964 only 972 remained; all had opted to stay. In the New Hebrides only 360 were recorded in 1967 after over 1,750 had been repatriated since 1960⁵⁴.

The Nature of Migration: The variation in the time of cessation of the various waves of Asian migrations can be demonstrated by examining the percentage of adults born locally. About 94 per cent of the adult Indian population, i.e. those over 14 years of age, were recorded as Fiji-born in 1966 whereas in 1956 the proportion of Fiji-born was 85 per cent. Clearly, Indian immigration has long ceased to be significant and the Indian population may be regarded as a 'closed' one. Among the Chinese the proportion

of Fiji-born among adults increased from 29 per cent in 1956 to 48 per cent in 1966. This supports the supposition that Chinese immigration for the last 15 years has virtually or completely ceased. In the New Hebrides less than 17.0 per cent of the Vietnamese adults were born locally and this reflects the recent settling down of this component.

Asians came to island dependencies from areas having colonial ties with certain metropolitan countries. Indians in Fiji came mainly from the United Provinces in North India and later, between 1903 and 1916, over 15,000 came from the Madras Province⁵⁵. Indentured Chinese in Nauru and Ocean Island as well as those in Fiji either came directly or by way of Hong Kong. The Chinese in French Polynesia came mainly from the Hakkas Provinces⁵⁶. In the former Japanese mandate, Bascom estimated that in Ponape one-third of the immigrants came from Okinawa, another one-third from the prefectures of Fukushima, Tokyo, Hokkaido, Kagoshima, Hiroshima and Shizuoka and the remainder came from the prefectures of what he calls "Japan proper"⁵⁷. The Vietnamese in New Caledonia and the Condominium came mainly from the Tonkin Province of former French Indo-China.

Because most Asians came from specific areas it may be safe to assume that some sort of a chain migration was in process.

Former repatriated Asians who returned to Fiji were already familiar with the Colony. Knowing Asian behaviour, they and those who remained as free settlers must have been instrumental in the immigration of others, especially relatives, friends and brides. They came as a response to the poor economic conditions in their home countries with the hope of bettering themselves whether they returned or stayed permanently. To others this was merely the first step to other countries with relatively greater opportunities. Moreover, the Asians came from areas where the people are supposed to be more adventurous and easily induced to move. They also came from either sea-faring areas or ports where they can learn about the better opportunities in other areas and where transport was more easily available to oversea places⁵⁸.

Whereas most of the Europeans probably came from urban areas, the Asians came from rural and peasant backgrounds. The Asians, as Asian immigrants everywhere, have shown great tenacity to their traditional customs and values. They were reluctant to inter-marry or mix socially with the indigenous populations. They were very loyal to relatives and their homelands and close contacts are still kept up today. Marriage partners are still often brought over from their own areas of origin. Asian children still attend their own special schools⁵⁹. Because the majority of them are barred from access to the land they became concentrated in towns where they perform specialized functions of considerable importance to the economy.

Further Asian immigration in future seems improbable, in view of the existing immigration laws and the looming threat of overpopulation. Moreover, the existing racial problems are not likely to encourage Asian immigration even if it is feasible. In future the Asian populations of the island territories will only grow through natural increase and if preferential treatment of islanders is dropped the new generation of Asians, who are less attached to their culture and traditional values as they regard the islands their country, ^{will make} ~~then~~ integration ~~will be~~ a fairly normal and natural process.

Emigration to Metropolitan Countries

Although before World War II a few individuals from the Pacific islands had settled in metropolitan countries, especially New Zealand, large-scale emigration from several islands is of recent origin. Not all territories have the opportunity of almost unrestricted entry into metropolitan countries. Those which have the distinction of easy access to metropolitan countries are the Cook Islands, Western Samoa, Niue, Tokelau, Nauru, Norfolk, Pitcairn, American Samoa, French Polynesia and Easter Island. Colonial ties and immigration policies of the metropolitan countries are perhaps the most influential factors in determining the sending and the receiving areas. Other variables such as the obstacles of distance, fares and transportation and push-pull factors have only limited influences. The discussion in this

section will be confined mainly to the indigenous people from the island territories regarded as islands of emigration.

Approximately 46,000 (about 4 per cent) Pacific islanders were living in metropolitan countries at the end of the 1960s. Of these the majority are in New Zealand, where a total of 26,271 Polynesians were enumerated in the 1966 census. About 12,000 of them were Samoans, 9,000 Cook Islanders, 3,000 Niueans and the remainder were Tongans and Tokelauans. In 1970 over 15,000 islanders, mostly Samoans, were estimated to be living in Hawaii and California⁶⁰. The de jure census of French Polynesia in 1951 showed 4,560 to be absent from their usual place of residence in the islands during the enumeration, among whom 3,556 were alleged to be domiciled in France⁶¹. The remaining emigrants were concentrated in Australia.

Net emigration from the Cook Islands to New Zealand was about 2,000 persons by 1956. In the next 5 years net emigration was about 2,000 and between 1961 and 1966 net emigration increased to about 3,500. Between 1955 and 1966 net emigration from Western Samoa to New Zealand totalled over 7,000. About 4,500 persons emigrated during the period 1961 to 1966⁶². Thus by 1966 about 8 per cent of the possible total population of Western Samoa were living in the Dominion. From Niue an average of about 150 persons left every year during the 1960s for New Zealand. In 1966 about 500 Tokelauans, mostly by their own efforts, had made their way to New Zealand⁶³. Since then growing concern for overpopulation in the dependency has forced the New Zealand Government to assist Tokelauans to emigrate by providing passages and jobs as well as settling them in New Zealand. Most of them have been settled in forestry towns of the Volcanic Plateau.

Rates of emigration for other islands of emigration are not known. However, in American Samoa emigration has declined since 1960, according to Pirie, partly because of revisions in the existing United States immigration laws relating to American Samoans and partly because of the increasing buoyance of the dependency's economy through American investments and

developments⁶⁴. Emigration from Nauru is not very significant because of her wealth from phosphate mining royalties. In Norfolk and Nauru the number of emigrants is limited by the small size of the population and lack of young adults. Emigration of Easter Islanders is restricted by the lack of transportation to Chile. From French Polynesia the rate of migration seems to fluctuate widely at alternate periods of 5 or 6 years. Moreover, the distance crossed is very much greater than the distance to New Zealand or the West Coast of the U.S.A. The insignificance of emigration from other territories is illustrated by the figures for Tonga and Fiji. The 1966 census of Fiji showed that some 4,000 (0.17 per cent per year), Fiji-born persons moved to New Zealand and Australia between 1961 and 1966. A relatively smaller number of Tongans (0.14 per cent per year), moved out of the Kingdom during the same period⁶⁵.

New Zealand immigration restrictions on Fijians and Tongans have inevitably increased the volume of temporary emigration to that country from these two territories. This temporary migration is at its height during the summer months when the weather is warmer and the demand for unskilled labour is greatest. Speedier air communication, increasing knowledge and acquaintance with existing opportunities, the growth of the number of friends and the lifting of certain restrictions in New Zealand have all contributed to the growth of this type of migration⁶⁶. The stringent Australian immigration policies have made that country a less favourable destination for either permanent or temporary immigrants. In the last 5 years a steadily increasing stream of emigrants from Fiji and Tonga are making California and Hawaii their destination⁶⁷. This has been possible through quotas given by the U.S. Government and the presence of an American Consulate in Fiji. In addition, people believe that wealth could be amassed much more quickly in the U.S.A. in view of the recent declining buoyancy of New Zealand's economy. The knowledge that others have done well for themselves in New Zealand and America has encouraged emigration. Immigration quotas are always booked up 5 years ahead⁶⁸. Fares are usually loaned through growing numbers of

money-lending agencies. Tongans often move to American Samoa in order to improve the prospects of emigrating to the U.S.A. Visas for students are easier to get and many go under the guise of being students. Often temporary migrants resort to less commendable methods such as marrying citizens in those countries, believing this will help them to stay permanently⁶⁹. Once an islander has become a permanent resident he will be instrumental in the emigration of others. The desire to emigrate among people of other territories which do not have the opportunity of doing so is not so visible, because of either less population pressure or a lower degree of acculturation.

American Samoans began moving to the States when the American Naval Base in Pago Pago was shifted in 1952. Rather than facing redundancy and a return to native subsistence agriculture, over 1,000 persons, formerly employed in the Base, moved with it to Hawaii. From there others moved to California. As soon as they settled down they helped to bring their families, relatives and friends. At first it was usual to live in Hawaii for a few years before shifting to either Los Angeles or San Francisco; today many go directly to California. Because of what appeared to be an open invitation the American Samoans to emigrate during the economic crisis of the 1950s following the removal of the Navy's payroll, Tongans and, especially, Western Samoans moved to American Samoa from where they made their way to the States. In 1950 1,704 Western Samoans moved to their eastern neighbour. Thus it seems that movements between the two Samoas were not strongly discouraged by crossing a political boundary. Since the beginning of emigration of American Samoans to the U.S.A. many more Samoans have crossed from the west to the east. McArthur calculated that between 1956 and 1960 only 2,500 of the estimated 4,000 who departed from American Samoa to the U.S.A. were bona fide easterners. She concluded that Western Samoans must have contributed substantially to the total number of emigrants from the east to the States⁷⁰. However, the free interchange of population between the two Samoas has been recently brought under much stricter control.

The Cook Islands, Tokelau, Niue, American Samoa and Western Samoa all experience the pressure of rapid population growth on their resources. In Easter Island over-population is not yet in sight although young people are emigrating to the cities of Chile. They are attracted by the economic opportunities and the 'neon lights of the big cities'. In addition there is also the need for marriage partners. "The small population and the existing marriage taboos are forcing the younger generation to seek marriage partners in Chile. Once they marry then tend not to return"⁷¹.

The increasing rate and volume of emigration have caused a profound change in the form and nature of the migration process⁷². Emigration initially began as a temporary individualistic movement of the young unmarried, more enterprising and energetic, discontented persons. Movements of islanders to metropolitan countries had, in the 1960s, assumed more of the nature of a permanent movement of family groups (see Figure 4.3). At the same time the motivation of migrants has also changed. Early migrants to New Zealand consisted largely of a transient element who moved for the purpose of secondary education, medical attention, administrative purposes or simply to look around. In fact early migrants to metropolitan countries had no intention to stay until they have assessed the opportunities offered. Their decision considerably influenced the decision of later migrants. Thus for 15 years after the war the number of departures from New Zealand almost equalled the number of arrivals there and the few who settled were mostly mixed-bloods. Emigration to the U.S.A. was slightly different because before 1952 hardly any Pacific islander was familiar with Hawaii or the mainland. Thus this migration did not begin with a comparable trickle as in New Zealand where travelling to and from, before the development of air transport, was easier.

Islanders are increasingly making the decision to emigrate permanently before they actually move. Dissatisfaction with the economic and social conditions in the islands has become the main 'push' factor while education, excitement of city life, large countries and peoples, wider opportunities, for wage-earning and higher standards of living are still the important 'pull'

Fig.4,3 Age-Sex Structures of certain groups of migrants. .

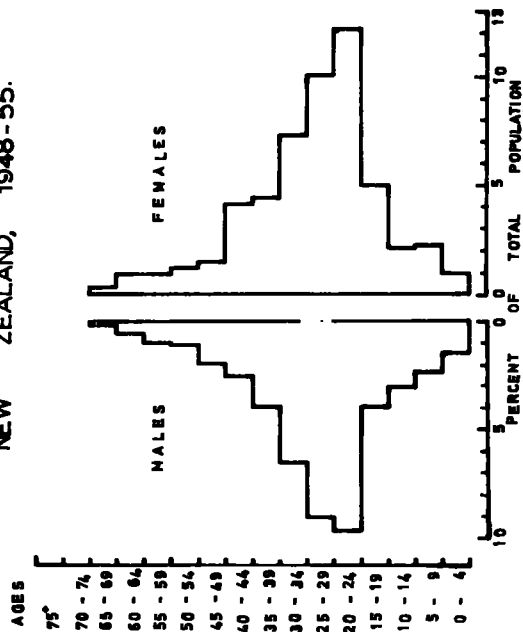
- A. Cook Islanders arriving in New Zealand, 1948-55.
- B. Cook Islanders arriving in New Zealand, 1965.
- C. Gilbert and Ellice Islanders in Nauru, 1963.
- D. Gilbert and Ellice Islanders in Ocean Island, 1963.

Sources: (1) Curson, P.H., 1970, "The Cook Islanders" in Thomson, K.W. and A.D. Trlin (eds), "Immigrants in New Zealand", Massey Univ., Palmerston North, p.181.

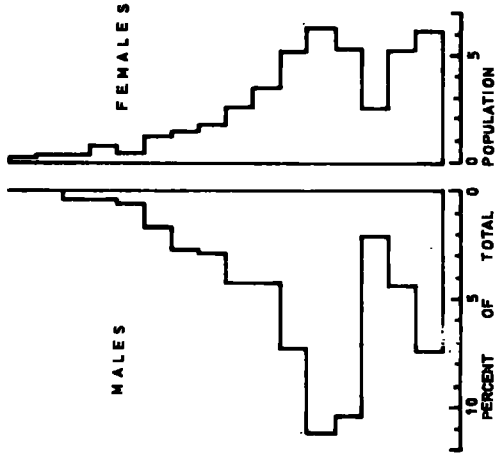
(2) McArthur, N., and J.B. McCaig, op.cit., p.56.

AGE - SEX STRUCTURES

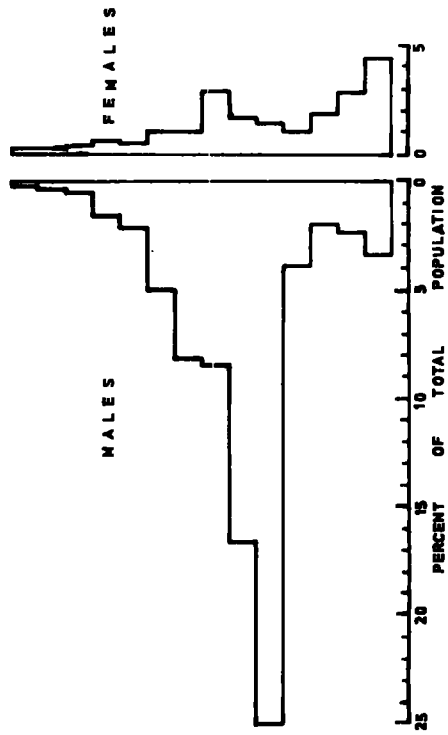
COOK ISLANDERS ARRIVING IN NEW ZEALAND, 1948-55.



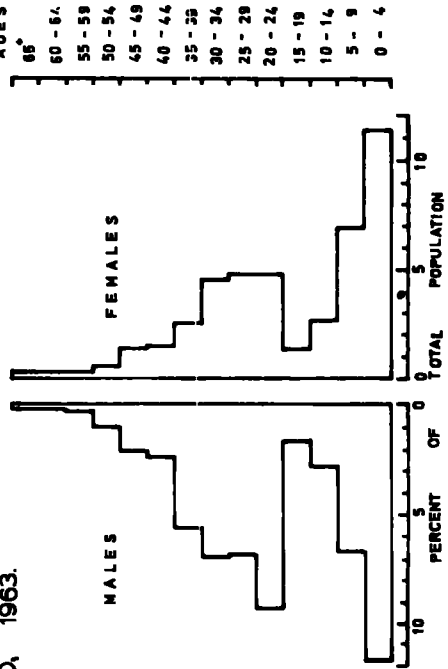
COOK ISLANDERS ARRIVING IN NEW ZEALAND, 1965.



GILBERT AND ELLICE ISLANDERS IN NAURU, 1963.



GILBERT AND ELLICE ISLANDERS IN OCEANIA, 1963.



factors. Today these attractions are greater because of the weakening forces of the 'pull' factors in the area of origin. Moreover, there is always the added stimulus provided by relatives and friends in metropolitan countries whose loyalty to kin and country creates a form of chain migration. In many cases this takes the form of providing the fare or part thereof, arranging work for members of the family, relatives and close friends or providing a place of residence for some time at least⁷³.

Migration streams are generally dominated by youthful adult males. This is particularly so at the pioneering stage. Early migrants from American Samoa as in other territories were mostly single males. In recent years the high sex ratio has been lowered as more women and children migrate and as former single male migrants send for brides from the islands. Until the late 1950s emigrants from the Cook Islands and Western Samoa were dominated by young single females. The demand in New Zealand for domestic servants and female factory workers during the war and the immediate post-war years led to the recruiting of women from these islands with fares paid for in New Zealand. Thus the usual process of migration was reversed among early Cook Island and Western Samoan emigrants. However, in the 1960s men have become preponderant among emigrants to New Zealand because they are more migratory than women and, in addition, there was an increasing demand in New Zealand for rural workers (see Figure 4.3 A and B).

From simple pioneer, individualistic movements the emigration of islanders has now taken on many of the aspects of a mass social movement. In other words, migration has become something of an established style, an example of collective behaviour. Thus the immediate destination is always a place which contains a substantial nucleus of islanders, usually the older residential areas of the large cities. 'It would now appear that it is the desire of islanders' who have access to metropolitan countries, principally New Zealand and the U.S.A. 'to establish some sort of a foothold'⁷⁴ there.

The growth of emigration has undoubtedly been influenced by the improvements in transportation and the growth of the mass media. Curson demonstrated that until 1960 'the volume (of migration from the Cook Islands)

was largely restricted by the limited transport facilities and lack of contact with New Zealand. The regularity or irregularity of the flow of migrants corresponds to that of transport and the availability of berths'.⁷⁵ The proportion of emigrants is usually highest in the main islands and the ones with better linking transport to those islands in which embarkation takes place. Among Cook Islanders who arrived in New Zealand in 1965 38 per cent came from Rarotonga alone and 32 per cent from the southern islands of Mangaia and Aitutaki. Altogether the 5 main southern islands provided nearly 83 per cent of all migrants while only 14.8 per cent came from the 7 northern atolls where population pressure is greatest.⁷⁶

The rising standards of an urban-orientated education system which is not suitable for island societies where Western urbanization is hard to envisage, and the increasing numbers of people being educated have helped to raise the aspirations of islanders for higher levels of living and these aspirations sometimes outstrip what the islands can offer. For the majority of islanders higher aspirations for education and Western standards of living, the excitement of urban life, the need for freedom from communal activities, higher incomes and better jobs will only be realised in the metropolitan countries. The growing desire to emigrate is an irreversible trend when aspirations are ahead of economic realities. In fact, only restrictions on emigration from Tonga and Fiji have held back migration from these territories. In 10 years time the desire to emigrate to metropolitan countries will be almost universal throughout the island territories. Emigration can only be reduced if the economic development parallels, or exceeds the ~~country's~~ aspirations, but continued rapid population growth will make it hard to maintain the economy, let alone improve it.

Inter-Territorial Migrations

It is not possible to know the number of islanders involved in migrations between island territories before the First World War. Territorial boundaries

did not exist and there were no government restrictions on movements. Migrants became assimilated into the populations of the areas of destination and only recent migrants are usually classified in censuses as 'Other Pacific Islanders'. For example, Tongans who settled in the Lau Group regard themselves today as Fijians. Religious rivalry in the Wallis Islands in the 1830s led to the migrations of Wesleyans to Tonga. They settled mainly in Vava'u and the village of Holonga and Tongatapu⁷⁷. However, they are now regarded as Tongans. Thus most of those who shifted from their island groups in the last century are now identified with those island populations, particularly their descendents. There are settlements in Tonga which are still referred to as Niuean or Fijian settlements yet probably most of the inhabitants are enumerated as Tongans.

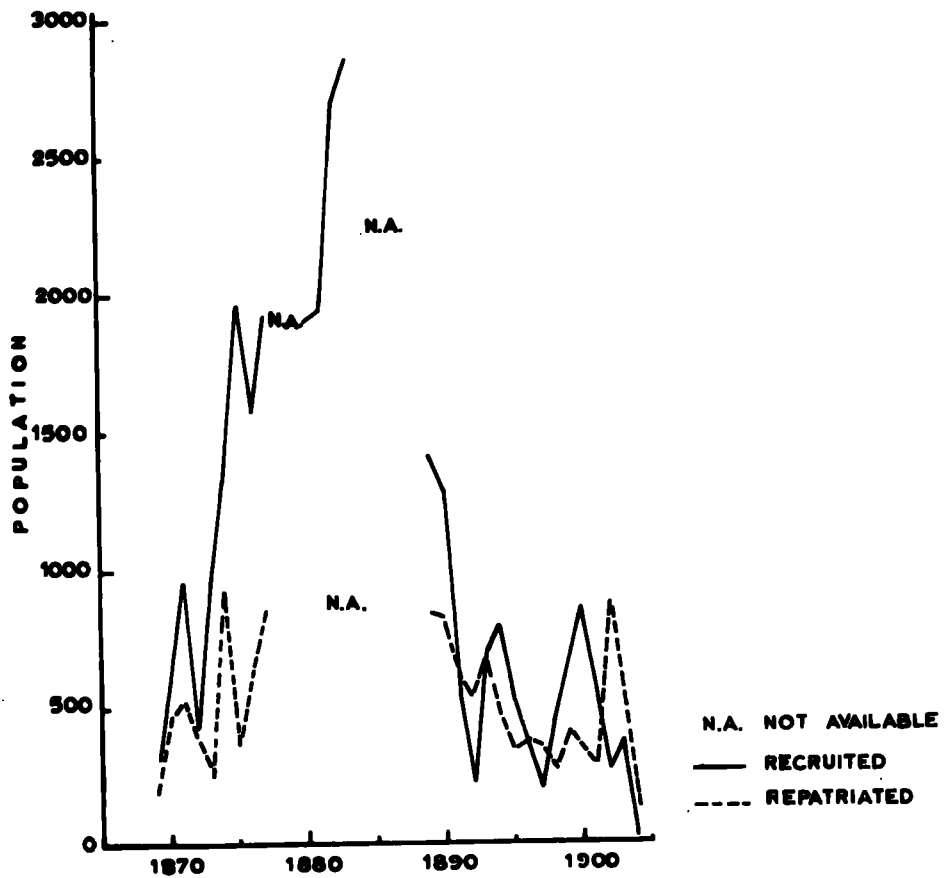
Movement between the island groups is generally believed to have been greater in the last century, especially in Micronesia and Polynesia. There was no need to get entry permits. Moreover, entry was not restricted to focal points of the main ports. Passages were usually paid in kind or services. The spread of Christianity and the introduction of commercial activities also helped to stimulate other waves of migration. A handful of islanders left their island groups to propagate the gospel. Others left to earn a few trade goods in areas where the exchange-economy was flourishing. The main islands of immigration were Fiji, Tahiti and Samoa. Recruitment of islanders reached its zenith in the 1880s (see Figure 4.4). Freemigration was usually towards the nearest area of European economic activities. In the nineteenth century Cook Islanders migrated to Tahiti and Tongans to Fiji. Many regarded it as acceptable for young men to be away for some time from their home islands as they still do in New Guinea and the Solomon Islands.

When international boundaries became clearly delineated and organized and centralized administrations were established, inter-territorial movements declined. Wars had ceased, refugees had returned and there was no need for mercenaries. In addition, most of the exploitable resources which required intensive labour were exhausted or there was a greater dependence

Fig. 4.4 The number of New Hebrideans known to have been recruited to and repatriated from Queensland, 1865-1905.

Source: McArthur, N., and J.F. Yaxley, *op.cit.*, p.15.

NEW HEBRIDEANS RECRUITED TO AND REPATRIATED FROM QUEENSLAND, 1865-1905



on Asian labour supply, landings outside defined points of entry were illegal as vessels often required quarantine and other port procedures, and the use of ocean going canoes declined to the point of disappearance while ships were few and imposed fares had to be paid in cash. Between Fiji, Tonga and Samoa movement by canoes ceased by the end of the last century. In the Gilbert and Ellice Islands interinsular canoe voyages were banned in 1910 because of the high casualty rate. When the ban was lifted 20 years later the islanders had lost the skills required for building and sailing large canoes⁷⁸. The decline in inter-territorial movements is reflected in the reduction of the proportion of 'Other Pacific Islanders' in Rarotonga from 9 per cent in 1895 to 7.6 per cent in 1901⁷⁹. In interwar years 'Other Pacific Islanders' never made up more than 2 per cent of the population. Part of the decline is probably due to assimilation and changing definition of 'Other Pacific Islanders'. Perhaps to islanders the excitement of moving to other territories lost its appeal since they were all developing at almost the same level. Each territory now began to develop poles of attraction where their inhabitants could be acquainted with all novelties. Furthermore, islanders had no real need for cash and when the need arose it could be easily rectified by selling copra and a few other cash crops. The population was either growing at a moderate rate or remaining stagnant, therefore there was no real population pressure and life was simple.

The explosive population growth in postwar years and the rising needs for money have been mainly responsible for the revival of inter-territorial migrations. Moreover, social and economic developments in certain territories have forged ahead of others. Population pressure has not yet impinged itself upon the resources of some of these territories. Naturally, the territories where economic development today has been retarded are the smaller ones. Barriers are being scaled by ~~several~~ many islanders who are no longer satisfied with the existing opportunities in their territories. Distance and cultural ties have become less significant in choosing the area of destination; political ties and the wider range of opportunities are

of greater importance. Fiji, Western Samoa and Tahiti are no longer the main destinations, though their attractions for education and wider ranges of social activities still remain. The new areas of destination are New Caledonia, New Hebrides and the Solomon Islands. Tahitians travel over 3000 miles to work in the mines and plantations of New Caledonia and the New Hebrides. The repatriation of Asians has increased the need for 'Other Pacific Islanders'. In 1963, 3076 Wallisians and 2,542 Tahitians were in New Caledonia⁸⁰. The nearness of the Wallis Islands explains the preponderance of Wallis Islanders among 'Other Pacific Islanders' in New Caledonia. Fijians and Tongans have recently made their way to New Caledonia and the Condominium. Fijians have also migrated to the Solomon Islands, especially to the capital Honiara⁸¹. Most of these migrants are either skilled or semi-skilled workers and professionals. Because it is still in the pioneering stage, most are males.

Better documented are the organized migrations from the Gilbert and Ellice Islands. All the Banabans (Ocean Islanders) were moved to Rabi Island in Fiji in 1945. A little later groups of Vaitupuan from Vaitupu in the Ellice Islands went to Kioa in Fiji, ^{an} island they had bought. Since then migration to Fiji has virtually ceased, partly because of restrictions in Fiji. Prolonged droughts in the islands of Sydney, Hull and Gardner in the Phoenix Group prompted the removal of those from the Southern and Central Gilbert Islands who had settled there since 1938. This time they were moved to Gizo and Wagina in the Solomons which began in the late 1950s. By 1962 there were 600 Gilbertese in the Solomons and in 1968 there were 2,000 of them⁸². Land is available in the Solomons where population pressure is not yet felt. In the cases of Vaitupuan in Kioa and Gilbertese in the Solomons, selected groups of men were sent ahead to grow food crops before others could join them when these crops were ready to be harvested. Gilbert and Ellice islanders are also recruited to work in the phosphate industry of Nauru and Ocean Island (see the Age-Sex Structures in figure 4.3 C and D). However, they are there for at least 2 years before new recruits take over, unless contracts

are renewed. In view of the possible exhaustion of phosphate within the next 10 years this form of migration on labour lines will also cease, causing dire consequences to the Colony.

The trend in inter-territorial migration is reflected in Table 4.3 which shows the fluctuations in the number of 'Other Pacific Islanders' in Fiji, between

Table 4.3 CHANGING NUMBERS AND SEX-RATIOS OF 'OTHER PACIFIC ISLANDERS' IN FIJI, 1881 - 1966

Year	Total	Males	Females	% Males	Year	Total	Males	Females	%Males
1881	6,100	5,269	471	92.3	1936	2,353	1,470	883	62.5
1891	2,267	1,923	344	84.8	1946	3,717	2,145	1,572	57.7
1901	1,950	1,584	366	81.2	1956	5,320	2,839	2,481	53.4
1911	2,758	2,429	329	88.1	1966	6,095	3,207	2,888	52.6
1921	1,564	1,271	293	81.3					

Source: Census Report, 1968, Table 1 p.1 (Appendix)

1881 and 1966. In 1966 over 90 per cent of those 0-14 years of age in the 'Other Pacific Islanders' component were born in Fiji but in the ages beyond this the proportion of Fiji-born was only 46 per cent. Of the 54 per cent not born in Fiji among those 15 years and beyond, 24 per cent were from Polynesia, 26 per cent were born in Micronesia (nearly all from the Gilbert Islands) and 4 per cent were born in Melanesia. Those born in Melanesia were preponderant in the old age groups which indicates that they are the residue of those Melanesians who opted to stay during the years of recruiting island labourers. Recent immigration of Micronesians is seen in the marked concentration of males at ages 30-44 years. The lack of recent immigration among Polynesians is evident in the more balanced sex-ratio and the fact that numbers of Polynesian-born have remained virtually the same since 1956. Among the Polynesian-born section is a large number of students.

Immigration of 'Other Pacific Islanders' into the New Hebrides is more recent and still continuing, and less than 40 per cent of those 10-14 years of age in 1967 were born there. There is also a bunching in this component between the ages 20 to 24 years. Moreover, among the adults there are almost twice as

many men as women. The number of 'Other Pacific Islanders' in Tonga decreased to about 300 in 1966 from about 640 in 1956, probably because of emigration rather than increasing naturalization or exceptionally high mortality.

In view of the present rates of population growth it is mostly ^{un}likely that inter-territorial migrations of a permanent nature will be of any significance, especially to relieve population pressure. Future growth of the 'Other Pacific Islanders' will be mainly by natural increase, if not reduced by such processes of assimilation as intermarriage and naturalization. Meanwhile, within island territories internal movements will continue to increase.

3. INTERNAL MIGRATIONS

It seems that after the coming of Europeans and the setting up of missions and trading beachheads internal migrations among the island groups increased. During the interwar years they continued but never at any alarming rate. Postwar developments and the greater centralization of the administration, education, wage-employment, entertainment, health and other public amenities have created an 'urban drift' from the outer islands never known before in the history of the island territories. The rate and volume of internal migration vary from territory to territory. More than 20 per cent of the population of each territory were enumerated outside their islands of birth during the latest censuses. In Fiji in 1966 slightly more than 25 per cent were enumerated outside their province of birth. The percentage enumerated outside their village of birth is not documented although it is believed to be higher. Undoubtedly, improvements in road and shipping transport have made the movements easier.

All island territories are faced with the problems of this increasing and continuing drift to the main islands and port towns. As a result the port town populations are increasing at very fast rates well above the national growth rate (see Table 1.10). Because fertility has been shown to be lower in the towns in-migration therefore contributes substantially to the high population growth rates of the towns which range from an average of about 5 per cent in Papeete to over 27 per cent per year in Honiara.

The varying sizes of the territories and the existing diversities in geographical features such as relief, soil types, number of islands, distance between islands, social and economic advancement etc., pose difficulties in making a generalized subdivision into rural-urban migrations, rural-rural migrations and inter-island migrations. Therefore all internal movements in various directions will be subsumed and discussed under the above heading. However, it may be said that in islands like the Cook Islands, Gilbert and Ellice Islands and the U.S. Trust Territory rural-urban migration as it is known in large countries is not important and will never be. Inter-island migration to the port towns, an oceanic form of rural-urban migration, is more important. Rural-rural and rural-urban migrations are evidently going on in the larger islands of Viti Levu and Vanua Levu (Fiji), Tongatapu (Tonga), New Caledonia Island, Tahiti (French Polynesia), the large islands of the Solomon Islands and the New Hebrides (such as Malaita, Santa Isabel, Guadalcanal, Santo, Malekula and Efate), Guam, Savaii and Upolu (Western Samoa) and Tutuila (American Samoa). Single island territories naturally do not experience inter-island migration, for example Nauru, Niue and Guam. All three types of internal migration can be clearly distinguished in Tonga, Western Samoa, Fiji, Solomon Islands, New Hebrides, New Caledonia and French Polynesia. However, the discussion that follows will be centred on the drift to the main islands and port towns with particular reference to the Kingdom of Tonga.

A large proportion of the town populations were born outside the towns. According to the 1963 census of the Gilbert and Ellice Islands over one-half of the 8,000 population of the main atoll of Tarawa were drawn from the rest of the Colony⁸³. In Papeete 59.7 per cent of the population in 1956 were born outside the town, of whom 18.0 per cent were Chinese, 5.0 per cent Europeans, 16.4 per cent came from other parts of Tahiti, 10.7 per cent from the Tuamotus, 8.6 per cent from the Australs and 1.0 per cent from the Marquesas⁸⁴. In this case the proportion of migrants decreases as the distance increases, and this is probably true in other territories. The proportion born outside the towns cannot be determined from the censuses and only access to the household census cards will enable one to do so.

In his study of the growth of Nuku'alofa Walsh found that before 1956 there was more movement to the rural parts of Tongatapu than to Nuku'alofa.

Between 1931 and 1956 Nuku'alofa's annual growth rate (5.2 per cent) was less than that of rural Tongatapu (6.3 per cent); but in the next decade the annual growth rate of Nuku'alofa (7.4 per cent) exceeded that of rural Tongatapu (5.3 per cent). The most densely populated part of the town grew at an even faster rate (10.6 per cent) while nearby Haveluloto, the centre of the only sizeable industry on the island, grew at the fantastic annual rate of 35.7 per cent between 1956 and 1966⁸⁵. The higher growth rates of the town indicate that it is the destination of an increasing number of Tongans. Still, the main island has an annual growth rate that is about five times that of the other island groups since 1956 which shows that Tongatapu is the main island of in-migration. Because of the smaller population of 'Eua and its surplus land for distribution, it is the only island with a slightly faster rate than Tongatapu, except the very small islands where the addition of a few persons will seem like an influx of migrants. The outer islands show either slow growth or decrease in absolute numbers. The growth rates of the island groups of Tonga are shown in Table 4.4 and in the same table the changing distribution of population is also given. The increasing proportion of Tongans in Tongatapu and the corresponding decrease in the other groups cannot be explained by existing differences in mortality and fertility. It is caused mainly by migration which shows that Tongatapu is the destination of most migrants from the outer island groups.

While the proportion of Tongatapu-born who were enumerated in the island in 1956 and 1966 has virtually remained unchanged, the proportion of those born in the other districts but failed to be enumerated there has increased. Table 4.5 shows that apart from 'Eua where over half of the population enumerated in 1966 were born outside the island, Tongatapu has a higher proportion of those born outside its district than either Ha'apai or Vava'u. In fact, the proportion of those enumerated in Ha'apai and Vava'u who were born outside those districts fell between 1956 and 1966, the decline being greater in Vava'u than in Ha'apai. As seen in Table 4.6, the proportion of Tongans born and enumerated in Tongatapu increased from 90 to 92.9 per cent during the intercensal period. This shows

TABLE 4.4. ABSOLUTE NUMBERS, AVERAGE ANNUAL GROWTH RATES AND POPULATION DISTRIBUTION BY ISLAND GROUPS, TONGA 1891-1966

	Population Numbers				
	1891 ¹	1921 ²	1939 ³	1956 ⁴	1966 ⁵
Tongatapu & 'Eua	7,028	10,127	16,234	33,189	51,311
Ha'apai	5,414	5,976	7,483	9,918	10,591
Vava'u	5,084	5,787	8,199	12,477	13,533
Other*	1,660	1,869	2,214	1,254	2,094
All Tonga	19,186	23,759	34,130	56,838	77,429
	(Per cent) Growth Rates				
Tongatapu & 'Eua	-	1.22	2.61	4.09	5.45
Ha'apai	-	0.32	1.24	1.64	0.68
Vava'u	-	0.44	1.95	2.40	0.85
Other	-	0.48	1.03	-2.55	6.70
All Tonga	-	0.72	2.03	2.94	3.62
Tongatapu & 'Eua	36.6	42.6	46.2	58.4	66.3
('Eua	-	-	-	3.4	4.4)
Ha'apai	28.2	25.2	21.9	17.5	13.7
Vava'u	26.5	24.4	24.0	22.0	17.5
Other	8.7	7.8	7.9	2.2	2.6
) Distribution of Population (%)

- ☛ Sources: 1. Missionary Account Census 1956, p.17
 2. Wood (1952) Appendix 6⁺
 3. Census 1956, p.41, 4. Ibid.
 5. Census 1966 p.36

* Niuafo'ou and Niuatoputapu

Note: Niuafo'ou had no population in 1956 because the volcanic eruptions in 1946 led to the evacuation of the total population who were mostly resettled in 'Eua. In 1958 some of the Niuafo'ou people returned to their island. Before 1956 'Eua was regarded as a part of Tongatapu and her population were enumerated and tabulated together with Tongatapu's population. Rates of growth are the average annual growth rate between the censuses.

+ Wood, A.H., 1938, 'A History and Geography of Tonga', Auckland.

that those born in Tongatapu are reluctant to move out of the island to the outer groups. Meanwhile, the proportion of Vava'uans enumerated in Tongatapu increased from 16.5 to 24.9 per cent and Ha'apai^as enumerated in Tongatapu increased from 24.1 to 32.3 per cent. Even the proportion of the 'Eua-born enumerated in Tongatapu increased during the intercensal period. The decline of those born and enumerated in their district-of-birth during the decade has been most marked in Vava'u.

Table 4.5 PERCENTAGES BORN IN AND OUTSIDE TONGAN ENUMERATION DISTRICTS (TONGANS ONLY)

Enumeration District		Per cent born in District	Per cent born outside District
Tongatapu	1956	78.6	21.4
	1966	78.2	21.8
Ha'apai	1956	84.9	15.1
	1966	86.3	13.7
Vava'u	1956	81.6	18.4
	1966	87.1	12.9
'Eua	1956	48.1	51.9
	1966	46.8	53.2

Source: Based on figures derived from the 1956 and 1966 censuses.

Table 4.6 TONGAN BIRTH PLACES AND ENUMERATION DISTRICTS (TONGANS ONLY)

Districts of Enumeration (%)

		Tongatapu	Ha'api	Vava'u	'Eua	Other
Tongatapu	1956	90.0	3.8	4.7	1.1	0.4
	1966	92.9	2.2	2.3	2.0	0.6
Ha'apai	1956	24.1	69.5	5.5	0.7	0.2
	1966	32.3	62.0	3.9	1.4	0.4
Vava'u	1956	16.5	2.6	80.1	0.4	0.4
	1966	24.9	2.9	70.2	1.3	0.7
'Eua	1956	18.0	2.1	1.4	78.4	0.1
	1966	20.-	1.7	1.3	75.3	1.7

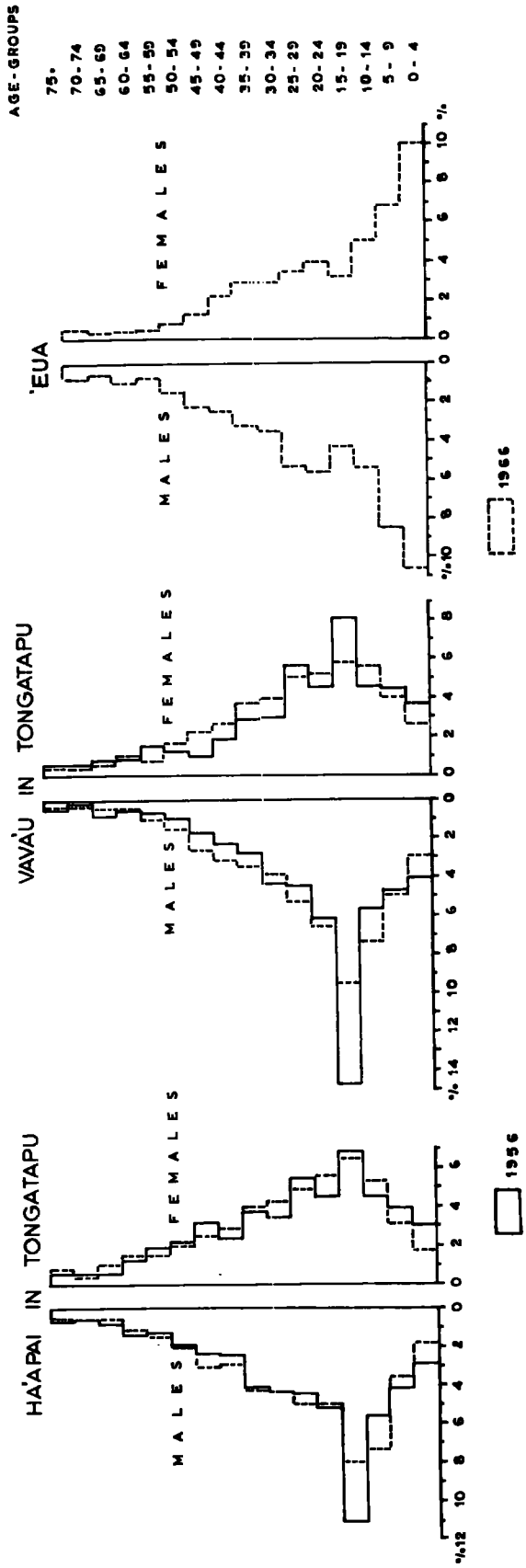
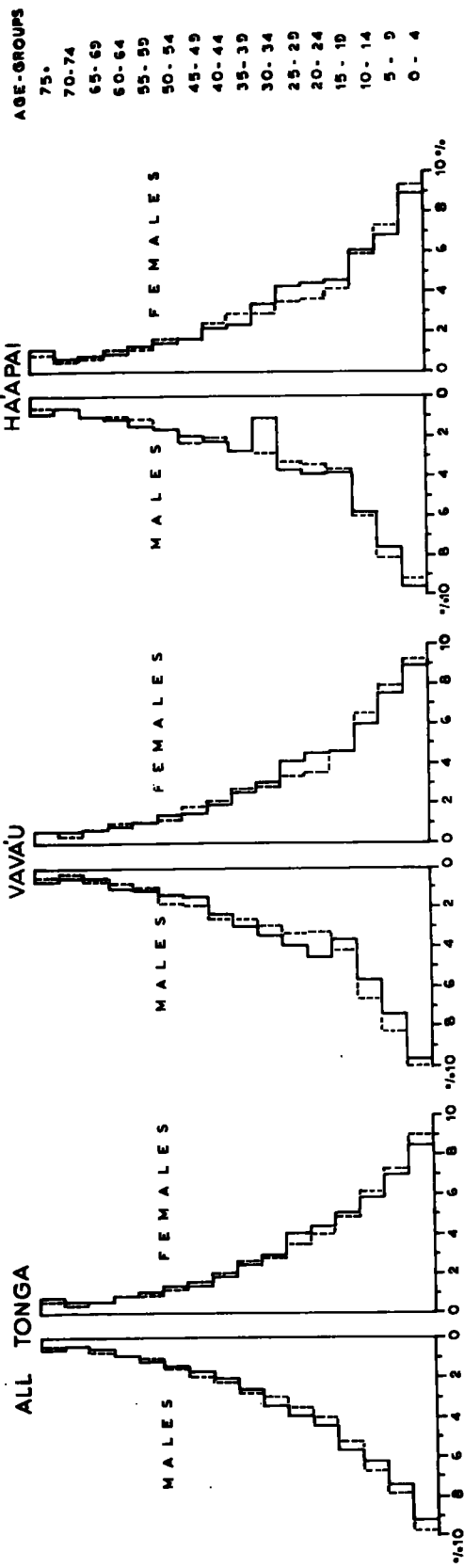
Source: Same as for Table 4.5

Fig.4.5 Age-Sex structures for various population groups in
Tonga, 1956 and 1966.

Sources: (1) Fiefa, S.N., op.cit., pp.63-8.

(2) Tupounina, M.U., 1958, "Report on the results of the
1956 census, Tonga", Nukualofa, Tonga, pp.70-77.

AGE-SEX STRUCTURES FOR POPULATION GROUPS IN TONGA, 1956 & 1966



The nature of migration has changed since the late 1950s. Instead of the former large element of transient migrants who came to Tongatapu, especially to Nuku'alofa, for education, administration reasons, medical check-ups, business reasons, to visit relatives or merely to look around, increasing numbers of Tongans are now moving to the main island with the intention of staying⁸⁶. In pre-World War II years, migrants were mainly unmarried individuals, mostly males, as in Melanesia today⁸⁷. Because all secondary schools in those years were located in Tongatapu the majority were in the youthful adult ages, probably concentrated in the age-groups 15-24 years. More males were involved than females because parents did not believe then in too much education for girls and, moreover, girls cannot be allowed to travel by themselves unaccompanied by a responsible member of the family. By 1956 this trend was still evident among migrants from Vava'u and Ha'apai in Tongatapu (see Figure 4.5).

Figure 4.5 shows that among the migrants in Tongatapu from Ha'apai and Vava'u ^{since 1956} slightly more women than men have been moving in the age-groups above 19 years. Between 10 and 19 years of age are those attending schools in Tongatapu and between 1956 and 1966 the proportion of girls has increased in relation to the proportion of boys. However, the proportion of those in these age-groups has declined during the period (see Table 4.7). The decline is greatest among those from Vava'u which shows that the in-migration of those in the other age-groups is greater than among the Ha'apaians who have been moving in to Tongatapu for a longer period in family groups. Before the 1960s the movement of Ha'apaians^a was mainly to central rural Tongatapu. Since then they have been aiming, as recent migrants from other groups at settling in and around Nuku'alofa. The process of chain migration is clearly at work here because many of those who move now are only joining other members of the family who have lived longer in Tongatapu. Increasingly those migrants who complete their education do not return as they see nothing for them in their island of birth. If they get employment they will help to bring others. The proportion therefore of those in the age-groups 10-50 years in Vava'u and Ha'apai has been depressed by out-

migration. The narrowing in the waist of the pyramid has been most marked among the age-groups 15-34 years (see Figure 4.5).

The increase in the number of migrants to Tongatapu from the outer groups has been greatest among the Vava'uans between 1956 and 1966 (see Table 4.7). In-migration from Ha'apai to Tongatapu has been going on for many years because of high population pressure in most of the numerous small islands of this group. In-migration from Vava'u is not greatly affected by relative population pressure but rather by the lack of opportunities for higher economic and social

Table 4.7 HA'APAI AND VAVA'U LIVING IN TONGATAPU, 1956-1966

		1956			1966		
		Males	Females	Total	Males	Females	Total
Vava'u:	Numbers	1096	923	2019	2212	1902	4114
	% Increase				101.8	106.0	103.8
	% aged 10-						
	19	37.7	27.7	33.2	31.5	24.9	28.4
Ha'apai:	Numbers	1500	1359	2859	2455	2276	4731
	% Increase				63.7	67.5	65.5
	% aged 10-						
	19	31.3	23.4	27.7	29.3	24.5	26.9

Source: Same as for Table 4.5

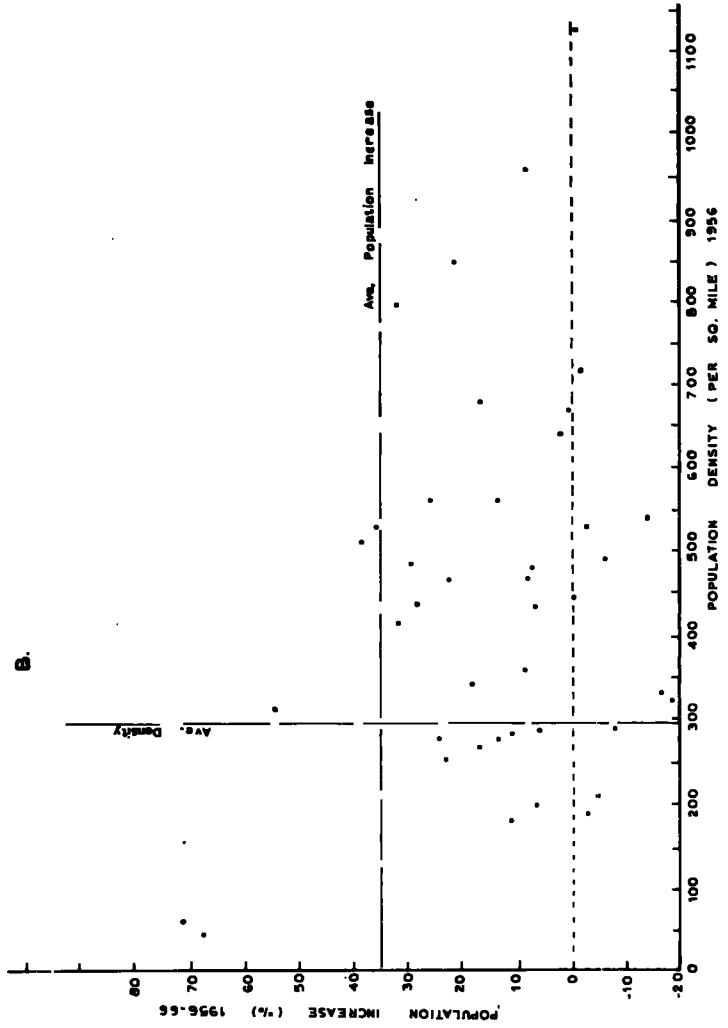
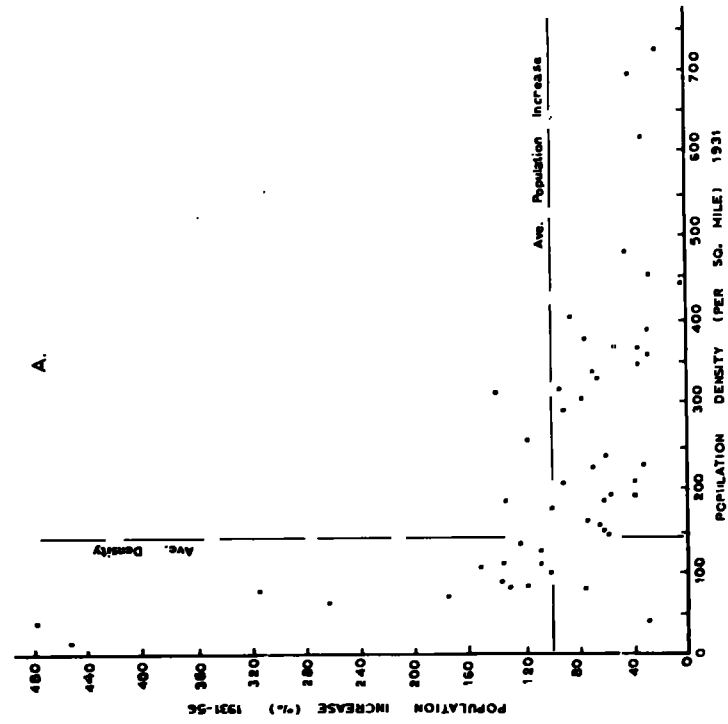
attainments. In fact what started the exodus from this island group was the severe hurricane of 1961 and the consequent drop in copra production. Figure 4.6 A and B shows population growth is no longer closely correlated with population density among the islands. Probably population growth is more related to economic development than to density though in 1956 it was still significantly correlated to population density⁸⁸. The change in the correlation illustrates the changing motives in the decision to move to Tongatapu and why there is a marked tendency for recent movements to be urban-orientated. Moreover, few settlements exceeded the growth of Nuku'alofa between 1956 and 1966. Where village growth exceeded or nearly approximated the growth of Nuku'alofa, it was either in very small villages, where an influx of a handful of settlers would give

Fig.4.6 Scatter diagrams showing the changing relationship between population growth and population density, 1931-56 and 1956-66.

Sources: (1) Diagram A. is after Maude, A., 1965, "Population, Land and Livelihood in Tonga", Unpub. Ph.D. Thesis, A.N.U., Canberra, p.84.

(2) Fiefia, S.N., op.cit., pp.39-49.

Note: The population growth for islands and districts during 1939-56 have been plotted against the population density of those islands and districts in 1939, and population increase between 1956 and 1966 have been plotted against the population density in 1956.



apparently spectacular increases or in settlements where land is easily available or close to the markets of Nuku'alofa.

Movements involve no hardships because the existing infrastructure of kinship obligations act as a buffer against possible hardships in the first few years. Land, property and homes are often shared during these years until newcomers are able to stand on their own feet. Kinship channels also connect the urban unemployed and underemployed with areas of food surpluses in the islands. Because of the great deal of inter-island travelling, but especially to Tongatapu, migrants are quite familiar with the environs of their new place of residence. Very often the choice of destination is determined by the existence of close relatives.

Factors 'pushing' people out of the outer islands and 'pulling' them towards Tongatapu and Nuku'alofa are: (i) the wider range of opportunities for social mobility in recent years; (ii) the changing economic needs of the average Tongan; (iii) easier transport between islands; (iv) more recently, the advertising of the attractions of Nuku'alofa; (v) land tied up in title disputes and in other ways kept back from distribution; (vi) low prices for copra; (vii) two severe hurricanes in the northern islands in 1961 and 1963; and (viii) the decimation of the banana by black leaf streak and other diseases. If one single cause can sum up these various and interrelated factors, it is the new need for money⁸⁹. The 'pull' of Tongatapu and Nuku'alofa is therefore so great that migrants are arriving ahead of job opportunities and many wait for years before they can get either an 'apikolo (town allotment) or 'api tukuhau (bush allotment)⁹⁰. Probably Belshaw's hypothesis has some relevance to this movement when he suggested that large proportions of migration streams are motivated by the excitement of urban life rather than job-hunting and as a result migrants are arriving ahead of the expansion of job opportunities.

The 'pull' of surplus land available for distribution has become less important, particularly if it is not easily accessible and transport to the markets is not very good. This is particularly true in the island of 'Eua. In 1939 the island of 'Eua, the second largest in Tonga and only 25 miles from

Nuku'alofa had a population of about 600 giving it a population density of about 12 persons per square mile. Niuafo'ouans were resettled in the island in 1946⁹¹ and migration of the land-hungry people from other parts of Tonga did not begin until well into the 1950s. Large streams of in-movement only began when transportation between Nuku'alofa and 'Eua was improved and shipping became more regular and reliable to enable the selling of food crops in Nuku'alofa and the exportation of cash crops. Improvements in transport followed the exploitation of the forest resources of the island. Consequently the population increased from 1925 in 1956 to 3,391 in 1966. The isolated volcanic island of Tofua which has been recently resettled has not yet had the attraction of 'Eua. The attractions of Nuku'alofa and Tongatapu still outweigh the attractions of these islands as far as the number of in-migrants are concerned. There is evidence of the same sort of declining interest of in-migrants in areas where lands are available but not easily accessible in the other island territories⁹².

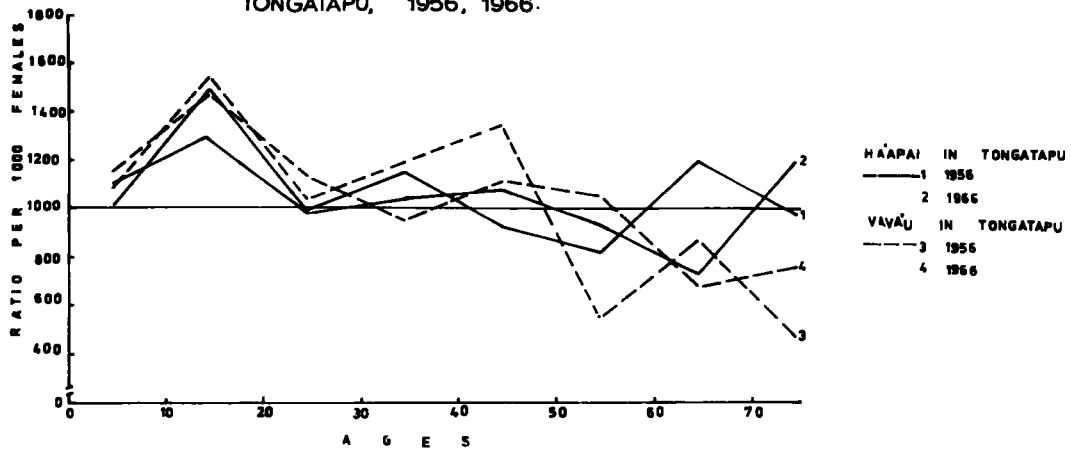
To the average islander, cash cropping is an unsteady and unreliable source of income in view of its subjection to price fluctuations, and vulnerability to pests, diseases and climatic changes. Furthermore, cash cropping or subsistence cropping is identified as a dull life, and a lower paid wage-earning job where one wears clean clothes and has a steady income is preferable. Thus, in view of available land in other islands and in parts of Tongatapu and the tendency for migration to become urban-orientated, Ward's contention seems relevant. He claims that 'as yet real population pressure on the land is localized. But as a cause of population movement or general discontentment it is not always real pressure or a truly low level of living which is important. It is the relative pressure and the differences in the level of living from one area to another which lead people to be dissatisfied and to shift their place of residence'⁹³.

Movements away from Tongatapu and between the other island groups are generally female dominated. The exceptions are the movements to the pioneering settlements in 'Eua and Tofua which is highly male dominated (see Figure 4.7 A and B). Migrations between villages over short distances are also female dominated. The preponderance of females among inter-village migrants, migrations

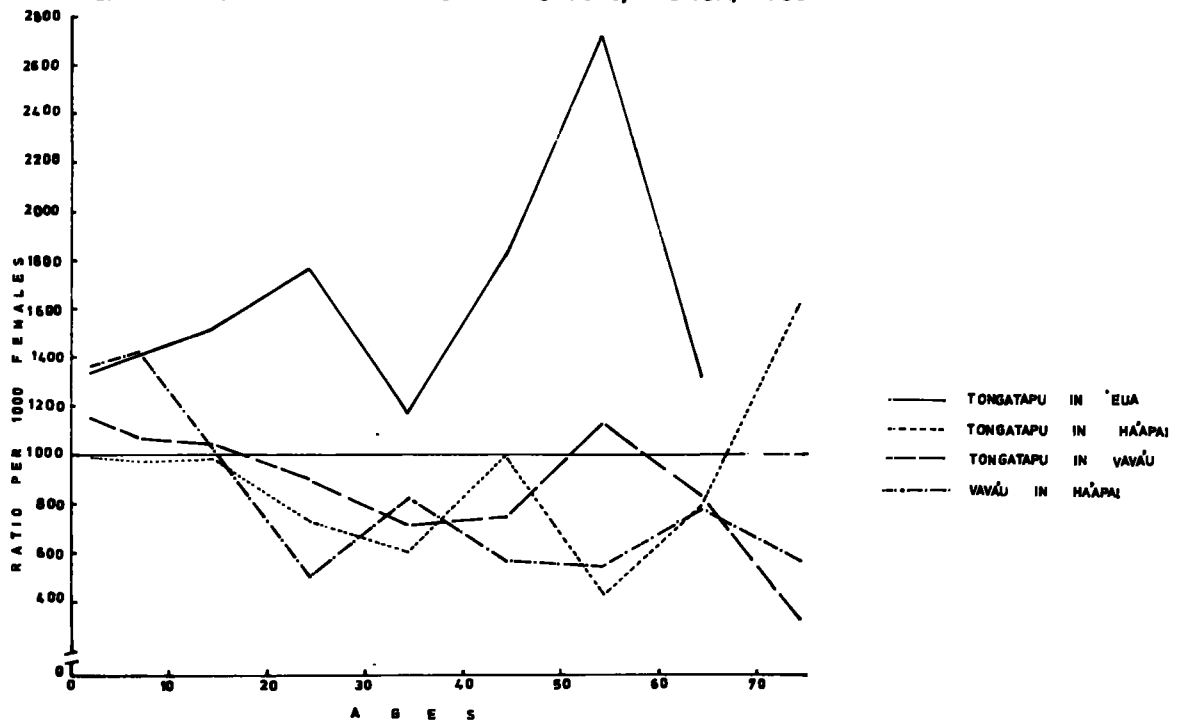
Fig. 4.7 Age-Sex Ratios for decennial age-groups among various population groups in Tonga, 1956 and 1966.

Sources: same as for Fig.4.5.

SEX RATIOS FOR HAĀPAI AND VAVĀU IN TONGATAPU, 1956, 1966.



SEX RATIOS FOR OTHER MIGRANT GROUPS, TONGA, 1966.



away from Tongatapu and between the other island groups is due to the exogamous nature of marriages. Villages in the island territories are small and marriage taboos force many to seek wives in other villages. Table 4.8 shows that the majority of wives in various villages in Fiji come from other villages. In her study of the village of Nukuleka in Tongatapu, Ayoagi counted 37 persons born outside the village. This means that 15 per cent were in-migrants. Of these 10 were males, 25 females and only two were children. The 25 women all married into the village. Against this 36 had moved out of the village; 13 males and 23 females. There were only 6 cases among the 36 married couples in the village where both wife and husband were born in the village. Most of the wives were from nearby villages whereas almost all of the husbands who married women in the village came from more distant villages or other islands⁹⁴.

Lack of data does not permit any statistical analysis of the relationship between migration, distance, size of settlement, the intervening opportunities, the opportunities at the receiving and sending areas, and the availability of transport. However, according to Walsh⁹⁵, over one-half of the immigrants in Nuku'alofa had come from other parts of Tongatapu. Also over 60 per cent of the migrants in the towns of Vila and Santo in the New Hebrides had come from other parts of Efate (where Vila is located) and Espiritu Santo (where Santo is located)⁹⁶. Migrants to the urban areas seem to come mainly from the larger villages or towns. For example, 41 per cent of all migrants from Vava'u to Tongatapu came from the only town of Neiafu while 31 per cent of those from Ha'apai came from the only town of Pangai. In Tongatapu about half of those who moved to Nuku'alofa came from the town of Mu'a, the second largest in the Kingdom. All settlements in Tongatapu have easy access to Nuku'alofa, especially from eastern Tongatapu where Mu'a is located. In Vava'u and Ha'apai the main settlements are more sophisticated and more materialistic. Because of the lack of intervening opportunities and the geographical distribution of the islands there is little evidence of any 'step migration'. Movements away from Tongatapu do not have any relationship to the distance although it appears to be proportional to the size of the islands and the population in the area of destination.

The present trend of internal migration seems irreversible. The more people drift into Nukua'lofa and Tongatapu the greater the centralization,

Table 4.8 EXOGAMOUS MARRIAGES IN SELECTED FIJIAN VILLAGES

Village	Village of mothers of adult males		Village from which present wives chosen		Village to which women have married	
	Same	Different	Same	Different	Same	Different
Narata	0	14	2	12	1	20
Koronisagana	1	13	1	13	1	21
Sautabu	1	12	0	14	0	22
Vunaquro	0	11	2	10	2	15
Naveyago	0	9	1	9	0	13
Nalebateba	5	20	1	23	1	14
Tuvu	2	10	1	11	1	10
Keiasi	12	0	3	18	5	25

Source: Belshaw, C.S., 1963, "Under the Ivi Tree", Oxford Univ.Press, p.29

which in turn will draw more people and so the cycle will continue. The implication of this is the increasing neglect of development in the outer islands where it is economically possible. Myrdal argues that the spread effect of centralization will eventually touch every corner of the country⁹⁷. However, this does not seem to be suited for small, fragmented insular territories like Tonga, Gilbert and Ellice, Cook Islands, etc., although it may work in Fiji, New Caledonia, Western Samoa and the Solomons. Walsh condemns the lack of interest of the Tongan Government in developing Vav'au, and urges Government action to reduce the increasing in-migration to Tongatapu which may have serious social implications⁹⁸. Belshaw partly favours the continuing in-migration to the towns on the grounds that 'the growth of industries (where viable) and other new institutional forms takes place primarily when there are under-employed minds associated with available unemployed labour'⁹⁹. Belshaw's hypothesis has social reality for no doubt people will continue to migrate to the urban areas ahead of available town employment. Whether it will also result in employment generation is a moot point although there is some

evidence for this process in Africa¹⁰⁰. Others like Davis and Golden partly hold the view that overurbanization stimulates economic growth by forcing an idle government to act¹⁰¹, This is similar to that of Belshaw and more applicable to the cities of Asia than the Pacific island port towns. Whether a deliberate unbalancing of the economy will bring about responses in the various sections¹⁰² which will help to reduce migration is another moot point in view of the narrow resource base of the islands. The development of the rural sector may help a little though it will never curb the rate of migration. Only a few territories like the Gilbert and Ellice Islands Colony have imposed restrictions on migrations to the port town.¹⁰³ In the case of the GEIC it is the only sensible thing to do. Ward's suggestion that it may be feasible to develop the main islands in some groups and abandon the small ones to become only 'coconut plantations' is certainly worth investigating¹⁰⁴.

It seems that there is no simple solution to reduce the migration to the port towns and the main islands. In large territories like Fiji and the Solomon Islands development of the backward areas will help to reduce out-migration from them. In Tonga this is feasible to some extent through the development of Vava'u and 'Eua although Government action may also be necessary to control migration through direct legislation. Further research is also necessary to determine the existing resources and the potentials of the various islands before policies are formulated. In small islands with narrow resource bases, generalizations, often misguided, will probably aggravate the problems. Exactness is necessary if errors are to be reduced in the utilization of resources for the maximum profit and the meagre capital saved from being squandered on misdirected development policies.

4. MIGRATION AS A SOLUTION TO POPULATION GROWTH

For countries with large populations like India external migration, it is clearly realised, will never be a solution to the pressing population pressure of the teeming millions on resources. There is no large, suitable underpopulated place left to accommodate any large-scale emigration from

these countries. However, it has often been asserted that emigration to metropolitan countries might be a solution to the growing population pressure in the small Pacific islands. Certainly the Cook Islands have found relief through increasing emigration to New Zealand. The net loss of Cook Islanders to New Zealand between 1961 and 1966 approximated an average of 3.3 per cent of the total population every year, whereas the natural growth for those who still remain on the islands was an average of about 4.2 per cent per annum. Thus emigration saved the dependency from a very rapid, perhaps unmanageable growth. The lightening effect of this emigration was all the more pronounced in that the majority of migrants were young males and females in ages most in need of employment and most prolific of children. In fact, emigration from the Cook Islands between 1951 and 1965 helped to reduce population growth by an average of 1.7 per cent per year. Emigration has also helped to relieve Niue from the pressure of rapid population growth. Emigration also helped to relieve population pressure in American Samoa until her economic development was no longer retarded during the 1960s and emigration slowed down. Average annual population loss from Tokelau between 1956 and 1966 was 2.25 and natural growth rate was about 3.6 per cent. On the other hand, Western Samoa has had little relief from emigration. During the period 1956-61 net emigration amounted to an average annual loss of 0.6 per cent and the population continued to increase at the explosive average rate of 3.3 per cent per annum. Despite the increasing emigration between 1961 and 1966 the average annual loss was still slight, 1.3 per cent. During this period the average annual growth in the territory was down only to 2.7 per cent. The GEIC, growing at a moderate annual rate of 1.9 per cent between 1947 and 1963 and 1.7 per cent between 1963 and 1968 has had little relief from emigration to Fiji and the Solomon Islands. The net loss was only an average of about 0.1 per cent per annum. She can not afford to keep increasing at the present moderate rate because population pressure has almost reached the optimum.

At present about 4 per cent of all Pacific Islanders in the area of

study are living in metropolitan countries, and this includes those born in those countries. Meanwhile, the population of the whole area is increasing at about 3 per cent per annum. Only those few territories, usually smaller ones, who have access to metropolitan countries find some relief from emigration. The most important barrier to emigration are the immigration laws in the receiving countries, which are not happy about immigration from those territories outside their jurisdiction. Immigration quotas are not liberal enough to have any great effect on a continued rapid population growth; for example Tonga's quota from the United States is a 100 persons a year. In New Zealand a new legislation was passed in 1959 to reduce the abuse of the existing immigration laws by Samoans and Cook Islanders. It is also possible that the present effect of chain migration on emigration may be reduced by new legislations. Because of the 'White Australia Policy' there is no possibility of any largescale emigration to that country. It is possible that the partly open doors in New Zealand and the U.S.A. may be closed completely. Already in New Zealand the islanders are creating social and racial problems. Islanders in metropolitan countries are mostly employed in labouring jobs, but these countries prefer trained migrants which will be a loss to the islands. The Trade Unions and the general public could easily put pressure on the New Zealand Government by arguing that increasing immigration of islanders will lower their standard of living. In all fairness, in view of problems created by minority immigrant groups, metropolitan countries cannot be blamed if they closed the doors.

Still, there is also a humanitarian view that may continue to favour emigration from the territories. In this case the Tokelau Islanders who are being helped by the New Zealand Government to settle in New Zealand may be cited as an example. The total removal of the small populations from such small territories may be feasible but emigration from territories like the Cook Islands and the two Samoas will only be a palliative. It may be argued that a large-scale emigration from these territories will only amount to a

small intake in metropolitan countries, for example in 1966 islanders make up only about 1.0 per cent of New Zealand's population even though probably one-quarter were born in New Zealand. Though the proportion may be small for a metropolitan country the problems created will be greater and it is these problems which will nullify the argument in favour of large scale emigration.

Emigration over a limited period of time does not affect the ultimate rate of increase though it may temporarily cause a decline in absolute numbers and, consequently, rate of growth. The ultimate rate of growth is determined only by the age-specific birth and death rates, and is entirely unrelated to the initial population, and it can not be modified by the removal of a part of it. However, an out-migration stream that continues indefinitely will have an effect on the rate of increase. To hold stationary a population of very high birth rate and low death rate a very large section of people in the fertile age-groups would be needed to be removed. It was calculated by Keyfitz that 57 per cent of each cohort, not necessarily both males and females, would have to leave Mauritius from 1966 onwards if fertility is to be reduced and the population held stationary. For Barbados 43 per cent of each cohort under the lowest age of reproduction would have to emigrate. Although this is only a statistical abstraction it points out the impracticality of emigration as a solution for population growth, even among small territories like those of the Pacific¹⁰⁵.

There are two other possibilities; emigration from the overpopulated territories to the underpopulated ones and internal redistribution of the population. Both seem rather impractical. The emigration from the GEIC to Fiji and the Solomon Islands is most unlikely to be repeated for other territories or even for the GEIC¹⁰⁶. The underpopulated islands are now entering the stage of rapid growth and if this growth continues as seems most likely, these territories will need the undeveloped areas for that expanding population. There are also political obstacles which will have to be overcome first. In the larger territories there are still underdeveloped

areas which can support slightly larger populations than they do at present. However, most are marginal areas that have topographical limitations. Resettlement will only be successful if organized by the Government and this will require capital which is urgently needed for social developments demanded by the growing population. Moreover, if the present population growth continues redistribution of the population will only delay the foreseeable consequences for 20 years or less. At any rate, islanders are already reluctant to reverse the present trend of internal movements.

Emigration also has disadvantages for the source areas although it may help to relieve population pressure. Since those who emigrate contain a large proportion of the able-bodied male population, food gardens and other necessary activities are often neglected because of the shortage of manpower. This has been observed in the Cook Islands. Emigration also creates dependence on remittances from overseas as well as passiveness. Instead of trying to help themselves, islanders from territories where economic expansion is viable will tend to lose their initiative and think only of emigration as a short-cut solution to all problems.

Larger island territories, where emigration will never be a solution for population growth, will do better if they realise that family limitation not only offers immediate advantages but it is also a more practical and lasting solution.

NOTES AND REFERENCES

1. U.N., 1953, "The Determinants and Consequences of Population Trends". Population Studies, No. 17, Department of Social Affairs, Population Division, New York, p.98. The UN. Population and Statistical Commissions have adopted certain standard definitions based on the duration of the move and whether it is made for the purpose of exercising an occupation. 'Permanent immigrants' are defined as persons, (other than refugees or transferred populations), entering a country with an intended stay exceeding one year, and 'temporary immigrants' as persons entering for shorter periods and intending to exercise temporarily an occupation.
2. Walsh, A.C., 1970. "Population Changes in Tonga: An Historical Overview and Modern Commentary" in 'Pacific Viewpoint'. Vol. 11, No. 1, p.27.
3. There is much literature concerning ancient migrations and movements of the islanders in pre-European times, such as Buck, P.H. (Te Rangi Hiroa), "Vikings of the Sunrise", New York: Frederick A. Stokes Co., 1938, Buck, P.H., "The Coming of the Maori", Wellington, N.Z., Whitcombe and Tombs, Ltd, 1949, Sharp, A. "Ancient Voyages in the Pacific", London: Penguin Books, 1957, Suggs, R.C. "The Island Civilizations of Polynesia", New York, Mentor Books, 1957. There are other works also on archaeology and ethnology by people like Lessa, W. (1950) Spoehr, A. (1957), Metraux, A. (1940); Williamson, R.W. and Ralph Piddington (1939); Emory, K. (1958); Burrow, E.G. (1936); Beaglehole, Enerst and Pearl, (1938); etc.
4. See works of those already mentioned above for theories on the centres of dispersion, directions of migrations and times of migrations. As to where Polynesians come from there are two main theories; the accepted theory is that they come fro Asia by way of Southeast Asia and the other theory, advocated by Thor Heyerdahl, is that they come from America. Thor Heyerdahl set out on the raft 'Kon-Tiki' from South America to try and prove that such voyages were possible. See also Heyerdahl, T., "American Indians in the South Pacific", London George Allen and Unwin, 1952.
5. Peterson, W. "Population", The Macmillan Company, New York, 1961 p.610
6. Although such ancient migrations had no definite destination the migrants must have a rough idea of where they were going. Probably someone has given some rough direction or at least one of the voyagers has been to that island, which is their destination, previously.
7. By the sixteenth century there were regular voyages between Tonga, Fiji and Samoa. The politically aggressive Tongans got their canoes from Fiji and there are legendary evidences of Tongan invasions of some of her neighbours. Moreover, since the Tu'i Tonga (the Sacred King of Tonga) had suzerainty over parts of Fiji, Samoa, Niue, Wallis Islands, Futuna and Rotuma voyages from these areas to Tonga were necessary at least once a year in order to pay their tributes.
8. Maude, H.E. and Doran Jr., Edwin, "The Precedence of Tarawa Atoll" in 'Annals of the Association of American Geographers', Vol. 56, No. 2., 1966, pp. 269-289.
9. Walsh, A.C., op. cit. p.28.
10. It is claimed that the cessation of wars and hostilities, establishment of law and order and the conversion of natives into Christianity encouraged wider social contacts which made migrations to centres of European influence easier as fear was removed. This was certainly true of Tonga and it was probably true of other territories. War refugees and political exiles were also free to make their way back to their villages and islands.
11. Land alienation is important only in Fiji, New Hebrides, Solomon Islands and New Caledonia, i.e. the larger island Groups. In Fiji and the Solomon Islands British legislations protecting native lands has limited the area alienated; but in the French dependency and the Condominium encouraged French settlements has resulted in greater land alienation.

12. Couper, A.D. "Indigenous Trading in Fiji and Tonga: A Study of Changing Patterns" in 'The New Zealand Geographer', Vol. 24, No. 1, 1968, pp.53-4
13. See Ward, R.G. "A Note on Population Movements in the Cook Islands" in 'Journal of Polynesian Society' Vol. 70, No. 1, 1961, pp 1-10; Howard, A, "Rotuna as a Hinterland Community" in 'Jour. Poly.Soc.' Vol. 70, No. 4, 1961 pp 272-298, Beaglehole, E. "Social Change in the South Pacific", London, 1957 and Allen, B.J. "The Development of Commercial Agriculture on Mangaia, Social and Economic Change in a Polynesian Community". M.A.Thesis (Pub.), Geog.Dept., Massey Univ., Palmerston North, 1969.
14. Bascom, W.R. "Ponape: A Pacific Economy in Transition", 'Anthropological Records', Vol. 22, Univ. of California Press, Berkeley and Los Angeles, 1965, p.18.
15. Beaglehole, E., op. cit. pp 138-9.
16. McArthur, N. and Yaxley, J.F., op. cit. pp. 13-16. Also see Ward, R.G. "Land Use and Population in Fiji", Overseas Research Publication No. 9, H.M.S.O. London, 1970, pp. 204-7.
17. Plantation agriculture and the limited amount of mining is only important in the 'continental' islands of Melanesia which probably have some relationship in geological formation to Australia.
18. The last territory to be politically demarcated as such was the New Hebrides in 1906. However, there were later modifications in some political boundaries such as the Phoenix Islands, Tokelau Islands, the Line Islands and the administration of the Marshalls, Marianas and the Carolines as a single unit. Powers in control continued to change, especially at the end of the two World Wars.
19. In Papua and New Guinea there was a definite increase in the White population during the interwar years when mines and plantations were developed. The number of Europeans also continued to increase in the Solomon Islands during this period.
20. In his analysis of the population of Mangaia, B.J.Allen (1969 pp 28-37) found that population increase during the interwar years was not only due to the falling death rate and a continuing high birth rate but also as a result of the slowing down of 'emigration of Mangaians to Rarotonga, New Zealand and Tahiti'. Emigration in Mangaia 'appears to have been marked only up to 1915 ... but after this period (emigration) does not seem to have seriously affected the Mangaian population until 1947'.
21. Much of Britain's colonial activities in the South Pacific was the result of pressures from New Zealand and Australia which forced a reluctant Whitehall to act. See A. Coates (1970) op. cit.; Morrell, W.P., "Britain in the Pacific Islands", Clarendon, London, 1960; and Scarr, D. "Fragments of Empire: A History of the Western Pacific High Commission, 1877-1914", Canberra, 1967
22. Ward (1965, pp. 21-35) claims that "small islands were among the commonest land purchases (in Fiji) as they gave more safety and less boundary disputes".
23. Few natives realised that by selling their land they were parting with it permanently and could not continue to use it or any part of it. In Fiji sales of land were prohibited after the cession, in 1874 and although it started again in 1905 in order to give land to settlers it soon ceased in 1909.
24. Wilkes, C. "Narrative of the United States Exploring Expedition", Vol. III, Philadelphia, 1844, p.52.

25. Derrick, R.A. "A History of Fiji" Third Edition, Suva, 1957, p.146.
26. Collocott, E.E.V. "Koe Ta'u 'E Teau", William Clowes and Sons, Ltd, London n.d., p.162.
27. Tudor, J. (ed), op.cit. p.475. There are over 100 Arabs in the dependency today who are descendents of political prisoners exiled from France's North African Colonies.
28. ibid.
29. ibid.
30. Zwart, F.H.A.G., op. cit. Appendix. Table 1. p.1.
31. Moncrief, A.R.H. "The World of Today: A Survey of the Lands and Peoples of the Globe as seen in Travel and Commerce" Vol. IV, The Gresham Publishing Company, London, m.d., pp. 145-150.
32. Ward, R.G. (1965) op. cit. p.84.
33. Troops actually actively fighting in the Pacific or stationed in the islands where fighting did not occur are not included. In the Solomon Islands there were over 50,000 American troops at any one time and in Saipan during the height of the war there were over 200,000 U.S.Marines.
34. The question on occupation in the 1966 Census of Fiji reflects the change in the nature of migration. The majority of those who were 60 years of age and above were engaged in primary industries. This proportion was much greater than in any other age-group. Between 15 and 59 years of age most were in professional and allied works, especially in the middle age-groups 30-44 years. In the age-groups 15 - 29 years the greatest proportion was engaged in commerce whereas in the age-groups 30-59 years those engaged in commerce was the next important group. However, the tendency of recruiting more, mature responsible men for professional and administrative jobs may have some influence on this distribution as well as the tendency for these expatriates to return just before they retire to their countries of origin. See Zwart, F.H.A.G. op. cit. pp.63-4.
35. Colonial Office, "Colonial Annual Reports: Fiji (1948-1969)", H.M.S.O. London
36. Probably there are more than what the figure indicates whose place of origin is not France. Many former British, New Zealand and Australian settlers are known to have been naturalised as French citizens in order to take advantage of opportunities open only to French citizens.
37. 'Pacific Islands Monthly' (P.I.M.) Pacific Publications Ltd, Sydney, Feb, 1968, pp. 67-9. See also Pirie, P. (1967) op. cit. p.15.
38. Compare with the growth of European activities in other tropical areas such as Africa South of the Sahara, Southeast Asia and Hawaii where Indians, Chinese, Japanese and Koreans were recruited as labourers in plantations and mines.
39. 'Kanaka' was the term early Europeans used to refer to the Pacific island natives.
40. Although the term 'Polynesian' was sometimes used to refer to recruited islanders in Fiji, Queensland and other islands such as Tahiti and Samoa it is a misnomer because practically all the recruited islanders were not Polynesians but Melanesians.
41. Derrick, R.A.: "The Fiji Islands", Revised Edition, Suva, 1957, p.138.
42. Gillion, K.L., "The Sources of Indian Emigration to Fiji", 'Population Studies' Vol. 10, No. 2. 1956, pp 142-3. Cf Taher, M., "The Asians" in 'Immigrants in New Zealand' (eds) Thomson, K.W. and A.D.Trlin, Massey Univ., Palmerston North, 1970, pp.38-63.
43. Ward, R.G. (1965) op. cit. p.82.
44. Tudor, J (ed) op. cit. p.163.

45. Melanesian labourers were recruited on a contract of 15/- a month. The conduct of this labour traffic was later taken over by the German administration until New Zealand took over the Colony in 1914.
46. Tudor J. (ed.) op. cit. p.46.
47. Ward, R.G. (1965) op. cit. p.84.
48. Colonial Office, "British Solomon Islands: Reports for the Years 1948-68"
H.M.S.O. London
----- "Annual Colonial Reports: New Hebrides 1948-68" H.M.S.O.
London
49. Naval Intelligence Division (1945) op. cit. Vol. IV pp.448-450.
50. Naval Intelligence Division (1945) op. cit. Vol. IV. pp. 324-6.
51. Bascom, W.R. (1965) op. cit. p.8.
52. At first they tried to get labourers from China with little success. The New Hebrideans proved to be unsatisfactory.
53. Naval Intelligence Division (1945) op. cit. Vol. IV. pp. 450-62. For most years before the war there were more Javanese than Vietnamese. British planters in the New Hebrides were not authorised by the British Authorities to use indentured Asian labour until 1940.
54. Tudor, J. (ed). op. cit. pp 481, 456.
55. Gillion, K.L. op. cit. Also see Mayer, A.C., "Indians in Fiji", London, 1963 and Coulter, J.W., "Fiji, Little India of the Pacific", 1942. Chicago.
56. Tudor J. (ed.) op. cit. p.163.
57. Bascom, W.R., op. cit. p.8.
58. Compare with Asian immigrants in other parts of the world such as Taher, M., "The Asians" op. cit., Huck, A., "The Chinese in Australia" in 'IUSSP Conference 1967: Canberra, 1967', pp. 786-97.
59. See Mayer, A.C. op. cit.; Kay, P. "Urbanization in the Tahitian Household", in 'Pacific Port Towns and Cities: A Symposium' (ed) Spoehr, A., Bernice, P. Bishop Museum, Honolulu, 1963, pp. 67-73, Cochrane, D.G., "Racialism in the Pacific: A Descriptive Analysis" in 'Oceania' Vol. 40, No. 1, 1969, pp. 1-12, Coulter, J.W., (1942) op. cit.; Keesing, F.M. (1945) op. cit., etc.
60. Ablon, Joan 'The Samoan Funeral in Urban America' in 'Ethnology' Vol. 9, No. 3, 1970, p.3.
61. McArthur, N. (1967) op. cit. p.333.
62. See Price, C.A., "International Migration" in 'Population Change: Asia and Oceania', (ed) Borrie W.D. and Cameron, M., IUSSP. Conference 1967, A.N.U. Canberra, 1969, pp 115-117; Borrie, W.D. "Malthusian Reflections on the South Pacific" in 'Transactions of the Royal Society of New Zealand' Feb. 1967, Vol. 2, No. 2, pp. 19-29, McArthur, N., "Contemporary Polynesian Emigration" in 'Jour. Poly. Soc', Vol. 73, No. 3, 1964, pp. 336-9; Curson, P.H. "The Cook Islanders" in 'Immigrants in New Zealand' (ed) Thomson, K.W. and Trlin, A.D., Massey Univ., Palmerston North, 1970, pp. 165-198; Curson, P.H., "Polynesians and Residential Concentration in Auckland" in 'Jour. Poly. Soc.' Vol. 79, No. 2, 1970, pp 421-432, Fairbairn, I., "Samoan Migration to New Zealand ..." in 'Jour. Poly.Soc.' Vol. 70, No. 1, 1961, pp. 18-30; Hooper, A., "The Migration of Cook Islanders to New Zealand" in 'Jour. Poly. Soc.' Vol. 70, No. 1, 1961, pp. 11-17; Hooper, A., "Cook Islanders in Auckland" in 'Jour. Poly. Soc.' Vol. 70, No. 2, 1961, pp. 147-193, Pirie, P., "Samoa: Two Approaches to Population and Resource Problems" unpub. paper, 1967; and Ward, R.G. "A Note on Population Movements in the Cook Islands" in 'Jour. Poly. Soc.', Vol. 70, No. 1, 1961, pp 1-10. As seen above the emigration from the Cook Islands and Western Samoa are well documented. Much of the information in this section is drawn from those sources and others.
63. Tudor, J. (ed) op. cit. pp. 157,80.
64. Pirie, P. op. cit. pp 7-14.

65. Price, C.A., op. cit. p.117.
66. See Anderson, A.G. "Indian Small Farming in Fiji: The Significance of Off-farm Employment" in 'Pacific Viewpoint' Vol. 9, 1968, pp. 12-32.
67. The Census, Report for Tonga's 1966 census states that "the external migration figures are not statistically significant, although emigrants are increasing"²
Fiefia, S.N., "Report on the Results of the 1966 Census", Muku'alofa, Tonga, 1968 p.11.
68. Rogers, G., "Some Comments on the 'Report on the Results of the 1966 Census', Kingdom of Tonga, 1968" in 'Jour. Poly. Soc.' Vol. 78, No. 2, 1969, pp. 212-22.
69. There are some well publicized incidents in New Zealand of Fijian Indians on temporary entry permits who have married New Zealand girls in the hope of staying but they still find themselves deported leaving behind wives often pregnant.
70. McArthur, N., (1964) op. cit. p. 337.
71. Beighton, P., "Easter Island People" in 'Geographical Journal' Vol. 132, 1966 p. 352. Beighton mentioned that no less than 12 stowaways were in the Chilean vessel in which he left the island. Illegal emigration to Australia and New Zealand from Fiji and Tonga is also increasing. This is seen in the increasing numbers caught, not to mention those who manage to enter undetected. This is their answer when visas and fares are not available.
72. See Curson, P. (1970) op. cit. pp. 170-1. From 1924-1942 net emigration from the Cook Islands was only 433 persons. In the 1950s the rate of migration was an average of 230 persons a year and in the 1960s this rate was more than trebled, 700 persons per year.
73. Before the revision of the immigration policy in New Zealand in 1959, Cook Islanders and Western Samoans need only their fares, health and good character reports before they leave for New Zealand. Many went but found no job and had to sponge off relatives which further lower their chances of moving to better housing areas. Since then requirements had been laid down that a job must be secured first before would-be migrants can move to New Zealand. For temporary migrants a return passage paid before migrating is a must. Incidentally, a disproportionate number of emigrants come from the better educated section of the community.
74. Curson, P. (1970) op. cit. p.175.
75. Curson, P. (1970) op. cit. pp 170-2.
76. Curson, P. (1970) op. cit. pp. 181-2.
77. Collocott, E.E.V., op. cit. pp. 98-105.
78. Couper, A.D. "Island Trade", Ph.D. Thesis (unpub.), ANU, Canberra, 1967, p.119
79. Beaglehole, E., op. cit. p.139.
80. Tudor, J. op. cit. p.476.
81. Up to the end of the 1950s there were hardly any Indians and Fijians from Fiji in the Solomon Islands but in 1968 there were over 360 of them. See 'Colonial Reports for the Solomon Islands 1948-68'. Also see Bellam, M.E.P. "the Colonial City: Honiara, as a Pacific Island Case Study" in 'Pacific Viewpoint' Vol. 11, No. 1, 1970, pp. 66-95.
82. 'Colonial Reports for the Solomon Islands 1948-68', H.M.S.O. London.
83. McArthur, N. and McCaig, J.B. (1964) op. cit. p.41.
84. Kay, P. op. cit. p.64. See also Oliver, D.L. "Papeete; Tahiti" in 'Pacific Port Town and Cities: A Symposium' (ed) Spoehr, A., Bernice P. Bishop Museum, Honolulu, 1963, pp. 43-45.
85. Walsh, A.C. "Population Changes in Tonga" in 'Pacific Viewpoint', Vol. 11, No. 1, 1970, pp.27-46. Also see Maude, A. "Population, Land and Livelihood in Tonga", Ph.D.Thesis (Unpubl) ANU, Canberra, 1965, pp 78-84.

86. The Tonga Government believed that improvements made in shipping between the islands and Tongatapu will make it less necessary for those from the outer islands to stay permanently in Tongatapu. However, this has made in-migrations to Tongatapu increase at a faster rate because of the lack of accompanying developments in the outer islands.

87. See Bellam, M.E.P. (1970) op. cit., Lasaga, I.Q., "Melanesians' Choice: A Geographical Study of the Tasimboko's participation in the Cash Economy, Guadalcanal, British Solomon Islands", Ph.D. Thesis (Unpubl), ANU, Canberra, 1968 Chapman, M., 'A Population Study in South Guadalcanal: Some Results and Implications' in 'Oceania' Vol. 40, No. 2, 1969, pp. 119-47; and Cochrane, D.G. "Choice of Residence in the Solomons and a Focal Land Model" in 'Jour.Poly.Soc.' Vol. 78, No. 3, 1969, pp. 330-343 for movements in the Solomon Islands.

88. Using Spearman's Rank Correlation the coefficient for the first scatter diagram was -0.64 which was significant at 1 per cent level. However, in the second scatter diagram the coefficient was -0.15 which was neither significant at 1 per cent or 5 per cent level.

89. Walsh, A.C., (1964) discusses the reasons given by migrants for moving to Tongatapu. See Walsh, A.C., "Nuku'alofa Tonga: A Preliminary Study of Urbanization and In-migration", M.A.Thesis (Unpub.) V.U., Wellington, 1964, pp. 179-197.

90. In Tonga every male adult above the age of 16 years is entitled to a $\frac{1}{4}$ acre town allotment in which to build his house and an $8\frac{1}{4}$ acres bush allotment in which to grow his crops. For this he pays poll tax of \$T3.20 per year and a rent of \$T0.80 per year. According to the 1966 census Report 64 per cent eligible males were without bush allotments. For further discussion see Maude, A., (1965) op. cit.

91. The remainder of those in the island of 'Ata, 80 miles south of Tongatapu, were moved to 'Eua and resettled there in 1874. There were about 200 of them left after blackbirders had raided the island.

92. See "Colonial Reports for GEIC 1948-68" prepared by the Colonial Office, H.M.S.O. London, Ward, R.G. "Internal Migration in Fiji" in 'Jour.Poly.Soc.' Vol. 70, No. 3, 1961 pp.257-271, Walters, R.F., "The Economic Response of the South Pacific Societies" in 'Pacific Viewpoint', Vol. 11, No. 1, 1970, pp. 120-144, Brookfield, H.C. and Hart. D., "Melanesia", Methuen, London, 1971, and Coates, A. "Western Pacific Islands", H.M.S.O., London, 1970.

93. Ward, R.G. "Problems of Smallness in Polynesia" in 'Problems of Smaller Territories' (ed) Benedict, B., Ahtlone Press, 1967, p.87.

94. Ayoagi, S.M. "Urilocal and Uxolocal Marriages in a Tongan Village", in 'American Anthropologist', Vol. 70, 1969, pp. 874-89.

95. Walsh, A.C. (1970) op. cit. p.35.

96. McArthur, N., and Yaxley, J.F. (1968) op. cit. p.48.

97. Myrdal, G. "Economic Theory and Underdeveloped Regions", London, 1957

98. Walsh, A.C. (1970) op. cit. p.45.

99. Belshaw, C.S. "Pacific Island Towns and Theory of Growth" in 'Pacific Port Towns and Cities' (ed) Spoehr, A., Bernice P. Bishop Museum, Honolulu, 1963, p.23.

100. Bauer, P.T. "West African Trade", Cambridge, 1954.

101. Davis, K. and Golden, H.H., "Urbanization and the Development of Pre-Industrial Areas", 'Economic Development and Cultural Change' Vol. III, 1954.

102. Hirschman, A.O., "The Strategy of Economic Development", Yale Univ. Press, 1958.

103. The regulation on migration to Tarawa from other islands in the GEIC was for the reason that "..... the high incidence of malnutrition and TB reported by the medical department at the time and by the large numbers of young children

whom the Schools could not admit. People in employment found themselves hosts, by custom, to numerous relations who, unemployed, contributed nothing to the household with the result that families and their guests were subsisting on a sub-standard diet of Koikoi, flour and water pancakes, and an insufficient amount of toddy for the later part of the month. People arrived at Betio (the port village) penniless and unemployed to become a burden on the community and on the Government which had to bear the costs of repatriating destitute persons to their home islands."

104. Ward, R.C. (1967) op. cit. p.95.

105. Keyfitz, N., "Migration as a Means of Population Control" in 'Population Studies', Vol. 25, No. 1, 1971, pp. 63-72.

106. Coates, A. (1970) op. cit. p.310-14.

Chapter Five

CONCLUSION: DEMOGRAPHIC CHANGES

The changes in population growth, age-sex structure and ethnic composition are the product of changing birth and death rates, immigration and emigration. If a combination of birth and death rates were to remain in effect, everything being equal, for a sustained period of time, a stable population with a characteristic growth rate and age composition would emerge! However, whatever are the theories of demographic stability, the empirically described realities in the Pacific island territories are those of instability since the island populations are not stable in any absolute sense.

The emphasis of this closing chapter is on the demographic changes in the Pacific island territories in terms of population growth, age-sex structure and ethnic composition. We will examine the changes of these aspects in the island populations, especially during this century, for which data are ^{not} only available but also less dubious. The chapter concludes with a brief assessment of the implications of the current rapid population growth in most territories, though for practical planning purposes the generalizations will be of minor importance. Nevertheless, it is necessary to understand the current geodemographic conditions in order to fully understand why urgent rapid reduction of population growth is imperative for national and individual welfare.

1. FLUCTUATIONS IN POPULATION NUMBERS AND CHANGING GROWTH RATES

There is no doubt that migrations, ravaging epidemics, wars and continuing and episodic cataclysmic hazards, described in Chapter I, generated changes in the growth of the Pacific island populations in the pre- and immediate post-European contact periods. The fluctuating high mortality, especially during the time of population decline, and migration, to some extent, exerted greater influence on population changes because the attitudes towards large families ~~seems~~ have never undergone any significant change. High mortality rates appear to have fluctuated more widely than fertility although the periods of peak mortality tended to fluctuate inversely with the birth rates. As mortality, which is

easier to control, is reduced and kept more stable at very low rates, the changes in population growth are determined largely by changes in fertility or by migration, if it occurs on a large scale.

It is clear that almost all the populations of the island territories are increasing rapidly and will continue to do so unless there is some radical change in the levels of either mortality or fertility, or far more emigration than has yet occurred. While the crude birth rates around 1969 ranged from 30 to about 45 per 1000 population, the recorded death rates were within the range 4 to 20 although some rates should have been higher than this if registration systems functioned more efficiently. The process of growth has been accelerated in recent years by declining mortality, and there may also have been some small increase in fertility for some of the populations as public health measures and modern medicine have reduced mortality and alleviated the incidence of some debilitating diseases.

Since about 1900, the aggregate for the island populations have been more than trebled in about 69 years from just under 500,000 to over 1.5 million, yet the total land area remains the same and about two-thirds of all the economically active males are still dependent on agriculture, or other primary industry for their livelihood. The aggregate, however, disguises the fact that not all the territories were experiencing population growth by the beginning of this century and it was only after World War II that population decline in all the territories had been stemmed. During the first 70 years or so after European contact the populations changed very rapidly, mainly declining. By the later half of the previous century and the first three decades of this century the populations changed much more slowly; either growing slowly as in Polynesia or fluctuating at an almost stationary level and sometimes declining slowly as in Melanesia and Micronesia. From 1850 to 1900 all the island populations were declining while the Tongan and the Samoan populations were the only ones which either fluctuated or increased slowly.

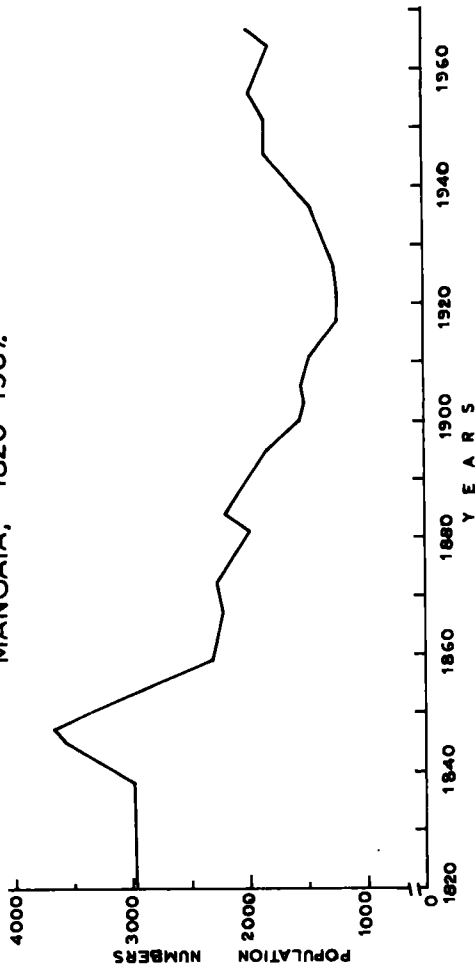
There is little point in going back any further into the immediate post-contact years, because such estimates as were made for the islands which had

Fig.5.1 Graphs showing the fluctuations in population numbers of Mangaia, 1821-1967; Norfolk, 1934-66; New Caledonia, 1880-1969 and Nauru, 1930-66.

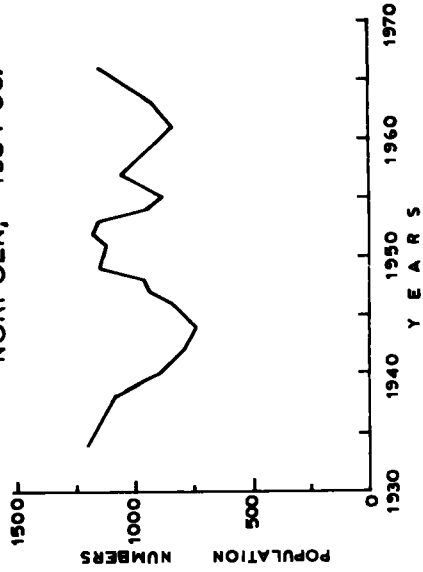
- Sources: (1) Allen, B.J., 1969, "The Development of Commercial Agriculture on Mangaia..." M.A. Thesis, Massey Univ., Palmerston North, p.29.
- (2) "Demographic Year Books, 1948-69", Dept. of Economic and Social Affairs, U.N., New York.
- (3) 'Report for the Territory of Nauru 1966-68', Govt. Printing Office, Commonwealth of Australia, Canberra, p.62.
- (4) Tudor, J. (ed.), op.cit., pp.204, 476, 499.

FLUCTUATIONS OF ISLAND POPULATIONS

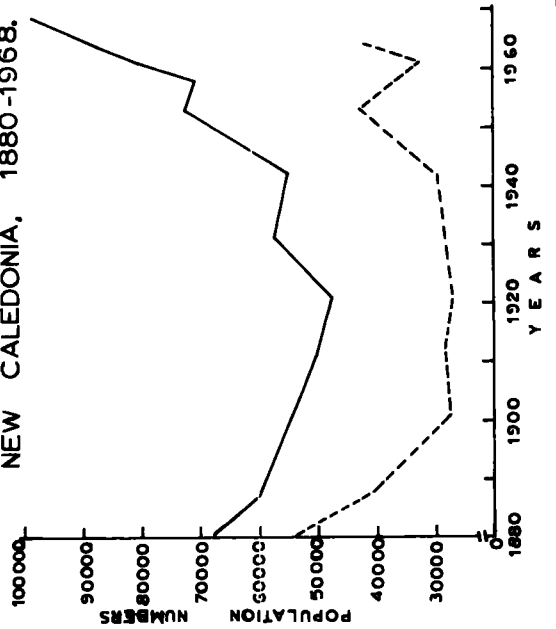
MANGAIA, 1820-1967.



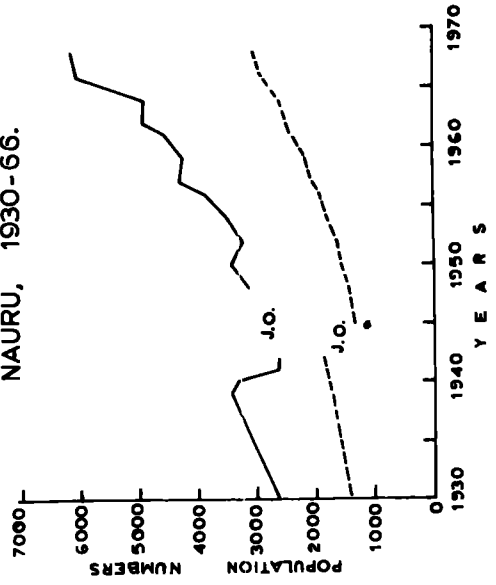
NORFOLK, 1934-66.



NEW CALEDONIA, 1880-1968.



NAURU, 1930-66.



J.O. JAPANESE OCCUPATION
 ——— TOTAL POPULATION
 - - - INDIGENOUS POPULATION

Europeans there during these years were likely to have as wide a margin of error as one of the two for Tahiti in 1797 - the 50,000 people supposed by the missionaries in their first tour of the island as compared with the 16,050 estimated from Wilson's tally of houses when he made the same journey a few days later². However, despite the deficiencies in the data, there were undoubtedly island populations which declined in the years following European contact, although the initial decline may not have been necessarily because of it. Furthermore, it should be mentioned that none of the cases of depopulation is parallel because there were exceptional factors involved in each.

Figure 5.1 illustrates the fluctuations in population numbers in the island of Mangaia (Cook Islands), New Caledonia, Nauru and Norfolk Island. The fluctuations of population numbers in Mangaia demonstrate the combined effects of the changing levels of death and birth rates and migration in small island communities of any territory during the last century. The fluctuations during the present century are mainly the result of changes in the rate of emigration and immigration. In Norfolk Island the natural growth since the beginning of this century has remained at an average of less than 1 per cent and migration to and from the island has a greater influence on changing the population numbers. Apart from the temporary setback in the growth of the indigenous population of Nauru during the years of Japanese occupation, 1942-45, during which 463 of the 1,200 who were deported to Truk (in the Carolines) died, the population has since continued to grow rapidly and it almost trebled between 1945 and 1968. The changes in the growth rates and the total population numbers are the results of the fluctuations in the numbers of phosphate workers recruited and repatriated from the Republic. The fluctuations in population numbers in New Caledonia reflect the fluctuations in the native population (based on estimates, since they were not enumerated in censuses until 1956) and the changes in the rates of emigration and immigration of both Europeans and Asians. For instance, the decline to 70,747 in 1958 from 72,289 in 1953 was largely due to the repatriation of Vietnamese and Indonesians.

In the Appendix, Table V shows the changes in population numbers and

growth, both total and natural growth rates. Part of the fluctuations in the growth rates may be attributed to the varying degree of completeness of death and birth registrations, and some early census enumerations, such as the 1879 census in Fiji and the 1891 to 1939 censuses in Tonga, were probably faulty because of some under- and over-enumerations. Nevertheless, the enumeration errors were probably not great enough to affect the overall trend. While the natural growth rates, which are averages for intercensal periods, show the changing levels of mortality and fertility, the total growth rates show the influence of emigration and immigration. Generally, the natural growth rates show the rapid growth of recent years as mortality declined rapidly while fertility remained little changed. The only exceptions are Fiji, where there has been a marked decline in fertility during the last decade, and Western Samoa where the system of registration has deteriorated. As a result, the intercensal growth rates for the total populations are generally much more influenced by emigration and immigration. Therefore, although all territories exhibit some degree of fluctuation in population growth, those affected by large scale immigration and emigration show greater ranges of fluctuation.

The population of American Samoa continued to increase since 1900 from 5,679 to 20,154 in 1956. This rapid growth is reflected in the average natural growth of over 3 per cent since 1940. Periodic fluctuations in the total population growth have resulted from net immigration from Western Samoa during the first decade of this century and between 1940 and 1950, when the number of American expatriates may have also increased temporarily. From 1940 to 1950 the population grew at an average rate of 4.67 per cent but in the next decade the growth declined as a result of emigration to Hawaii and the U.S. mainland. Between 1950 and 1956 the average growth rates was only 1.07 per cent and in the next 4 years the population actually declined from 20,154 to 20,051. Since 1960 the rate of emigration has diminished though natural growth has remained at an average of over 3 per cent. The influx of American technicians and the continuing immigration of Western Samoans and some Tongans have contributed to an estimated average growth rate of 3.84 per cent between 1960 and 1969.

Western Samoa's population has also grown rapidly from 32,815 in 1900 to an estimated 141,000 in 1969. The changes in the intercensal average growth rates have been less marked than in American Samoa and the greater inefficiency of the registration system here is obvious in the changing annual natural growth rate which by 1945 was probably about 30 per 1000 population and today it may be close to 40 as mortality continues to decline. The presence of indentured workers plus a temporary greater decline in mortality and some increase in the birth rate may have accounted for the increase in the average growth rate from -0.31 per cent between 1900 and 1902 to 2.84 per cent between 1902 and 1906. Over-enumeration may have also contributed to this high rate of increase. Anyway, although growth was apparent since 1900 the population continued to fluctuate and the 1918 influenza pandemic was largely responsible for the decline of the population from 38,084 in 1911 to 36,726 in 1921. A slight reduction in the number of births during the decade, 1911-21, when the small birth cohorts which survived the measles epidemic of 1893 entered their maximum reproduction capacity, also contributed to the population decline. Although this reduction in births may have spread to the next 5 years, 1921-26, the population increased at an average annual rate of about 2.0 per cent because mortality was lower after the 1918 pandemic. The average growth rate dropped from 3.09 per cent between 1926 and 1936 to 2.25 per cent between 1936 and 1945; probably a result of a reduction in the number of births when the small birth cohorts which survived the 1918 epidemic entered the reproductive age-groups, in addition to the repatriation of almost all the Chinese. Since 1945 the changes in the growth rate have been mainly caused by the changing, but increasing rate of emigration.

From 1902 to 1969 the population of the Cook Islands has increased from 8,213 to an estimated 20,000. The growth rates have increased from 16.9 per 1000 population, during the decade 1926-1936 to 37.1 during the period 1961-66. Between 1966 and 1969 fertility has been reduced slightly and the average ^{growth} rate was 33.2 persons per 1000 populations. The average annual rate of increase for the total population has varied during these years between 0.32 per cent,

between 1906 and 1911, and 2.12 per cent, between 1951 and 1956. The varying rate of increase between 1945 and 1969 has been largely the product of the changes in the rate of emigration and the continuing decline in mortality. As emigration increased the rate of population growth has correspondingly been reduced. From 1956 to 1961 the total growth was 10 per cent and between 1961 and 1966 it was down to 4.7 per cent.

Between 1900 and 1969 the population of French Polynesia has increased from more than 29,000 to an estimated 103,000. As in the other island territories the natural growth was slow at first after the tide of population decline was checked until 1951 when it has remained at an average of over 3 per cent. Since 1926 the total growth has fluctuated between an average rate of 1.77 per cent between 1931 and 1936 and 3.55 per cent during the period 1951-56. These variations in the intercensal rates of growth have been produced by the immigration of the Chinese, especially in the 1920s, the emigration to France, New Caledonia and the New Hebrides since World War II, and the annual variations in the number of births and deaths.

In 1900, despite the immigration of Indians, Fiji's population was perhaps 15,000 fewer than its total before the measles epidemic of 1875 when the population was estimated to be 135,000³. After 1921, when the native Fijians ~~became~~ less susceptible to the more common communicable diseases, natural growth increased rapidly from about 1 per cent around that year to a peak average of about 3.5 per cent between 1958 and 1963. By 1969 natural growth was reduced drastically to 2.5 per cent through the reduction of fertility. The immigration of Indians, Other Pacific Islanders and Europeans led to an increase in the total population, at an average rate of 8.7 per cent, from 108,924 in 1879 to 127,486 in 1881. (However, the indigenous population continued to decline slowly until 1921, when they began to increase from the lowest ever recorded figure of 84,000).

By 1891 the total population had declined to 121,124 and by 1901 the enumerated population was 120,124. Since then the total population began to increase at an increasing rate, partly because of the high fertility and low

mortality of the Indian component and partly because of continuing Indian and Chinese immigration. The effect of the 1918 influenza pandemic is shown by the decline from an average rate of 1.62^{per cent} between 1901 and 1911 to an average growth rate of 1.27 per cent in the next decade, 1911-21; Since 1936 immigration has been of little significance in the growth of the total population despite the immigration of Micronesians in the years immediately after World War II and the increase in European immigration. If the estimate of 500,000 for 1969 is near correct, then the population has increased by only 3.0 per cent since 1966 whereas between 1956 and 1966 it increased at the peak average rate of 3.79 per cent.

Since the first complete census of Tonga in 1891 in which 19,186 Tongans were enumerated, the population, then probably not very different from that around 1850, has continued to increase to an estimated total of 83,000 in 1969. From the beginning of this century Tonga's population has been little influenced by migration into or out of the Kingdom. As a result there was little fluctuation in the average intercensal rates of growth, although as mortality has continued to drop, fertility remaining well above 30 per 1000 population, growth rates have increased. The only detectable fluctuation was the decline from an average rate of 1.07 per cent between 1901 and 1911 to 0.8 per cent average growth rate in the next decade. This temporary decline was probably the result of high mortality during the 1918 epidemic of influenza and the entrance into the reproductive age-groups of the reduced birth cohorts born during the pre- and post-1893 measles epidemics. From 1966 to 1969 the estimated average rate of increase was 2.39 per cent which means that the 1969 population was slightly under-estimated. Although emigration is increasing it probably accounts only for an average annual loss of not more than 0.2 per cent while the average natural growth rate is over 3 per cent.

Unlike Tonga, where the indigenous population was already growing by the beginning of this century, the population of the Gilbert and Ellice Islands Colony continued to decline well into this century; from 1911 to 1921 the population declined from 31,121 to 29,897 at an average rate of 0.40 per cent.

However, between 1931 and 1947 the rate of growth was reduced from an average rate of 1.22 per cent between 1921 and 1931 to 0.40 per cent, owing to some minor epidemics but mainly the disrupting effect of the Pacific War on family life and the emigration to Fiji immediately after the war from Ocean Island and Vaitupu. Between 1947 and 1963 the population increased at the average rate of 1.9 per cent but increasing emigration to the Solomon Islands and to Nauru has slightly reduced the average rate of growth during the period 1963-68 to 1.7 per cent. The natural growth rate is probably about 20 per 1000 population, if the registration system were not defective.

The population of the Trust Territory of the Pacific Islands illustrates best the effect of migration on population growth. In 1920 the total population was 56,200 and 5 years later it had increased by only 94 persons, at an average rate of 0.03 per cent. As Japanese immigration increased the average rate of growth rose but still fluctuated. Between 1925 and 1930 the population grew at an average rate of 4.34 per cent, and in the next 5 years the average rate of growth had increased to 8.05 per cent. As Japanese immigration slowed down the rate of growth was reduced to an average of 5.06 per cent between 1935 and 1940. In the 20 years 1920-40 the population of the territory was more than doubled from 56,200 to 131,258, but the native population increased by only 4 per cent⁴. The repatriation of the Japanese and the high mortality and low birth rates during the 1942-45 war reduced the population dramatically to about 51,000 in 1948. Since then mortality has declined rapidly and there has been a shift to rapid growth. According to Irene B. Taeuber, the natives increased by 40 per cent between 1940 and 1958⁵, most of this increase came in the 1950s. By 1967 the population was estimated to be 91,448, and the average rate of growth between 1958 and 1967 was 3.26 per cent. The natural growth rate has increased since 1950 and around 1967 it was about 30 per 1000 population. However, if the system of registration were more efficient the natural growth might be slightly higher than the statistics indicate.

Probably the fastest growth of all the Pacific populations is that of Guam where the population has increased from 9,676 in 1901 to an estimated 102,000 in

native population has been slightly more than quadrupled during this period and the remainder of the growth has been due to immigration at varying rates, for each intercensal decade. The average rate of growth has been 2.27 per cent from 1901 to 1910, and during the next 5 intercensal decades it has been respectively 1.46, 3.06, 1.88, 10.32 and 1.23 per cent. Whereas the average rate of natural increase between 1950 and 1960 was 2.65 per cent the average population growth was only 1.23 per cent which is probably the result of the return of the American expatriates with their children born on the island. Moreover, the fertility of the native population is probably higher than the birth rate of around 35 per 1000 population indicates because the presence of a large number of single American military personnel would depress the birth rate from its true level. Since 1960 the average rate of growth has been estimated to be 5.79 per cent, a total increase of 35,000 persons by 1969. Only a recent influx of immigrants would produce such phenomenal growth in the territory.

The Condominium of the New Hebrides was the last Pacific island territory to have its first full census enumeration taken when in 1967 the total population was enumerated at over 77,000. The native population has just entered the phase of growth and while the crude birth rate is about 45 per 1000 population the death rate is about 20. In a similar situation is the population of the British Solomon Islands which has increased from over 91,000 in 1931 to about 150,000 in 1969⁶. Although there has been some recent immigration to this island Colony it probably amounts to an average of 0.1 per cent of the rate of growth since 1959. Not much is known about the total population growth of both territories but one can speculate that here too the growth has fluctuated in previous years when episodic epidemics were frequent in several islands before modern medicine and health campaigns had made much impact. Moreover, the changing rates of Asian immigration and the eventual repatriation of nearly all by 1963 must have had some influence on the population numbers and growth in the New Hebrides.

The natural growth of the populations of Niue and Tokelau Islands is at present around 35 per 1000 population while the total population growth for both

has fluctuated at intercensal averages of less than 2 per cent. This discrepancy between the natural and the total population growth is due to emigration from these islands. Tokelau's population increased from 989 in 1921 to 1,580 in 1951. Between 1945 and 1951 the average growth rate was 2.18 per cent but increasing emigration in the 1950s reduced the average to 1.76 per cent during the period 1951-61. Since then emigration has continued to increase and between 1961 and 1966 the average rate of growth was 0.32 per cent. In Niue the population fluctuated between 4,015 in 1900 and 3,747 in 1928, though the trend was a slow decline. This fluctuation in numbers was due to varying rates of emigration and the existence of a precarious balance between high mortality and fertility. Since 1928 the population has increased slowly to 5,194 in 1966. During this period mortality declined rapidly while fertility remained high and as a result natural growth showed a continuous increase. Meanwhile the population growth fluctuated between an average of 0.41 per cent during 1936-46 and 1.04 per cent during 1956-66.

As a result of the changes in the vital balances of the birth and death rates, immigration and emigration, the small island populations have generally experienced variations in growth and fluctuation in numbers not often seen in large populations, especially of mainland Asia. Whether the present family planning programmes will be successful in rapidly reducing fertility to a level comparable to the low mortality in order to reduce natural growth to around 1.0 per cent or less remains to be seen. But if it does the growth of island populations will continue to exhibit instability. Because of the small areas of the fragmented insular territories of the Pacific the populations must pass through a much more shortened demographic cycle than that experienced by the developed countries or hoped to be achieved by larger developing lands. The islands of large-scale immigration or emigration in the Pacific are probably classic illustrations of the instabilities inherent in the continuing increase of island peoples. Because of the inherent instabilities in the island populations there is also a need for caution in the projection of growth into the future and the derivation of conclusions of social, economic and political difficulties.

2. CHANGES IN THE AGE-SEX STRUCTURE

The changes in population numbers and growth rates are directly associated with changes in age-sex structures and, on the whole, the data are less reliable for these than for the total numbers enumerated. The data are not comparable from census to census but lack of comparability would not greatly affect the general conclusion that the exact chronological age has been relatively unimportant to Pacific islanders until the last 15 years or so when increasing Westernization has given the younger generations a greater consciousness of chronological time. As a result of the poor concept of chronological age among natives only descriptive ages were given in the early censuses. The attempt to include the chronological age distribution of the populations was not made until just before or after the Second World War.

As the islanders become more familiar with the concept of exact chronological age the proportion of unit digits wrongly stated has decreased. For example, in Tonga during the 1939 census unit digits were wrongly stated for at least 20 per cent of the males and over 30 per cent of the females between the ages 13-62 years⁷. In 1966 the percentage of the wrongly stated ages has fallen to less than 5 per cent for both sexes though slightly higher for females. The misreporting of ages therefore affects the age structure and may change it superficially from census to census. Even in a 'closed' population where we may expect only a decrease in cohort sizes from census to census, the pattern of some cohorts are not often regular because of preferences for certain unit digits of age which results in numbers in various age-groups being under-stated and others exaggerated. It is not unusual to find in the next census that certain birth cohorts have increased or decreased in size (when there was no immigration, emigration or epidemic to affect them).

Before chronological age distributions were recorded in censuses, it seems justifiable to assume that the age-sex structure after European contact often changed as a result of the effects of the transplantation of peoples, labour recruiting, migrations, epidemics, famines and other natural hazards. During the censuses in the 1950s, and to some extent in the 1960s, the age

structures of certain territories were still marred by the scars of epidemics, famines and other cataclysms, immigration and emigration besides incomplete coverage and errors in age-reporting. From such age structures it is evident that there were changes in the past. However, in some territories the age structures do not exhibit any irregularity although major epidemics are known to have occurred, even when there is little influence of migration. Probably, if the islanders were more sophisticated in regard to chronological age there would be an indentation or flattening at the relevant ages in their age pyramids.

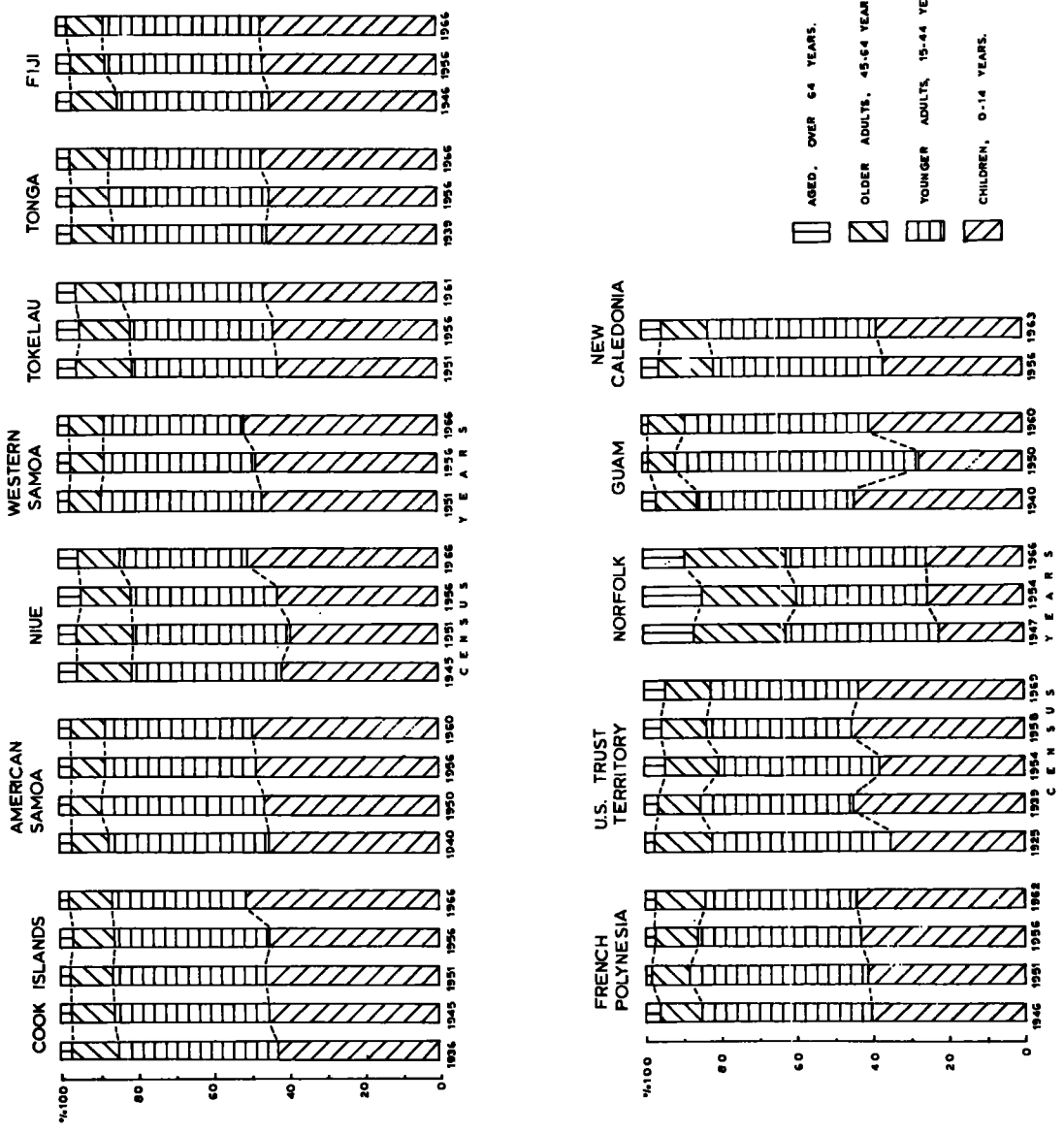
Simulation of the effects of epidemics in the past, with mortality unknown in both level and pattern, on populations which had been practising primitive methods of population control, such as infanticide, to an unknown extent for an unknown number of years offers endless possibilities, but probably none would advance the interpretation beyond the idea that population pyramids were probably irregular with steep slopes and a narrower base than they are today. The increasing chances of survival in this century have led to a broadening of the base of the pyramid and had there been no migration, incomplete coverage and misreporting of ages the age pyramids would have less steep slopes with detectable traces of past epidemics and other events affecting the population. In 1894 approximately 35 per cent of Tonga's population were described as children, including those under 5 years of age, 55 per cent were adults and 10 per cent were presumably aged⁸. It is probable that many under 15 years of age were described as adults and the proportion of those 65 years and above may not have been more than 3 or 4 per cent. Such errors are expected when the descriptive age distribution was based on physical appearances which often belie actual age. Probably the age distribution in Tonga in 1891 was not very different in 1925 when population growth was slow and fluctuating. The proportion under 15 years was 35.2 per cent, 62.4 per cent were adults, (47 per cent were between the ages 15 and 44 years) and those 65 years and beyond made up 2.4 per cent¹⁰.

There is no scope in this study for a detailed analysis of the age structure of each island territory, either cohort by cohort or by quinquennial

Fig.5.2 Changing age-sex structure of selected Pacific island territories.

- Sources:
- (1) 'Demographic Year Books, 1955, 1963, 1964 and 1969', Dept. of Economic and Social Affairs, U.N., New York.
 - (2) McArthur, N., op.cit.
 - (3) McArthur, N., and J.B. McCaig, op.cit.
 - (4) Fiefia, S.N., op.cit.
 - (5) Tupouniua, M.U., op.cit.
 - (6) Zwart, F.H.A.G., op.cit.
 - (7) McArthur, N., 1958, "Report on the Results of the census of the population, 1956", Suva, Fiji.
 - (8) Tudor, J. (ed.), op.cit.
 - (9) Tonga, 'Tonga Government Gazette, 1939-40', Nukualofa.

AGE-GROUPS OF SELECTED ISLAND TERRITORIES



age-groups. Instead we will examine only the changes in the broad age-group divisions 0-14 years (children) 15-44 and 45-64 years (adults) and 65 years and over (aged). As shown in Figure 5.2 the age structures of the island territories have changed from one census to another. Generally, the proportion under 15 years of age has increased as a result of the progressive reduction of infant and child mortality. Therefore the increasing youthfulness of the population has led to a reduction of the proportion of adults while there has been no major change in the proportion of the aged. With the exception of Norfolk Island all the island territories show that over 80 per cent of the population are under 45 years of age, and in the case of others like the Cook Islands, Tonga, Fiji, American Samoa, and Western Samoa where population growth has been most rapid the proportion is over 85 and often close to 90 per cent. This youthfulness of the population means that if there is no radical change in the attitudes towards high fertility rapid growth will continue in the future.

With the exception of Norfolk, Guam, New Caledonia and Nauru the proportion of children in the island territories is over 40 per cent and is rising in some territories like the Cook Islands, Western Samoa, American Samoa and Niue to over 50 per cent⁹. In 1950 in Guam the proportion of those in the age-groups 0-14 years was 27.1 per cent, a decline from 44.3 per cent in 1940. The lowering of the proportion of children was the result of the influx of American immigrants which increased the proportion of adults. When the rate of immigration slowed down and more women and children joined their menfolk in the island the proportion of children rose again to 40.6 per cent in 1960. The increase in the rate of immigration in the 1960s may have resulted in a lowering again of the proportion of children in Guam (see age pyramid for Guam, 1960, in Figure 5.3).

Since the beginning of this century Norfolk Island had a population pyramid which is characteristic of populations where growth is slow due to low fertility and mortality (see Figure 5.3). The proportion of the age-groups 0-14 years is comparable to that of developed countries. In 1947 it was 22.2

per cent and in 1954 and 1966 it increased to 25.1 and 25.6 per cent respectively. Intermediate between the very low proportion of children in Norfolk and the large proportion in the other Pacific territories are those of New Caledonia and Nauru. In New Caledonia the small families of the large European component population have been mainly responsible for the 36.5 and 38.3 per cent of the total population being under 15 years in 1956 and 1963 despite growing youthfulness of the indigenous component. The proportion of those aged 0-14 years in Nauru has remained in the range of 30.0 and 38.0 per cent since 1945 partly as a result of the small cohorts born during the Second World War but mainly due to the presence of immigrants on labour lines who are concentrated in the young adult age-groups.

The emigration of young adults from the Cook Islands, Western Samoa, American Samoa and Niue has been mainly responsible for the increase in the proportion of 0-14 year olds to slightly over 50 per cent in 1966. It may also be assumed that the proportion in these age-groups has also increased in the Tokelau Islands to over or just about 50 per cent by 1966, in spite of the unavailability of the census data, because the rate of emigration increased rapidly since 1961.

Because the immigration of adults depresses the proportion of the under 15 years age-group, the proportion of children in Fiji during the height of immigration may have been lower than 30 per cent, especially as child and infant mortality were also high. The percentage under 15 years may have fluctuated, but since 1921 it has increased. It is also reasonable to believe that Japanese immigration to the presently called Trust Territory of the Pacific Islands would result in a proportional decrease in the 0-14 age-groups, and their repatriation would have led to an increase since 1945. The marked decline in the proportion of the under 15 years age-group in 1954 was probably the result of a marked decline of the number of births, in addition to a rise in mortality during the years 1941-45.

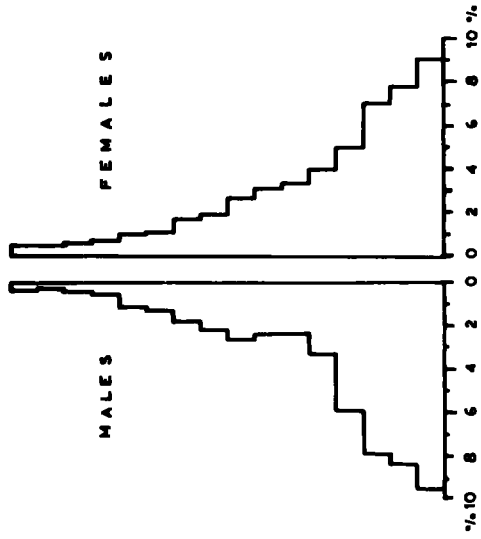
As the proportion of children increased, that of the adults decreased, unless the population was affected by immigration. The youthful age structure

Fig.5.3 Recent Population Structures of selected island territories.

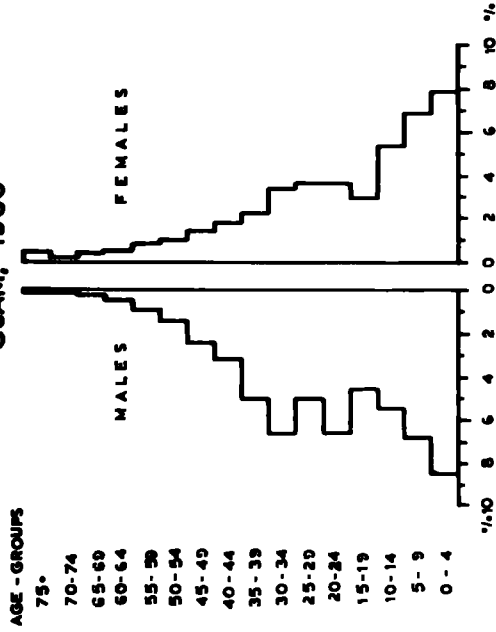
Sources: 'Demographic Year Books 1960-69', Dept. of Economic and Social Affairs, U.N., New York.

RECENT POPULATION STRUCTURES

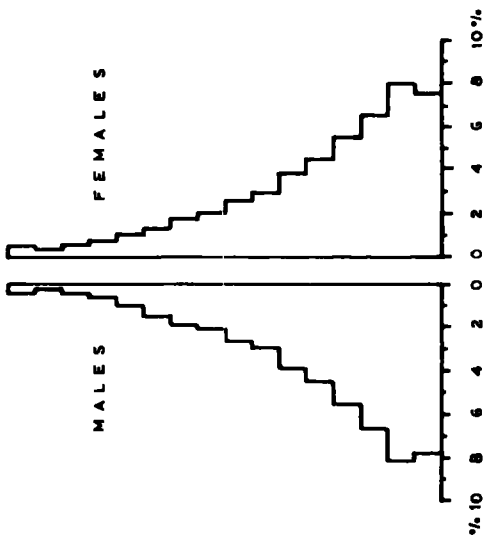
AMERICAN SAMOA, 1960



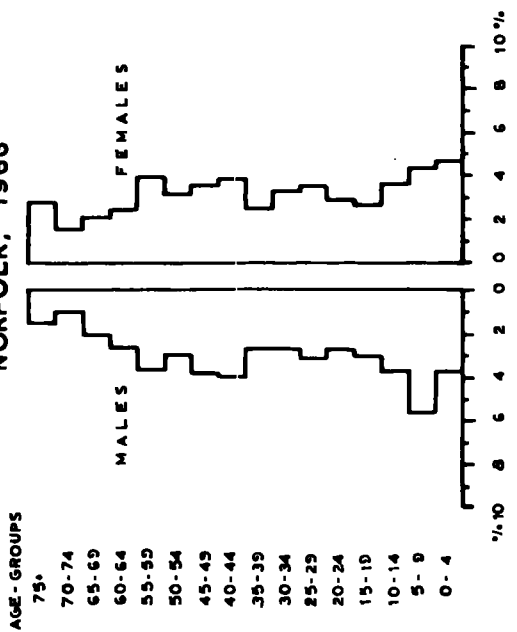
GUAM, 1960



FIJI, 1968



NORFOLK, 1966



AGE - GROUPS

- 75+
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4

AGE - GROUPS

- 75+
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4

of most island populations is reflected in the concentration of over two-thirds of all adults in the 15-44 years age-groups. Apart from Norfolk and territories where immigration is significant, the proportion of 15-64 years age-groups has decreased from over 52 per cent in most territories in 1945 to under 50 per cent in the 1960s. The decrease has been greater in such territories as the Cook Islands and American Samoa where the increasing emigration of adults, especially in the age-groups 20-39 years, has reduced the proportion of adults to about 46 per cent. The waist of the age pyramid has been therefore constricted as seen in the age pyramid for American Samoa, 1960, in Figure 5.3.

The proportion of adults in Guam increased from 51.6 per cent in 1940 to 71.6 per cent in 1950 although it decreased again to 57.7 per cent in 1960. Because immigrants were mostly aged 20-39 years the proportion of those 15-44 years of age showed the greatest increase from 41.6 per cent in 1940 to 63.9 per cent in 1950, and although it decreased to 48.4 per cent in 1960 the bulging of these age-groups was still clearly evident in the age pyramid for 1960 (Figure 5.3). While the proportion of those aged 15-44 years increased, the proportion of those aged 45-64 years declined from 10.6 per cent in 1940 to 7.7 per cent in 1950. However, it increased again in 1960 to 9.3 per cent as the proportion of the youthful adults declined. In Nauru about 60 per cent of the total population are adults and only about 10 per cent are in the age-groups 45-64 years. Similar changes probably took place in Fiji, New Caledonia and the Trust Territory of the Pacific Islands during their periods of large scale immigration. In New Caledonia the adult age-groups still make up more than 55 per cent of the total population. Once again Norfolk Island is the extreme exception. In 1947 the total population contained 64.7 per cent in the age-groups 15-44 years which fell to 59.4 per cent in 1954 and rose again to 63.4 per cent in 1966. Whereas the proportion of those aged 45-64 years ranged from 9 to 15 per cent in other territories, in Norfolk it has remained about 24 per cent.

The changes in the 65 years and over age-groups have been slight in comparison to the changes in the broad age-groups already discussed. The proportion of the aged varies from territory to territory and from census to census.

Within the area of study the proportion varies among the territories from 1.5 per cent in Guam and Nauru to 11 per cent in Norfolk, although most territories fall within the range of 2 to 5 per cent. In Guam and Nauru the immigration of adults has resulted in the decline in the low proportion of the aged. The aging population of Norfolk is reflected in the high proportion of old people in comparison to other territories. In 1947 the proportion was 13.1 per cent and in 1954 it was 15.2 per cent but in 1966 it decreased to 11 per cent. Tonga, the two Samoas, Fiji, New Hebrides, the Solomon Islands and the Cook Islands all showed little variation in the proportion of the aged which is between 2 and 4 per cent. In French Polynesia the proportion of those above 64 years of age decreased from 3.5 per cent in 1946 to 1.2 per cent in 1951, probably because of higher mortality among the aged during the intercensal period, but in 1956 and 1962 the proportion has remained at 2.5 per cent. In the United States Trust Territory the proportion has increased from 2.4 per cent in 1925 to 5.3 per cent in 1969 which may be partly attributable to the lengthening of the life expectancy. The proportions of old people in Tokelau, Niue and the GEIC have varied between 4 and 6 per cent since 1945. The slightly higher proportions in these three territories in comparison to territories like Fiji and Tonga are probably due to the large scale emigration of young adults from small populations, especially Niue and Tokelau Islands, along with the increase in life expectancy. A possible additional reason in the GEIC is the low rate of natural growth from lower fertility, though mortality is also low, which has made that population more aged than most Pacific island territories.

If fertility is reduced substantially within the next decade the proportion of children will soon begin to decline. Simultaneously the proportions of adults and aged will begin to increase as the present 5 - 14 years and 55 - 64 years birth cohorts move up, provided the population is not affected by migration. The relative unimportance of migration in Fiji between 1956 and 1966 and the decline of fertility among Chinese and Indians have resulted in an increase of only 0.7 per cent for those aged 0-14 years and 0.1 per cent for adults, while the proportion of the aged decreased by 0.8 per cent. The rapid decline

of the birth rate since 1964, not only for the total population but also for both the two main components of Indians and Fijians, has resulted in the decrease of the birth cohorts born between 1964 and 1968 which is seen in Figure 5.3. If this decline in fertility continues for the next 20 years, by 1990 the shape of the age pyramid will be similar to those of developed countries.

Other useful comparative indices of the changes in the age structure are the changes in the child-woman ratio (discussed in Chapter 3), and in the median age (Table 5.1) and the dependency ratio (Table 5.2).

The median ages for both sexes in the island territories have declined as the proportions of children have increased, except in Norfolk, Guam and Nauru. Chance variations in the loss through deaths and accessions through births and the changes in the rate of emigration and immigration explain the changing median age in Norfolk. Nevertheless, Norfolk stands alone as it is the only territory with extremely high median age of over 35 years. Large scale immigration into Guam and Nauru has kept the median age above 20 years, and the changing age composition of the immigrants greatly influences the changes in the median age. In the other territories the median ages during the 1960s varied from just under 20 years in New Caledonia to slightly less than 14 years in the Cook Islands and Western Samoa. On the whole, the median ages are lower in the territories where the natural population growth has been high for longer periods, unless affected by immigration. Moreover, the median ages are lowest in the territories greatly affected by increasing emigration.

In small closed populations the changes in the median ages for males and females would result from random fluctuations in the numbers of births and deaths in either sex. The changes in the median ages for males and females reflect the influence of migration on either sex and, to some extent, the changes in the sex-ratios. Territories like Guam and Nauru show higher median ages for males since most immigrants are males. Where emigration has been on any significant scale the median ages for males are much lower than for females, as in American Samoa, Niue, Tokelau, Cook Islands, Western Samoa and the Gilbert and Ellice Islands. However, in 1956 the median age for females in the Cook

Table 5.1 THE MEDIAN AGES FOR SELECTED ISLAND TERRITORIES FOR VARIOUS YEARS

Territory	Census Date	Median Ages in Years for		
		Males	Females	Both Sexes
American Samoa	1930	17.4	17.2	17.3
	1940	15.3	15.6	15.5
	1950	15.2	15.7	15.5
	1956	15.0	16.5	15.8
	1960	13.9	16.2	15.1
Cook Islands	1936	17.6	16.9	17.3
	1956	16.5	15.1	15.8
	1966	13.7	13.9	13.8
Fiji	1956	17.1	16.3	16.7
	1966	16.6	16.5	16.6
French Polynesia	1946	19.4	17.8	18.6
	1956	18.0	16.9	17.5
	1962	17.9	16.6	17.3
Gilbert & Ellice Is.	1947	19.7	22.1	20.9
	1968	16.1	18.3	17.2
Guam	1950	22.3	19.5	20.9
	1960	28.0	14.7	21.4
New Caledonia	1956	22.2	20.4	21.3
	1963	20.2	19.4	19.8
Niue	1945	18.7	19.8	19.3
	1956	15.3	19.0	17.2
	1966	13.8	15.2	14.5
Norfolk	1947	33.7	36.1	34.9
	1954	39.0	37.4	38.2
	1966	34.1	37.2	35.7
Trust Territory of the Pacific Islands	1954 ^E	21.3	20.1	20.7
	1958	20.1	19.6	19.9
	1969 ^E	17.4	17.3	17.4
Tokelau	1951	19.0	17.3	18.2
	1956	17.4	18.3	17.9
	1961	15.3	17.5	16.4
Tonga	1939	17.5	16.9	17.2
	1956	16.3	17.1	16.7
	1966	15.6	16.0	15.8
Western Samoa	1951	15.2	17.6	16.4
	1956	15.4	16.4	15.8
	1966	13.6	13.9	13.8

Source: Same as for Figure 5.2

E Based on estimated age distribution.

Table 5.2 THE DEPENDENCY RATIOS FOR SELECTED ISLAND TERRITORIES FOR VARIOUS YEARS

Territory	Year of Census	Under 20 yrs	Over 64 yrs	Total Dependency Ratios
Fiji	1946	1280	90	1370
	1956	1405	83	1488
	1966	1431	63	1494
French Polynesia	1946	1086	88	1174
	1951	1101	51	1152
	1956	1240	58	1298
	1962	1180	92	1272
New Hebrides	1967	1337	73	1410
British Solomon Islands	1959	1309	71	1380
Norfolk	1947	490	225	715
	1954	457	316	773
	1966	588	145	733
Tokelau	1951	1157	100	1257
	1956	1190	125	1315
	1961	1308	113	1421
Trust Territory of the Pacific Islands	1954 E	977	115	1092
	1958	1084	163	1247
	1964 E	1425	152	1577
	1969 E	1421	140	1561
Tonga	1956	1281	94	1375
	1966	1387	82	1469
Gilbert & Ellice Islands	1963	1238	98	1336
	1968	1375	102	1477
Guam	1950	656	22	678
	1960	1088	32	1120
Western Samoa	1951	1396	56	1452
	1956	1495	90	1585
	1966	1757	78	1835

Source: Same as for Figure 5.2

E Based on estimated population

Islands was lower than that for males which lends support to the fact that there was a preponderance of females among the emigrants from this territory between 1945 and 1958

In calculating the dependency ratios, all those under 20 years of age were regarded as dependents. The inclusion of those 15-19 years of age within the youthful dependents seems justifiable since a large portion of them would still be in schools and those not in schools contribute very little to meeting

the needs of the family because not much is demanded or expected from them. All those above the age of 64 years were regarded as the old-age dependents although some of them may still be gainfully employed. Those within the age-groups 20-64 years form the bulk of the working population, although less than one-half could be regarded as economically active because nearly all women in these age-groups are engaged only in 'Home Duties'. However, many of those not gainfully employed would be marginal workers¹¹.

Apart from Norfolk, Nauru and Guam in 1950 all the territories have a heavy dependency load - ranging from over 1,100 in Guam to over 1,800 in Western Samoa - which has been increasing as the age pyramids become more progressive, especially in the islands of emigration. The recent regression in the base of the age pyramid of Fiji is reflected by the very slight increase in the dependency ratio between 1956 and 1966. Immigration to Guam and Nauru and the large white population of New Caledonia are responsible for their lower dependency ratios in comparison to other territories. In Norfolk the dependency ratios are comparable to those of developed countries with heavy old-age dependency. In all the other territories, even those where immigration is important, the dependency load is concentrated in the youth sector. Whereas the heavy youth dependency has been increasing the old-aged dependency has varied according to the changes in the proportion of those aged 65 years and beyond. Where the proportion of the aged is higher the old-age dependency ratio is also higher, for example Tokelau, Niue and the Trust Territory of the Pacific Islands, and where the proportion of the aged is very small, as in Guam, the old-age dependency ratio is extremely low.

While migration is normally sex selective, epidemics and other causes of mortality are less sex selective although they may be so within certain age-groups. The biological sex-ratio at birth is about 1060 males per 1000 females but higher mortality throughout life for males, everything being equal, either balances the sex-ratio or leaves a preponderance of females in the older age-groups since they usually have higher life expectancies than males. In small

Table 5.3 THE SEX-RATIOS FOR SELECTED ISLAND TERRITORIES FOR VARIOUS YEARS

Territory	Year of Census	Males/1000 Females	Year of Census	Males/1000 Females
Fiji	1881	1233	1936	1176
	1891	1216	1946	1112
	1901	1256	1956	1067
	1911	1344	1966	1037
	1921	1286		
American Samoa	1912	1123	1940	1050
	1916	1091	1950	1077
	1920	1057	1956	1006
	1930	1074	1960	1028
Cook Islands	1936	1086	1956	1089
	1951	1068	1966	1026
French Polynesia	1951	1090	1962	1053
	1956	1062		
Tonga	1921	1085	1938	1091
	1931	955	1939	1067
	1933	956	1950	1080
	1935	1040	1956	1037
	1936	1056	1966	1028

Source: Based on figures given by McArthur, N., 1967, op. cit. pp. 36-87, 330-6; Tonga, Censuses of 1956 and 1966; Fiji, Census 1966; and the Demographic Yearbooks, 1948-69.

populations, such as small island populations of less than 10,000 people like Tokelau, Norfolk, Niue and Easter Island, random fluctuations in the numbers of births and deaths or the emigration or immigration of a few persons changes the sex-ratio. We will not concern ourselves with the changes in the sex-ratios of cohorts from census to census since these changes are quite frequent as a result of migration, incomplete coverage in censuses, incorrect reporting of ages or merely chance variations in births and deaths.

Generally, the sex-ratios in the island territories (Table 5.3) ^{have been} gradually lowered as the practice of selective infanticide, which was once responsible for the high sex-ratios in preliterate times, had been abandoned. Moreover, the mortality rates for females have been reduced at a faster rate to levels

normally lower than those for males which has resulted in higher life expectancies for females. The gradual balancing of the sex-ratios of the island populations can be seen in Table 5.3 inspite of the inconsistency of the declines.

The indenturing of Pacific Islanders in Fiji during the 1870s and the 1880s helped to maintain the sex-ratio at high levels during those years. When they were repatriated the sex-ratio fell slightly in 1891. However, as the Indian immigration increased the sex-ratio increased rapidly to 1344 in 1911. Although Indian immigration reached its peak in about 1915-16 the sex-ratio decreased to 1286 in 1921 because more females now joined the migration stream and those born in Fiji had a more normal sex-ratio. Since then the sex-ratio has continued to decline to the figure of 1037 in 1966 although immigration of Indians, and in addition ^{many} ~~some~~ of the Chinese, continued during the 1920s and 1930s. In fact the balancing of the sex-ratios among the Indians and other immigrant groups contributed greatly to the lowering of the sex-ratio for the total population.

Japanese immigration into the Trust Territory of the Pacific Islands must have helped to raise the sex-ratio during the period 1920 to 1945 although the increase in the proportion of female to male immigrants from 18.5 per cent in 1920 to 69.7 per cent in 1937 would slow down the rise. After the Japanese were rapatriated the sex-ratio may have been lowered again to a level similar to what it was before their immigration. In 1957 the sex-ratio was 1,050 males per 1,000 females and by 1969 it had not changed much from this figure.

A further example of the effects of immigration on the sext-ratio can be seen in Guam and Nauru, which rank among the countries with the highest sex-ratios in the world. In 1961 the sex-ratio in Nauru was 1,894 and although it may not have always been this high, it is probable that it has not been very much lower since the use of imported labour in the phosphate works, except at the time of Japanese occupation. In Guam the sex-ratio in 1950 was 2,129 males per 1,000 females whereas in 1940, before large scale immigration, it was around 1,110. The change in the nature of immigration between 1950 and

1960, when more females were among the immigrants, was primarily responsible for lowering the sex-ratio to 1,409 in 1960.

Emigration, on the other hand, normally results in the lowering of the sex-ratio, since males predominate among emigrants. However, in the Cook Islands, despite the improvements in the female survival rate, the sex-ratio in 1956 had hardly changed from the figure of 1,086 males per 1,000 females for 1936 because females were preponderant among emigrants during this period. Since 1958 male migrants have exceeded the number of females and the sex ratio dropped to 1,026 in 1966. The sex-ratio in Western Samoa in 1951 was 1,064 and it fell to 1,049 in 1956, owing to increasing male emigration, but since the number of females who moved out of the territory has increased in recent years the sex-ratio has increased by 1966 to almost the same level as in 1951. In American Samoa the sex-ratio has generally continued to fall from 1,123 males per 1,000 females in 1912 to 1,028 in 1960 except the increases in 1930 and 1950. The increase in the sex-ratio in 1930 (Table 5.3) may have been partly due to the in-movement of political refugees from Western Samoa during the Mau Movement of 1926-36 and the increase in 1950 may be due in part to the presence of an unusually large number of Americans, since 1945. When emigration began in 1953 the sex-ratio dropped from 1,077 in 1950 to 1,006 in 1956. In 1960 the sex-ratio rose to 1,028 males per 1,000 females which was partly the result of increasing numbers of females who emigrated since 1956.

Not all the territories exhibit a preponderance of males. In the GEIC, Niue and Tokelau there has been a preponderance of females since 1945. The sex-ratio in the GEIC declined from 976 males per 1,000 females in 1947 to 914 in 1968 which was partly due to dominance of males among emigrants and partly the result of higher life expectancy for women. However, it seems probable that the sex-ratio for the GEIC has been lower than in most other Pacific islands for a long time in view of the great reduction of the male population through blackbirding and labour recruiting and the higher male mortality rate. The low-sex-ratios for Niue and Tokelau mainly result from male dominated emigration from small populations of a few thousands. The

fluctuations in the sex-ratio for Niue between 934 and 952 males per 1,000 females from 1945 to 1966 arose from the sex-differentials in mortality, fertility and emigration. In Tokelau the sex-ratio declined from 861 in 1951 to 833 in 1956 when nearly all emigrants were males, but since then the proportion of women in the migration stream has increased and as a result the sex-ratio rose to 885 in 1966. In Norfolk the sex-ratio has been lowered from 1,116 in 1947 to 964 in 1966, partly because of male emigration along with higher average male mortality and, generally, a preponderance of females among those born.

During the 1960s the sex-ratios for island populations ranged from about 900 in Tokelau to about 1,900 in Nauru¹². When not influenced by immigration the sex-ratios continue to become more balanced. In 1959 the sex-ratio in the Solomon Islands was 1,119 males per 1,000 females and in the New Hebrides it was 1,130 in 1967 and because of lowering mortality, especially among females, the sex-ratios for both territories are likely to be lower in the future. The same will probably occur in New Caledonia where the sex-ratio was 1,116 males per 1,000 females in 1963, considering that the sex-ratio for the white population was already as low as 1,040 for the same year. Sometimes the changes in the sex-ratio of what is considered a 'closed' population seem to be clearly the result of incomplete coverage for one of the sexes when no period of high sex-selective mortality is known to have occurred. This is seen in the changes in the sex-ratio for Tonga between 1921 and 1950 (Table 5.3).

3. CHANGING ETHNIC COMPOSITION

The present ethnic composition of the various island territories has been brought about by either immigration or the drawing of the territorial boundaries which cut across ethnic groupings as in the case of the GEIC and the inevitable political fragmentation of ethnic groups, such as the atoll dwelling Polynesians in the Trust Territory of the Pacific Islands and Solomon Islands. The divisions of the component populations in the island

censuses are partly based on ethnicity and partly on nationality and area of origin. Therefore the term 'ethnic' is used here within this context and not in the strict definition of the term. The changes in the ethnic composition are induced by immigration, emigration, ethnic population growth rate differentials and the assimilation of minority ethnic groups through naturalization and intermarriage. It is not unusual to find that those islanders who emigrated to other territories during the nineteenth century, especially if they were culturally, racially and linguistically similar to the receiving population, have been completely assimilated through intermarriage and the length of association.

The proportions of the non-indigenous populations vary from territory to territory. The only territories with completely non-indigenous populations are Norfolk and Pitcairn. In Guam, Fiji, New Caledonia and Nauru the non-indigenous populations constitute slightly more than one-half of the total population. In French Polynesia they form about 15 per cent of the population and in the remaining territories the proportion of non-indigenous is less than 10 per cent. In fact, if the mixed-bloods are excluded then the proportion of the non-indigenous will be mostly under 5 per cent in those remaining territories. Probably the relative proportions of Micronesians, Melanesians and Polynesians have been changing since European contact as a result of the differences in the rates and times of population decline and growth¹³. The proportions of the ethnic populations in the area of study have also changed, largely because of immigration and emigration.

In the 1870s, probably not more than 1 per cent of the populations in the area of study were non-indigenous, the majority of them being Europeans. By about 1900 they made up about 12 per cent of the population. Of this population about 5 per cent were Indians, 6 per cent Europeans and 1 per cent Mongolians. By 1940 the total population of the area was about 800,000 and the non-indigenous populations comprised about 35.5 per cent, of whom Indians made up about 12 per cent, Mongolians Vietnamese and Indonesians 3 per cent, Europeans 3 per cent and the Japanese 17.5 per cent. After 1945 the Japanese

were repatriated and the proportion of the non-indigenous dropped to about 20 per cent in 1950. About 1960 the non-indigenous constituted about 25 per cent of the population of all the territories and by the end of the decade their proportion has slightly increased to 26.3 per cent. However, the proportion of Indians fell from about 18.8 to 17.6 per cent as a result of the reduction of fertility and a slight rise in mortality while the natural growth of the indigenous populations generally increased. From 4.2 per cent the proportion of Europeans increased to 7.4 per cent, mainly as a result of immigration. As for the Mongolians, Vietnamese and Indonesians, repatriation without further recruits of the latter two led to the decline in their proportion to 2 per cent in about 1960 and then 1.3 per cent at the end of the decade.

The changes in the ethnic composition of the populations of New Caledonia, Fiji and Nauru are shown in Figure 5.4. Immigration and the differences in the levels of natural growth have resulted in the changes in the proportions contributed by each component population in Fiji. The most remarkable change is that shown by the Indians who comprised less than 1 per cent of the population in the mid- 1880s but by 1966 they numbered about 241,000 (50.6 per cent) while the Fijians were about 202,000 (42.3 per cent). The proportion of Chinese has increased from 0.2 per cent in 1911 to 1.1 per cent in 1966, while the proportion of 'Other Pacific Islanders' has generally declined from about 5 per cent in 1881 to about 1 per cent in 1966. Hardly any change has occurred in the proportion of Rotumans, who are Polynesians, since 1881. Among the minor components, as in most territories, the proportions of mixed-bloods, especially Euronsians, has shown the most rapid increase. However, changes in their numbers are marred by changes in definition in censuses and the way they prefer themselves to be defined.

The changes in the ethnic composition of the population of New Caledonia largely arise from the variation in the rate of immigration, the rate of return flow of these immigrants and the rate of growth of the indigenous population. The repatriation of almost all the Vietnamese and Indonesians has reduced their proportion from the time when they made up more than 10 per cent of the

Fig.5.4 Trends in the Ethnic Composition of the populations of
New Caledonia, 1887-1963; Fiji, 1881-1966 and Nauru, 1930-68.

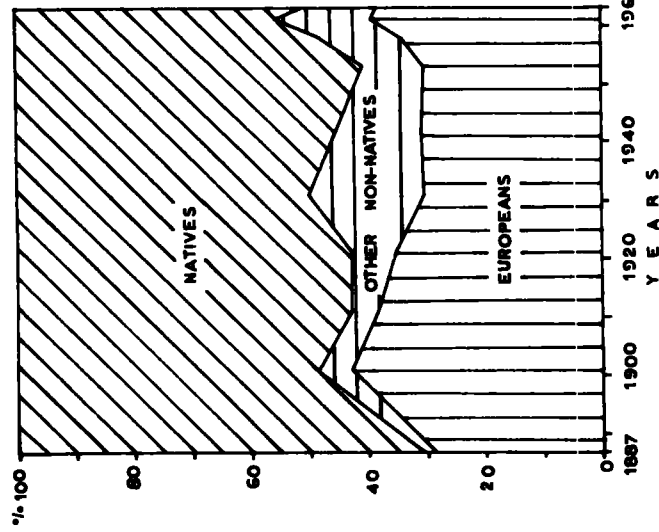
Sources: (1) Tudor, J., (ed.), op.cit.

(2) Zwart, F.H.A.G., op.cit.

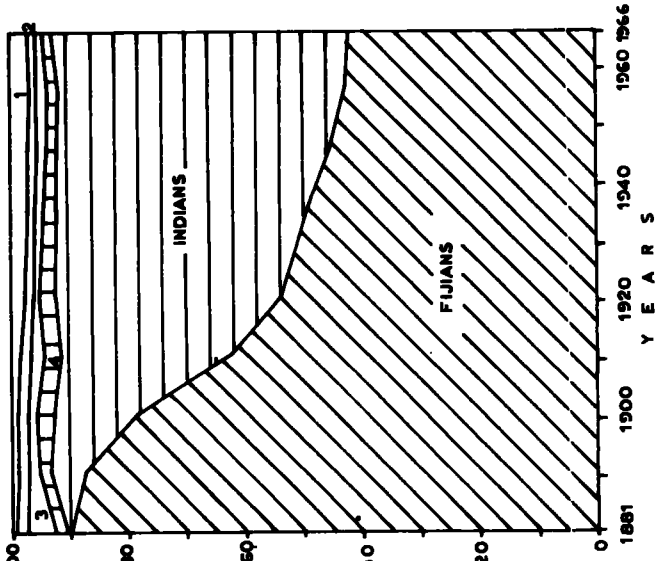
(3) 'Report for the Territory of Nauru, 1966-68',
Govt. Printing Office, Commonwealth of Australia, Canberra.

TRENDS IN ETHNIC COMPOSITION

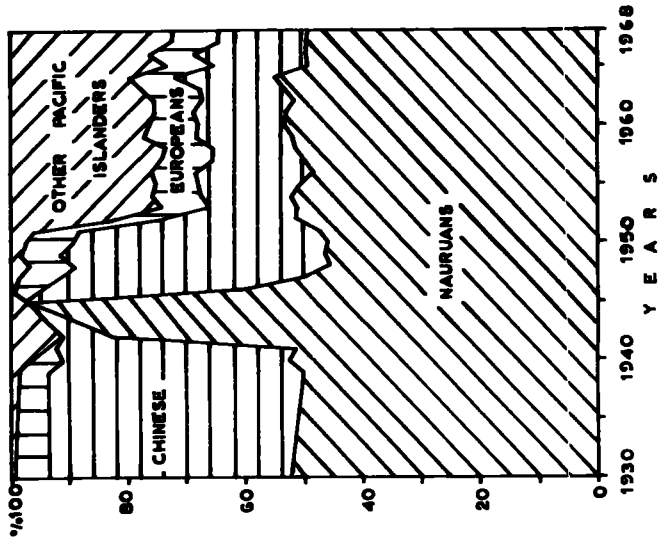
NEW CALEDONIA, 1887-1967.



FIJI, 1881-1966.



NAURU, 1930-66.



- 1 CHINESE AND MIXED-BLOODS
- 2 ROTUMANS
- 3 OTHER PACIFIC ISLANDERS
- 4 EUROPEANS

total population in the late 1930s to about 1 per cent by the end of the 1960s. Meanwhile, the proportion of 'Other Pacific Islanders' has increased as they replaced the repatriated Asians. While the proportion of Nauruans has fluctuated around 45 to 55 per cent between 1930 and 1968 the main changes in the ethnic composition have occurred mainly among the non-Nauruans. During this period the proportion of 'Other Pacific Islanders' has increased at the expense of the Chinese. Since 1956 there have been only slight changes in the ethnic composition of the population; generally, the proportion of 'Other Pacific Islanders' has fluctuated during this period between 20 and 27 per cent, the Europeans between 5 and 8 per cent and the Chinese between 15 and 20 per cent.

Remarkable changes in the ethnic composition also took place in the populations of Guam and the Trust Territory of the Pacific Islands. Before large scale Japanese immigration the non-indigenous population of the Trust Territory was probably not more than 1 per cent of the total population in 1920. But by 1939 the indigenous population made up about 34 per cent of the population while the Japanese made up nearly all of the remaining 66 per cent. After the repatriation of the Japanese the proportion of the non-indigenes returned to the level in 1920 and today they make up less than 5 per cent of the total population. In Guam the non-indigenes probably constituted less than 8 per cent of the population but in 1950, with the presence of a large population of American military personnel, they formed more than half of the population. By 1960 this proportion fell to about 46 per cent but recent immigration has probably raised it again to about 50 per cent. Although the magnitude of change is less, the Chinese in French Polynesia have increased from less than 1 per cent of the population in 1921 to form more than 10 per cent by the end of the 1960s, notwithstanding the fact that many have been naturalized and together with their children are defined as French citizens in the censuses. In the New Hebrides the proportion of Asians has dropped from about 10 per cent in the late 1920s to less than 0.5 per cent in 1967, while the proportion of Europeans has increased from about 2 to 6 per cent.

In the remaining island territories there has been no major change in the

ethnic composition and since European contact the proportion of the indigenous population has always remained above 90 per cent. For example, in the Solomon Islands about 98.5 per cent of the population in 1959 were indigenous and this proportion had not changed much in previous years. The non-indigenous population consists of Europeans, Chinese and 'Other Pacific Islanders', and immigration has increased their proportion to 2.9 per cent in 1968 from 1.5 per cent in 1959. The major increase has occurred among 'Other Pacific Islanders', of whom most are Micronesians, who increased from a proportion of 0.4 per cent in 1959 to 1.5 per cent in 1968. As for the indigenous populations, the proportion of Melanesians has decreased from 94.8 per cent to 93.4 during the same period, owing to the lower mortality of the Polynesians in the Solomon Islands. In the GEIC there has been a slight increase in the proportion of Polynesians, who made up about 14 per cent of the population in 1968 while the Micronesians, who have slightly lower fertility, made up about 83 per cent.

While the ethnic composition of most island populations appears to become more stabilized as immigration declines and the mortality and fertility rates become more uniform, anything can happen in territories like Nauru and Guam which contain a large transient population, especially when the source of attraction to these islands ceases to exist. The only component population that is likely to keep increasing in proportion is the mixed-blood population though they tend to opt for the ethnic identity of one or other parent.

4. FUTURE PROSPECTS

Although population growth, as well as the attitudes towards it and the problems it creates and aggravates, differs from territory to territory, there is still some scope for generalizations. Moreover, while dealing with the peculiarities of their own specific population problems, island territories can achieve a lot by co-operation and consultation through such established institutions as the South Pacific Commission. Undoubtedly, rapid population growth is one of the major problems, if not the central problem, of these

small, fragmented insular territories. Because population problems are integral aspects of the whole national problems they cannot be isolated or extricated from the social, political and economic considerations in any form of development planning.

At the end of the 1960s, nearly all the island territories were growing at the rate of over 2.5 per cent per annum. Without further immigration, the various island populations are expected to double their numbers within the next 20 to 30 years, unless emigration increases. In Tonga, one of the fastest growing populations in the area, it is estimated that the population of about 85,000 in 1971 will increase to over 200,000 by the year 2000¹⁴ if there was no migration and the mortality and fertility rate undergo little change. In Fiji the present population of about 500,000 will be more than doubled in 30 years time if the fertility does not continue to decline rapidly¹⁵. Such prognostications are really frightening in view of the fact^{that} the land areas do not expand correspondingly (see Table V in the Appendix for the increases in the population densities of selected territories).

In view of the present levels of technology, the physical, the economic and the potential limitations of these territories it is clear that most have almost reached the optimum populations which the islands can support without a fall in the present standards of living¹⁶. The aim is not to present a biased view towards pessimism or optimism but rather a realistic balanced view. There are still isolated pockets in these territories which can support slightly higher population densities than they do at present but these areas are only economically and agriculturally marginal or peripheral in terms of distance, to the centre of activities¹⁷. Moreover, the need for increasing agricultural and mineral exports in order to buy more imports is limited by the encroaching food needs of the rapidly increasing population¹⁸. There is also the prospect that minerals will be exhausted in the not too distant future. In some territories such as Tonga and the GEIC where emigration, as a palliative, is not likely to be significant the outlook is very gloomy.

Economic growth, the rate of technological change and the willingness of

the people to change their values and attitudes have failed to keep up with the rate of population growth. While an ever increasing number of young people will be ready to enter the labour force, often with better educational qualifications than those already in employment, the number of jobs available will not be able to accommodate all, not even half of them. The increase in the number of jobs has been mainly in the tertiary sector and industrialization seems destined to remain a pipe dream. Unemployment, underemployment and all forms of disguised unemployment are increasing while the increasingly educated young people, usually the wrong kind of education but with aspirations for the good things of life, demand higher wages which is hard to meet. Obviously disillusionment will be the outcome which will produce all sorts of frictions. The capital needed for economic development, a large proportion comes through foreign aid, will be siphoned into the non-productive sector of social developments. This is more burdensome when we consider how foreign and private investments are negligible or limited and how geography and tradition demand that all forms of development and initiation of new schemes must be borne on the shoulders of the governments.

A discussion of all the problems and possible solutions lies outside the scope of this study. However, it is necessary to say a little more about the economic prospects since it is almost the desire of every human being to better himself economically and from this will come social mobility and, it is hoped, greater political freedom. In the island territories the question is not one of "take-off" into economic growth but of maintaining per capita incomes. At its present rate of growth, the population of the whole area will have doubled in 25 years and in order to maintain the current per capita incomes exports must double in real terms during that period. There are glimmers of hope, however, that this will not be altogether insol^avable. Firstly, the small size of these island economies makes the aggregate need for aid small in relation to other developing parts of the world. Secondly, the Pacific is relatively free from political rivalry and there is room for co-operation in the identification of problems and the dissemination of advice. Thirdly, the

general primitiveness of the native agricultural techniques suggests that with more technical assistance, education and research, the quality and yields of both food and cash crops can be improved, provided that there is a willingness to change for the sake of more lasting rather than momentary benefits. Fourthly, there is some scope for increasing exports of fish, and in some cases forestry products, and extending the tourist trade. For their development there is a need for foreign investment.

The reduction of population growth will contribute towards making these hopes become a reality. There are three possibilities to be considered: (1) increasing the death rate; (2) more emigration and (3) the reduction of fertility. The first is most unlikely to be adopted anywhere. The avoidance of death is everywhere a social value, with only minor exceptions all societies readily accept and embrace practices that reduce mortality and lengthen the span of life. Almost no society imposes death on its members as a means of controlling population growth, except in the past when infanticide and even voluntary suicide were practised in addition to the indirect effects of war. Despite the present low levels of declining mortality the emphasis is still placed on overcoming the effects of the remaining high incidence of debilitating diseases. If mortality increases in future it will probably be the result of the passing of the present large younger birth cohorts into the older age-groups where curative medicine cannot prevent death.

The second possibility offers little hope in view of the restrictions in most metropolitan countries against immigration from most island territories. It is an illusion to entertain the idea that emigration will ever be a palliative in view of the existing political arrangements.

Only the third possibility offers hope, but to reduce the fertility it must be through the implementation of birth control since these island territories have no hope of emulating the process which led to the reduction of fertility in the developed countries. Reducing the rate of population growth by voluntarily reducing fertility will allow the rate of technological, improvements, psychological ^{change} and economic growth to catch up. The aim should be a reduction

of fertility to a level where population growth will be less than 1 per cent but it is not impossible in view of the smallness of the island population. Achieving this objective will help to change the progressive age pyramids into regressive ones similar to those of the developed nations. More positive action is needed in order to achieve this objective from all sections of the community. The authorities as well as individuals must shake themselves loose from the prevailing complacency, indifference and laissez faire attitudes. The people need to be shocked by presenting them with the facts, and population policies should be formulated and also implemented where they are lacking. Planning the population is an integral part of any form of developmental planning - but so far most island governments seem to have indulged in less practical, often misdirected, opportunist grandiose schemes.

Admittedly, the control of the population is only part of the solution to the problems and it must be accompanied by reforms and developments in the other sectors. In the Pacific islands demographic instability has always been a problem. During the 1930s arresting population decline was still a major problem, but by the late 1950s it had changed into stemming the tide of population growth. Such dramatic changes are the fate of small territories with small populations. Problems associated with population growth and movement have been met with little social distress, because of the traditional attitudes and values towards kinship, rank and land. This is still true today, but it is not certain that it will be so in the future.

NOTES AND REFERENCES

1. Lotka, A.J., 1925, "On the True Rate of Natural Increase", Journal of the American Statistical Association, Vol. 20, pp 305-339
2. McArthur, N., 1967, "Island Populations of the Pacific", ANU Press, Canberra, p.346.
3. McArthur, N., 1967, op. cit p.348.
4. Taeuber, I.B., 1965, "Demographic Instability in the Island Ecosystem" in 'Man's Place in the Island Ecosystem' ed. by Fosberg, F.A., Bishop Museum Press, Honolulu, p.233.
5. ibid.
6. The most recent census for the Solomon Islands was taken in 1970 but the results are not available yet.
7. McArthur, N., 1967, op. cit p.85.
8. Thomson, B.H., 1894 "Diversions of a Prime Minister" Blackwood, Edinburgh, p.371.
9. According to Bogue 6 of the Pacific island territories are among the nations which appear to have the youngest age composition in the world in the 1960s. There were 17 such nations with the proportion of the 0-14 years age-groups being above 46 per cent of their total population. At the top of his list is Western Samoa followed by American Samoa in the next rank. Other Pacific Islands among those listed were the Cook Islands, Niue, Tokelau and Fiji. An interesting feature of the list is the fact that nearly all the countries are small, a large number being insular, with ^{small} populations. See Bogue D.J., 1969. "Principles of Demography" John Wiley & Sons, Inc., New York, p.161.
10. Taeuber, I.B., 1965, op. cit p.238.
11. Much literature discusses the low average working hours per week of Pacific islanders outside wage employment and the labour organizations. Belshaw, C.S., 1964, "Under the Ivi Tree: Society and Economic Growth in Rural Fiji", Univ. of California, Berkeley; Fraser, R.M., 1968, "A Fiji-Indian Rural Community", Pacific Viewpoint Monograph No. 3, Wellington N.Z.; Lockwood, B., 1970, "Market Accessibility and Economic Development in Western Samoa", Pacific Viewpoint, Vol. II, No. 1 pp 47-65; Maude, A. 1965 "Population, Land and Livelihood in Tonga" Unpub. Ph.D. Thesis, ANU, Canberra; Brookfield H.C. and Hart, D. 1971, "Melanesian" Methuen and Co, London; WARD, R.G. 1965 'Land Use and Population in Fiji', H.M.S.O. London, Etc.
12. In ranking the nations with the highest sex-ratios, (205 and beyond males per 100 females), in the world, Bogue ranked Guam second to Kuwait where the sex-ratio was 177. Both are countries of high immigration rate. However, Nauru has a higher sex-ratio of about 190, than Kuwait and both the Solomon Islands and the New Hebrides have higher sex-ratios than Singapore which was ranked third with the sex-ratio of 112 males per 1000 females. In his list Bogue included 3 other territories - Fiji, Western Samoa and the U.S.Trust Territory - among the 15 countries with sex-ratios of 205 or above. Bogue, D.J., 1969, op. cit. p.168.
13. During the 1960s the proportion of Melanesians in the area of study was roughly ~~27.6~~ 27.6 per cent, Micronesians 11.5 per cent and Polynesians 34.1 per cent. The remainder were made up of non-indigenous populations. The Chamorros of Guam and the U.S.Trust Territory, though racially different, were included in the Micronesian population.
14. Maude, A., 1965, op. cit p.189. The Tonga Government Statistician estimated a population of about 118,000 for the Kingdom by the mid-1980s assuming limited birth control and slowly falling mortality with no migration.

15. McArthur, N., 1963 "Projected Populations and their Labour Potentials" in "Urbanization in the South Pacific", SPC Technical Paper 137, Noumea, Appendix 4.

16. Spillius considered the question of optimum village size in Tonga and concluded that many villages have grown beyond the expected optimum size for social cohesion and as a result some have coalesced. Spillius, J., 1959 "Report of a Social Survey of Villages in Tonga", cycl. WHO Office, Tonga.

17. Ward, R.G., 1965, op. cit and Maude, 1965, op. cit, considered the potential in Fiji and Tonga, respectively, to absorb further increases in the population.

18. A great proportion of the island imports are made up of foodstuffs which reflects the changes in dietary habits and taste. There is much literature on the changing patterns of island agriculture as a response to commercialism mentioning the shortening of the fallows, the increasing utilization of marginal agricultural lands, declining soil fertility and the increasing tendency to grow easier to maintain but less nutritious food crops which still give good yields in low fertility soils. Part of these changes are undoubtedly due to the growth of the population. See Maude, A, 1970, "Shifting Cultivation and Population Growth in Tonga", Jour. of Tropical Geog. Vol. 31 pp 57-64.

APPENDIX
STATISTICAL TABLES

Table I ESTIMATED AND EARLY CENSAL POPULATIONS OF SOME PACIFIC ISLANDS AT VARIOUS DATES

Date	Tahiti	Moorea	Samoa	Savaii	Raratonga	Fiji	Aneityum
1829	8,674						
1839			56,600	20,000			
1845					3,000		
1848	8,082	1,372					
1849			37,000	12,000			
1853			33,901	12,444			
1854-5					2,374		
1857	6,252	960					
1859							3,513
1860	7,252	1,114					
1863	7,642	1,242	35,097	12,670			
1871-2					1,936		
1874			34,265	12,530			1,488
1879			34,100			112,000 ⁺	
1881	9,380	1,428			2,000	114,748	
1887	9,282	1,557	33,450*	13,000			850
1891						105,800	
1892	11,097	1,407					710
1897	10,733	1,383					600
1899			33,800	10,000			517
1901						94,397	482
1902	11,177	1,558			2,060		476

- Sources: (1) McArthur, N., 1967 "Island Populations of the Pacific" Australian National University Press, Canberra, pp. 27-8, Tables 2 and 3; p. 101, Table 18, p. 183, Table 34; and p. 161 Table 53.
- (2) McArthur, N., and Yaxley, J.F., 1968, "Condominium of the New Hebrides: A Report on the First Census of the Population 1967". Gov't Printer, New South Wales. p. 4, Table A.

NOTE: All are estimates except for Fiji's population in 1891 and 1901 which are censuses but probably far from being complete

+ Include 3,000 Fijians working in plantations for Europeans.

* Manua's population was probably not included. It is hard to distinguish between estimates that included non-natives and the estimates only for the indigenous people, and on many occasions Europeans and others were included. Notwithstanding the lack of distinction between indigenes and aliens, probably it can be reasonably assumed that the number of aliens were in most or not all cases not more than 5 per cent of the total population. Estimates for Fiji are only for the Fijians and all other components excluded.

Table II TYPES OF EPIDEMICS AND ESTIMATED DATE OF OCCURRENCE, WARS AND OTHER CATAclysms IN SOME PACIFIC ISLANDS UP TO 1918

Island or Island Group	Date	Estimated no. died	Epidemic Type	Wars	Other Cataclysm	
Fiji	1791-2	30,000	'wasting sickness'	wars		
	1802-3	20,000	dysentery	wars		
	1819	n.s.	'Vudi coro'	wars		
	1839	n.k.	influenza	wars		
	1875	40,000	measles			
	1883	n.s.	influenza			
	1884	3,000	whooping cough			
	1885-6	1,000	dengue fever			
			dysentery			
	1891	1,500	influenza			
			whooping cough			
	1903	1,770-1,800	measles			
			measles			
	1911	nk	measles			
	Samoa	1918	8,000	influenza		
		1830	n.s.	influenza		
		1837	n.s.	influenza		
1839		me.	influenza			
1846-7		me.	influenza			
1848					hurricane	
1848-53				wars		
1849			whooping cough			
1844-5		n.k.	dysentery			
1850					storm & hurricanes	
1851		n.s.	mumps			
1869-70				wars		
1872				war		
1883					hurricane	
1888-9				war		
1889					hurricane	
1891		n.s.	influenza			
1893-4	n.k.	measles	war	famine		
1895	n.k.	influenza				
1896	n.k.	diarrhoea, dysentery		drought and famine		
1898			war			
Rarotonga	1918	7,000	influenza			
	1816-23	730		war		
	1829				heavy rain and famine	
	1829-30	1,600	dysentery, 'fever and ague'			
	1831				hurricane and famine	
	1833				violent storm	
	1837-8	n.k.	influenza			
	1841				3 hurricanes	
	1843	433	dysentery			
	1847		influenza			
	1846				hurricane	
	1848	n.k.	influenza and whooping cough			

Island or Island Group	Date	Estimated no. died	Epidemic Type	Wars	Other Cataclysms
Tahiti and Moorea	1850	n.k.	mumps		
	1851	n.k.	fever, ague and influenza		
	1854-5	n.k.	measles		
	1866-7				severe storms and hurricanes
	1918	n.k.	influenza		
	1772-4	n.k.	catarrhal fevers and influenza		
	1777		outbreak of venereal disease		
	1791-2		scorophula	wars (to 1815)	
	1826	n.k.	dysentery, influenza		
	1841-2	200	smallpox		
	1843	n.k.	dysentery		hurricane
	1843-7			war against French	
	Tanna	1847-8	n.k.	scarlet fever	
1852		n.k.	coast fever		
1862					hurricane
1863		n.k.	Type not mentioned		
1867		n.k.	diphtheria and whooping cough		
1843		n.k.	dysentery and influenza	wars	
1845-6		n.k.	(Type not mentioned)	wars	
1850		n.k.	measles		
1860		n.k.	'Inflammatory of lungs and sore throats'		
1861		n.k.		wars	hurricanes
1862				wars	hurricane
Futuna	1870	n.k.	Type not mentioned		
	1842	n.k.	dysentery		
	1867	n.k.	influenza		
	1869	n.k.	influenza		
	1870	n.k.	(dysentery and (sore eyes		
Erromango	1871	n.k.			
	1842	n.k.	dysentery		
	1861	n.k.	measles and dysentery		
	1867	n.k.	diphtheria		
	1872	n.k.	dysentery		
	1873-4	n.k.	influenza		
	1882	n.k.	influenza		

Source: Based on information from various sources, especially McArthur, N., 1967 op. cit.

n.k. = not known:

n.s. = not serious:

m.e. = mild epidemic.

Table III POPULATIONS OF PACIFIC ISLAND TERRITORIES BY RATE AT VARIOUS DATES

Area	Date	Whites	Asiatics	Half-Castes	Natives	Others	Total	
Western Samoa	1921	835	-	1,191	32,601	-	34,627	
	1943	280	-	3,027	60,957	-	64,264	
	1951*	450	-	4,142	80,153	-	84,745	
	1961*	668	108	11,813	101,288	134	113,877	
American Samoa	1930*	227	11	877	8,926	14	10,055	
	Tonga	1926	611	-	225	26,138	367	27,331
		1931*	482	-	265	27,700	336	28,839
		1939*	400	-	441	32,862	427	34,130
		1956*	277	-	604	55,156	801	56,838
1966*		402	-	512	76,121	394	77,429	
Niue Island	1939	20	-	-	4,281	-	4,301	
	1945	23	-	-	4,230	-	4,253	
	1956*	57	-	-	4,650	-	4,707	
	1966*	134	-	-	5,065	-	5,199	
French Polynesia	1931	5,882	4,423	-	28,324	1,084	39,713	
	1962*	8,000	10,000	-	76,000	250	94,250	
Nauru	1930	147	1,105	-	1,426	14	2,692	
	1939	171	1,512	-	1,733	44	3,460	
	1941	68	1,429	-	1,827	193	2,672	
	1948	247	1,370	-	1,448	97	3,162	
	1956*	286	696	-	1,976	935	3,893	
	1961*	324	712	-	2,409	1,094	4,264	
	1966*	428	1,167	-	2,921	1,532	6,048	
	1967	476	908	-	3,011	1,658	6,053	
	Gilbert & Ellice Islands	1931*	249	728	231	32,164	-	33,372
1935		280	536	-	32,993	-	33,809	
1963*		346	105	864	47,463	85	48,780	
Guam	1930	1,205	865	-	16,463	37	18,509	
	1960	-	-	-	34,762	-	67,044	
	1962	2,343	1,825	-	37,705	723	-	
Carolines, Marianas & Marshalls	1930	71	19,860	-	49,695	-	69,626	
	1935	77	51,621	-	50,540	-	102,238	
	1948	-	300	-	-	-	50,844	
	1966	-	-	-	-	-	92,373	
Fiji Islands	1921*	3,878	61,630	2,781	86,710	2,267	157,266	
	1931*	5,058	78,163	3,446	95,821	3,085	135,373	
	1936*	4,028	86,821	4,572	99,267	3,689	198,377	
	1946*	4,594	123,288	6,129	121,406	4,231	259,638	
	1956*	6,402	173,558	7,810	152,556	5,411	345,737	
	1966*	6,590	246,109	9,697	207,973	6,368	476,737	
Solomon Islands	1931*	478	172	-	93,415	1	94,066	
	1959*	781	366	139	122,245	545	124,076	
	1966*	1,280	610	-	139,640	2,210	142,740	
New Hebrides	1931	1,083	3,451	-	-	-	-	
	1935	953	949	-	-	-	-	
	1948	912	1,289	-	-	-	-	
	1960	1,987	2,153	-	-	-	-	
	1967*	1,773	649	1,151	70,873	2,172	76,585	
New Caledonia	1901	23,499	-	-	27,768	3,148	54,718	
	1921	16,794	-	-	27,100	3,611	47,505	
	1931	15,848	12,631	-	28,502	184	57,165	
	1936	16,515	7,930	-	28,800	-	53,245	
	1942	17,000	-	-	30,000	8,000	55,000	
	1953	21,788	-	-	42,744	7,757	72,289	
	1963*	33,397	-	-	41,990	11,932	87,319	

Area	Date	Whites	Asiatics	Half-Castes	Natives	Others	Total
Norfolk Island	1921	713	-	4	-	-	717
	1933	1,230	-	1	-	-	1,231
	1939	983	-	-	-	-	983
	1944	733	-	-	-	-	733
	1950	1,140	-	-	-	-	1,140
	1954	1,163	-	-	-	-	1,163
	1957	880	-	-	-	-	880
	1961	844	-	-	-	-	844
	1966	1,152	-	-	-	-	1,152

Sources: Kuezynski, R.R. 'Colonial Population', 1937, Oxford Univ. Press, London, p. 121. Table IV, and Tudor, Judy (ed.) 'Pacific Islands Yearbook 1967', Pacific Publications, Sydney, 1968.

Note: * Indicates figures from something close to a complete enumeration in censuses. The remainder are either estimates or partial enumeration.

Table IV SEX- AND AGE-SPECIFIC DEATH RATES FOR VARIOUS PACIFIC TERRITORIES
(~~3~~) FOR VARIOUS PERIODS

(a) TONGA 1938-40 AND 1955-57

Age group	1938-40*		1955-57	
	Males	Females	Males	Females
0+	65.7	47.2	45.8	45.6
1-4	7.2	7.3	8.4	8.4
5-9	2.9	2.8	1.1	1.2
10-14	2.7	3.1	1.1	1.0
15-19	9.4	5.2	2.5	1.3
20-24	9.0	5.1	2.3	3.0
25-29	6.6	8.2	3.0	2.2
30-34	4.4	6.9	2.4	3.9
35-39	5.7	9.0	2.7	3.3
40-44	6.3	7.1	7.7	7.4
45-49	11.8	18.1	9.1	5.7
50-54	15.9	14.0	24.6	8.7
55-59	27.8	36.8	17.7	5.5
60-64	38.6	25.3	41.9	22.8
65-69	54.7	53.2	40.7	16.1
70-74	55.8	92.0	54.6	48.9
75 and over	163.1	219.2	136.8	86.2

(b) WESTERN SAMOA 1950-2, 1955-7 AND 1961

Age group	1950-2		1955-7		1961	
	Males	Females	Males	Females	Males	Females
0+	57.6	44.2	46.0	42.1	14.8	13.1
1-4	11.1	8.8	9.1	7.9	3.7	1.6
5-9	1.9	1.7	1.9	1.5	0.5	0.3
10-14	1.5	1.0	1.4	0.6	0.6	0.4
15-19	2.5	1.7	1.0	1.4	0.4	0.7
20-24	2.6	1.5	2.6	1.3	0.7	1.8
25-29	1.8	2.4	1.8	2.2	0.6	0.8
30-34	3.5	4.8	3.3	3.8	0.9	1.5
35-39	4.2	6.5	3.9	3.6	3.2	3.9
40-44	7.6	5.9	5.2	5.4	4.1	4.7
45-49	8.5	8.1	7.6	8.2	6.5	1.8
50-54	13.5	11.9	12.6	8.7	6.0	5.1
55-59	19.8	6.8	17.6	7.0	14.0	7.8
60-64	28.6	18.0	21.6	19.7	10.9	7.7
65-69	26.3	23.7	35.0	20.2	25.8	24.4
70-74	52.4	38.3	55.7	31.8	27.7	29.3
75 and over	82.1	82.4	81.3	53.0	57.4	35.7

(c) AMERICAN SAMOA 1939-41, 1949-51, 1955-7 and 1960

Age Group	Males				Females			
	1939-41*	1949-51*	1955-7	1960	1939-41*	1949-51*	1955-7	1960
0+	128.0	73.4	63.4	19.1	125.5	62.3	61.4	32.9
1-4	17.2	8.5	8.2	4.7	17.8	9.6	6.4	1.5
5-9	3.9	1.5	1.0	0.6	1.4	1.5	1.7	0.6
10-14	3.1	1.4	1.6	0.6	1.2	1.2	2.0	0.0
15-19	5.1	1.6	3.1	1.7	5.7	4.2	1.6	0.0
20-29	6.1	3.9	3.6	2.8	8.4	4.2	2.7	0.8
30-39	7.4	1.2	5.1	1.9	6.0	4.8	3.1	2.9
40-49	17.1	6.3	5.1	17.7	11.9	7.9	3.6	2.8
50-59	31.4	18.1	16.5	12.3	19.2	10.5	10.9	9.4
60-69	51.3	41.3	26.6	31.7	55.2	29.3	20.5	16.4
70+	108.5	90.4	86.0	140.6	127.0	102.2	96.7	59.7

(d) COOK ISLANDS 1944-6, 1950-2, and 1955-7

Age Group	Males			Females		
	1944-6	1950-2	1955-7	1944-6	1950-2	1955-7
0+	138.1	118.6	123.7	100.4	112.0	114.4
1-4	N.A.	16.6	10.6	N.A.	19.3	17.3
5-9	2.8	3.8	4.3	4.4	5.9	2.7
10-14	3.5	3.4	2.9	4.8	3.9	3.3
15-19	12.9	8.9	2.6	13.3	8.6	6.0
20-24	8.7	10.3	6.2	13.4	12.3	6.3
25-29	8.7	7.4	4.5	12.4	15.7	9.0
30-34	13.7	5.5	12.4	10.2	11.5	7.4
35-39	10.7	8.5	6.8	12.8	8.9	9.4
40-44	33.3	8.0	10.3	16.7	10.5	8.1
45-49	26.6	22.1	11.0	24.4	12.5	15.7
50-54	30.2	39.8	17.0	30.2	36.2	37.7
55-59	34.0	15.5	23.4	25.8	29.9	20.9
60-64	51.3	61.6	74.6	70.5	34.7	45.5
65-69	73.7	56.1	50.9	37.5	36.6	37.4
70-74		149.1	95.2		117.9	91.3
75+	162.9	132.1	134.3	221.1	185.2	91.8
All ages	20.8	18.1	15.8	20.1	19.0	16.6

(e) FRENCH POLYNESIA 1950-2 AND 1955-7

Age Group	Males		Females	
	1950-2*	1955-7	1950-2*	1955-7
0+	156.1	106.3	120.2	82.5
1-4	13.9	8.3	12.7	7.0
5-9	3.1	1.1	3.8	1.0
10-14	4.6	1.2	4.8	1.2
15-19	7.3	2.2	11.2	2.8
20-24	8.1	2.6	9.0	3.6
25-29	6.7	3.7	7.4	3.9
30-34	12.5	4.2	11.0	4.3
35-39	12.2	6.1	13.5	6.6
40-44	15.5	8.1	15.8	11.1
45-49	19.0	12.3	19.0	9.2
50-54	29.0	16.6	32.6	10.1
55-59	45.2	29.8	27.1	20.6

(e) FRENCH POLYNESIA 1950-2 AND 1955-7

Age Group	Males		Females	
	1950-2 [⊕]	1955-7	1950-2 [⊕]	1955-7
60-64	59.2	29.1	45.2	28.4
65-69	103.8	70.3	105.3	36.9
70+		79.8		86.9

(f) GUAM^a, 1950 AND 1960

Age Group	Males		Females	
	1950	1960	1950	1960
0+	40.1	25.6	27.5	35.1
1-4 [⊕]	1.0	1.6	1.4	1.2
5-9	0.4	0.4	0.5	0.4
10-14	0.5	0.5	2.6	0.3
15-19	0.5	2.3	1.9	0.5
20-29	1.0	1.5	2.7	1.2
30-39	2.9	2.4	4.8	0.9
40-49	4.9	5.5	6.8	4.3
50-59	9.8	14.4	8.1	7.2
60-69	13.5	32.5	14.2	23.8
70+	45.1	107.4	31.2	69.4

(g) UNITED STATES TRUST TERRITORY OF THE PACIFIC ISLANDS^b, 1954, 1965

Age Group	Males		Females	
	1954	1965	1954	1965
0+	40.7	50.4	18.8	45.5
1-4	4.3	4.1	3.9	4.6
5-9	2.2	0.8	0.9	0.2
10-14	2.2	1.8	0.8	1.0
15-19	1.1	1.8	1.2	1.9
20-29	1.1	2.4	1.7	1.5
30-39	2.6	4.2	2.1	3.1
40-49	3.7	5.0	4.5	3.4
50-59	5.9	8.2	5.1	6.4
60-69	12.9	16.2	11.6	11.4
70+	40.7	52.1	33.7	61.8

Sources: 1. McArthur, N., 1968, op. cit. pp 93, 136, 154, 215, 337

2. U.N. "Demographic Yearbooks, 1966, 1965 and 1954"

a Includes U.S. Military personnel, dependents and contract employees.

b Does not include U.S. Military personnel, dependents or contract employees.

* Excludes Niuaro'on for whom register was not available.

+ Infant mortality.

⊕ Exclusive of Europeans.

⊞ Influenced by 1951 measles epidemic.

Table V AVERAGE GROWTH RATES AND NATURAL INCREASE (%) DURING INTERCENSAL YEARS AND THE POPULATION DENSITIES FOR SELECTED ISLAND TERRITORIES

Territory	Year of Census	Population Numbers	Average Annual Growth Rate (%)	Average Ann. Nat.Inc.(%)	Population Density/Sq. mile	
American Samoa	1900	5,679	-	-	74.7	
	1912	7,251	2.06	-	95.4	
	1920	8,056	1.34	-	106.0	
	1930	10,055	2.48	-	132.3	
	1940	12,908	2.53	-	169.8	
	1950	18,937	4.67	3.37	249.2	
	1956	20,154	1.07	3.27	265.1	
	1960	20,051	-0.10	3.14	263.8	
	1969 ^E	27,000	3.84	3.32	381.6	
Solomon Islands	1931	91,409	-	-	7.9	
	1959	124,076	1.27	-	10.8	
	1969 ^E	150,000	2.09	2.00	13.1	
Cook Islands	1902	8,213	-	-	94.3	
	1906	8,518	0.92	-	95.2	
	1911	8,655	0.32	-	96.3	
	1916	8,805	0.35	-	96.9	
	1921	9,459	1.44	-	104.1	
	1926	10,082	1.28	-	111.4	
	1936	12,246	1.98	1.69	135.7	
	1945	14,088	1.49	2.14	154.2	
	1951	15,079	1.14	2.12	169.7	
	1956	16,680	2.12	2.33	189.5	
	1961	18,378	2.0	3.30	204.5	
	1966	19,247	0.94	3.71	218.8	
	1969 ^E	20,000	1.34	3.32	227.2	
Fiji	1879	108,924	-	-	15.4	
	1881	127,486	8.70	-	18.8	
	1891	121,124	-0.49	-	17.2	
	1901	120,124	-0.09	-	17.0	
	1911	139,541	1.62	-	19.8	
	1921	157,266	1.27	-	22.3	
	1936	198,378	1.74	1.72	28.1	
	1946	259,638	2.61	2.34	36.8	
	1956	345,737	3.32	2.88	49.0	
	1966	476,727	3.79	3.31	67.6	
	1969 ^E	500,000	3.00	2.86	70.9	
	French Polynesia	1926	35,862	-	-	23.2
		1931	40,392	2.41	-	26.2
1936		43,962	1.77	-	28.5	
1946		55,734	2.38	-	36.1	
1951		62,678	2.25	-	40.6	
1956		73,724	3.55	3.00	47.7	
1962		84,500	2.40	3.31	54.7	
1969 ^E		103,000	3.13	3.09	66.7	
Gilbert & Ellice Is.*	1911	31,121	-	-	249.0	
	1921	29,897	-0.40	-	239.2	
	1931	33,745	1.22	-	89.7	
	1947	35,919	0.40	1.37	95.1	
	1963	48,780	1.90	1.82	129.7	
	1968	53,517	1.70	1.84	142.3	

Territory	Year of Census	Population Numbers	Ave. Annual Growth Rate(%)	Ave. Ann. National Increase (%)	Population Density/Square Mile
Guam	1901	9,676	-	-	44.2
	1910	11,806	2.27	-	53.9
	1920	13,584	1.46	-	62.0
	1930	18,509	3.06	-	84.5
	1940	22,290	1.88	-	101.8
	1950	59,498	10.82	-	171.7
	1960	67,044	1.23	2.65	306.1
	1969 ^E	102,000	5.79	2.86	467.7
Nauru	1921	2,066	-	-	243.1
	1933	2,641	2.04	-	310.7
	1941	3,517	2.77	-	413.8
	1947 ^E	2,855	-3.15	-	335.9
	1948	3,162	10.75	1.86	372.0
	1949 ^E	3,269	3.38	1.82	384.6
	1954	3,473	1.22	2.26	408.6
	1961	4,613	4.10	2.58	534.0
	1966 ^E	6,057	6.26	2.68	711.5
	1969 ^E	7,000	5.19	3.49	823.5
New Caledonia	1887 ^E	60,237	-	-	8.5
	1901 ^E	54,718	-0.66	-	7.7
	1911 ^E	50,608	-0.75	-	7.1
	1921 ^E	47,505	-0.61	-	6.7
	1931 ^E	57,165	2.03	-	8.1
	1942 ^E	55,000	-0.34	-	7.8
	1953 ^E	72,289	2.85	-	10.2
	1958 ^E	70,749	-0.42	2.39	10.0
	1963 ^E	86,519	3.19	2.39	12.1
	1969 ^E	98,000	2.22	2.77	13.3
Niue	1900	4,015	-	-	40.1
	1902	4,051	0.51	-	40.5
	1906	3,801	-1.58	-	38.0
	1911	3,943	0.67	-	39.4
	1916	3,876	-0.35	-	38.8
	1921	3,761	-0.67	-	37.6
	1926	3,795	0.18	0.57	37.9
	1928	3,747	-0.47	0.73	37.5
	1936	4,082	1.08	1.21	40.8
	1945	4,230	0.41	1.18	42.3
	1951	4,553	1.23	1.31	45.5
	1956	4,707	0.68	2.81	47.7
	1961	4,864	0.72	3.55	48.6
	1966	5,194	1.36	3.69	51.9
Trust Territory of the Pacific Islands	1920	56,200	-	-	79.6
	1925	56,294	0.03	-	79.7
	1930	69,626	4.34	-	98.6
	1935	102,537	8.05	1.49	145.2
	1940	131,258	5.06	1.96	185.9
	1948 ^E	50,844	-7.66	-	72.0
	1958 ^E	70,724	2.81	2.48	100.2
	1967 ^E	91,448	3.26	2.90	139.5

Territory	Year of Census	Population Numbers	Ave. Annual Growth Rate (%)	Ave. Annual National ^a Inc. (%)	Population Density/ Square Mile
Tokelau	1921	989	-	-	247.2
	1926	1,033	0.91	-	258.2
	1936	1,170	1.17	-	292.5
	1945	1,388	1.94	-	347.0
	1951	1,580	2.18	-	395.0
	1956	1,719	1.76	-	429.7
	1961	1,870	1.76	-	467.5
	1966	1,900	0.32	3.69	475.0
Tonga	1891	19,186	-	-	71.3
	1901	20,700	0.78	-	76.9
	1911	23,017	1.07	-	85.6
	1921	24,937	0.80	-	92.7
	1931	28,837	1.46	-	107.2
	1939	34,130	2.13	2.36	126.9
	1956	56,838	3.00	2.64	211.3
	1966	77,429	3.61	2.93	289.8
	1969	83,000	2.39	3.02	308.6
	Western Samoa	1900	32,815	-	-
1902		32,612	-0.31	-	28.5
1906		37,320	2.84	-	32.7
1911		38,084	0.41	-	33.4
1921		36,726	-0.39	-	31.9
1926		40,229	1.96	2.04	35.3
1936		55,946	3.09	2.26	49.1
1945		68,325	2.25	2.35	59.8
1951		84,909	3.72	2.89	74.2
1956		97,327	2.10	3.10	85.1
1961		114,427	3.30	3.30	100.1
1966		131,377	2.96	2.87	117.5
1969 ^E		141,000	2.54	2.36	123.3

Source: Demographic Yearbooks 1948-69

Note: E Estimates

* The Phoenix Islands and Christmas Island did not become parts of the GEIC until 1926

BIBLIOGRAPHY

A. UNPUBLISHED MATERIAL

- Allen, B.J. 1969 "The development of commercial agriculture on Mangaia : Social and Economic Change in a Polynesian Community", M.A.Thesis, Massey Univ., Palmerston North.
- Allen, M.R. 1964 "The Nduindui : A study of the social structure of a New Hebridean community", Ph.D.Thesis, A.N.U., Canberra.
- Barrington, J.H. 1968 "Education and National development in Western Samoa", Ph.D. Thesis, Victoria University, Wellington.
- Bellam, M.E.P. 1964 "The Melanesian in Town", M.A.Thesis, Victoria Univ., Wellington.
- Chignell, P.L. 1969 "Some developments (mainly in education) that have taken place in Tonga during the period Aug. 1967 to Aug. 1969", Nukualofa, Tonga.
- Cook, J.G. 1969 "An assessment of the effects of a Tourist industry on the economy of the Cook Islands", M.A.Thesis, Univ. of Canterbury, Christchurch.
- Couper, A.D. 1969 "Island Trade", Ph.D. Thesis, A.N.U., Canberra.
- Douglas, E.M.K. 1965 "Migration of Cook Islanders to New Zealand", M.A.Thesis, Victoria Univ., Wellington.
- Eyde, D.B. 1954 "A preliminary study of a group of Samoan migrants in Hawaii", Univ. of Hawaii, Honolulu,
- Fairbairn, I.J. 1963 "The national income of Western Samoa, 1947-58", Ph.D. Thesis, A.N.U., Canberra.
- Fergusson, D.J.B. 1968 "Western Samoa - Tradition versus Modernity", B.A.Hons.Dissertation, Victoria Univ., Wellington.
- Forster, J. 1954 "The assimilation of Samoan migrants in the Naval Housing Area, Pearl Harbour", M.A.Thesis, Univ. of Hawaii, Honolulu.
- Fraser, R.M. 1961 "Land and population in Ra Province, Fiji", Ph.D. Thesis, A.N.U., Canberra.
- Geddes, W.R. 1948 "Cultural change in Fiji", Ph.D.Thesis, Univ. of London, London.
- Gillion, K.L.O. 1950 "The Indian Political Problem in Fiji", M.A.Thesis, Univ. of New Zealand, Wellington.
1958 "A history of Indian immigration and settlement in Fiji", Ph.D. Thesis, A.N.U., Canberra.
- Gilson, J.C. 1952 "Administration of the Cook Islands", Ph.D.Thesis, Univ. of London, London.
- Gunson, W.N. 1960 "Evangelical missionaries in the South Seas 1797-1860", Ph.D. Thesis, A.N.U., Canberra.

- Kitto, G.T. 1969 "Polynesians in New Zealand", M.A.Thesis, Auckland. Univ., Auckland.
- Kolff, J. 1965 "The National Income of the Cook Islands", M.A.Thesis, Victoria Univ., Wellington.
- Lasaga, I.Q. 1968 "Melanesians' choice : a geographical study of the Tasimboko participation in the cash economy, Guadalcanal, British Solomon Islands"; Ph.D. Thesis, A.N.U., Canberra.
- Latukeyu, S. 1967 "Church and State in Tonga: The influence of the Wesleyan Methodist missionaries on the political development of Tonga, 1826-1875", Ph.D. Thesis, A.N.U., Canberra.
- Maude, A. 1965 "Population, Land and Livelihood in Tonga", Ph.D. Thesis, A.N.U., Canberra.
- McNally, T.J. 1954 "Land policy in Fiji since cession, 1874-1954", M.A.Thesis, Univ. of New Zealand, Auckland.
- McTaggart, W.D. 1963 "Noumea : A study in Social Geography", Ph.D.Thesis, A.N.U., Canberra.
- Pirie, P.N.D. 1964 "Geography of population in Western Samoa", Ph.D. Thesis, A.N.U., Canberra.
- Rutherford, N. 1966 "Shirley Baker and the Kingdom of Tonga", Ph.D.Thesis, A.N.U., Canberra.
- Sadaraka, S.M. 1961 "Factors affecting the development of commercial agriculture in the Cook Islands", M.A.Thesis, Victoria Univ., Wellington.
- Sahib, M.H. 1964 "A cross-section study of the Indian community in Fiji", B.A.Hons.Dissertation, Victoria Univ., Wellington.
- Slater, M. 1967 "The Pacific Economy", Dept. of Economics, Research School of Pacific Studies, A.N.U. Canberra, (Typed).
- Spillius, E. 1960 "Report on a brief study of mother-child relationship in Tonga", WHO. Nukualofa, Tonga.
- Spillius, J. 1959 "Interim Report on Anthropological aspects of the work of the Environmental Sanitation Project in Tonga", WHO, Nukualofa, Tonga.
- 1959 "Report on the Social Survey of villages of Tongatapu", WHO, Nukualofa, Tonga.
- 1960 "Assignment Report on the Environmental Sanitation Project in Tonga", WHO, Nukualofa, Tonga.
- Surujpal, R. 1969 "Fiji's economically active population", B.A.Hons. Dissertation, Victoria Univ., Wellington.
- Walsh, A.C. 1964 "Nukualofa Tonga : A preliminary study of urbanization and in-migration", M.A.Thesis, Victoria Univ., Wellington.
- 1969 "Patterns and problems of urbanization and population movement in Tonga", (Typed). Wellington.

- Whitelaw, J.S. 1966 "People, Land and Government in Suva, Fiji",
Ph.D. Thesis, A.N.U., Canberra.
- Wong, J.A. 1963 "The distribution and the role of the Chinese in
Fiji", M.A.Thesis, Univ. of Sydney, Sydney.

B. OFFICIAL PUBLISHED MATERIAL

- Burns, A., T.Y.Watson and T. Peacock. 1960 "Report of the Commission of Enquiry into the
Natural Resources and Population Trends of Fiji,
1959", Govt. Printer, Suva, Council Paper No.1.
- Commonwealth of Australia "Report to the General Assembly of the U.N. on the
Administration of the Territory of Nauru", Govt.
Printers, Canberra, Various years.
- Cool, J.C. 1957 "Census of American Samoa Sept.25, 1956", Govt. of
American Samoa, Pago Pago.
- Fiefia, S.N. 1968 "Kingdom of Tonga : Report on the Results of the
Census 1966", Govt.Printer, Nukualofa.
- Fiji "Annual Reports", Govt. Printer, Suva, Various years.
1970 "Annual Statistical Abstract - Fiji 1969", Bureau of
Statistics, Suva.
1896 "Report of the Commission appointed to enquire into
the decrease of the native population", Govt.
Printing Office, Suva.
1931 "The Colony of Fiji, 1874-1931", (ed. by A.A.Wright),
Govt.Printer, Suva.
- Great Britain,
Colonial Office. "Anglo-French Condominium of the New Hebrides:
Biennial and Annual Reports 1948-68", H.M.S.O., London.
"British Solomon Islands : Biennial and Annual
Reports, 1948-68", H.M.S.O., London.
"Fiji: Annual Reports, 1948-69", H.M.S.O., London.
"Gilbert and Ellice Islands Colony : Biennial Reports,
1948-68", H.M.S.O., London.
"Kingdom of Tonga : Biennial and Annual Reports,
1948-68", H.M.S.O., London.
- 1951 "Introducing the British Pacific Islands", H.M.S.O.,
London.
- 1953 "An economic survey of the Colonial Territories,
1951", Vol.6, the Mediterranean and Pacific
Territories, H.M.S.O., London.
"The Colonial Office List", H.M.S.O., London,
Various years.
"The Colonial Empire", H.M.S.O., London, various years
- Great Britain,
Commonwealth Office. "The Commonwealth Office Year Book", H.M.S.O.,
London, Various years.
"The Commonwealth Relations Office List", H.M.S.O.,
London, Various years.

- Great Britain,
Foreign Office. 1920 "Malpelo, Cocos and Easter Islands", H.M.S.O., London.
1920 "New Hebrides", H.M.S.O., London.
1920 "British possessions in Oceania", H.M.S.O., London.
1920 "Former German possessions in Oceania", H.M.S.O., London.
1920 "French possessions in Oceania", H.M.S.O., London.
- Jupp, K.M. 1958 "Report on the population census: Western Samoa, 1956",
Govt. Printer, Wellington.
- McArthur, N. 1958 "Fiji census: Report on the census of the population
1956", Govt. Printer, Suva.
1961 "Report of the population census of 1959", Govt.
Printer, Honiara.
- McArthur, N. and 1964 "A report on the results of the census of the
J.B. McCaig. population, 1963: Gilbert and Ellice Islands Colony".
Govt. Press, Suva.
- McArthur, N. and 1968 "Condominium of the New Hebrides : A report on the
J.F. Yaxley first census of the population, 1967", Govt. Printer,
Melbourne.
- Pincott, W.J.R. 1967 "Human factors affecting national development:
Suggested guidelines for some aspects of economic
development in Tonga", Govt. Printer, Nukualofa.
- Spate, O.H.K. 1959 "The Fijian people: economic problems and prospects;
a report to the Fijian Government", Govt. Printer,
Suva, Council Paper No.13.
- Tonga "Departmental Reports", Govt. Printer, Nukualofa.
"Annual Reports of the Premier", Govt. Printer,
Nukualofa.
"Tonga Government Gazette", Govt. Printer, Nukualofa,
various dates.
- Tupouniua, M.U. 1958 "Kingdom of Tonga: Reports on the results of the
census 1956", Govt. Printer, Nukualofa.
- United Nations 1948 "The population of Western Samoa", Department of
Economic and Social Affairs, Population Division,
New York. Population Studies No.1.
1953 "The determinants and consequences of population
trends", Dept. of Economic and Social Affairs.
Population Division, New York. Population Studies
No.17.
1955 "Age and sex patterns of mortality", Dept. of
Economic and Social Affairs, Population Division,
New York. Population Studies No.22.
1967 "Proceedings of the World Population Conference,
Belgrade, 30 Aug. to 10 Sept. 1965", Dept. of
Economic and Social Affairs, Population Division,
New York.
Demographic Year Books, 1948-69", Dept. of Economic
and Social Affairs, Population Division, New York.

- United States " "Annual Reports of the Governor of American Samoa to the Secretary of the Interior", Govt.Printing Office, Washington.
"Annual Reports to the General Assembly of the U.N. on the Administration of the Trust Territory of the Pacific Islands", Govt.Printing Office, Washington.
- Zwart,F.H.A.G. 1968 "Fiji: Report on the census of the population, 1966", Govt.Printer, Suva. Council Paper No.9.

C. OTHER PUBLISHED WORKS

- Ablon, J. 1970 "The Samoan funeral in urban America", Ethnology, Vol.9, No.3, pp.209-27.
- Alkire, W.H. 1960 "Cultural adaptation in the Caroline Islands", Jour. of the Polynesian Soc., Vol.69, No.2, pp.123-50.
- Allison, A.(ed.) 1970 "Population Control", Penguin Books, London.
- Anderson, A.G. 1968 "Indian small farming in Fiji: The significance of off-farm employment", Pacif.Viewpoint, Vol.9, No.1, pp.12-32.
- Andrews, C.F. 1937 "India and the Pacific", Allen and Unwin, London.
- Aoyagi, M. 1966 "Kingship organization and behaviour in a contemporary Tongan village", Jour. of the Polynesian Soc., Vol.75, No.2, pp.141-76.
- Ashley-Montagu,M.F.1937 "Infertility of the unmarried in primitive societies", Oceania, Vol.8, pp.16-21.
- Baker, J.R. 1928 "Depopulation in Espiritu Santo, New Hebrides", Jour. of the Royal Anthropological Institute, Vol.58, pp.279-304.
- Barrau, J. 1961 "Subsistence agriculture in Polynesia and Micronesia", Bulletin No.223, Bishop Mus., Honolulu.
1958 "Subsistence agriculture in Melaneasia", Bulletin No.219, Bishop Mus., Honolulu.
1963 "Plants and migrations of Pacific peoples", Bishop Mus., Honolulu.
- Bascom, W.R. 1949 "Subsistence farming on Ponape", New Zealand Geographer, Vol.5, pp.115-29.
1965 "Ponape : A Pacific economy in Transition", Anthropological Records, Univ. of California, Vol.22.
- Bassett, I.G. 1965 "Population and land use on Aitutaki, Cook Islands", Massey Univ., Palmerston North.
- Bassett, I.G. (ed.)1969 "Peasantry of the Pacific", Massey Univ. Palmerston N.
- Bassett, I.C. and 1968 "Land use and agrarian change on Aitutaki, Cook
K.W. Thomson Islands", South Pacific Bulletin, Vol.18, No.1, pp.25-30.
- Beaglehole, E. 1957 "Social change in the South Pacific, Rarotonga and Aitutaki", Allen and Unwin, London.

- Beaglehole, E. & P. 1941 "Pangai, a village in Tonga", Memoir, Vol.18, Polynesian Soc., Wellington.
- Beckett, J. 1964 "Social change in Pukapuka", Jour. of the Polynesian Soc., Vol.73, No.4, pp.411-30.
- Beighton, P. 1966 "Easter Island People", Geographical Jour., Vol.132, No.3, pp.347-60. (Also in The Geographical Mag., 39,4: 253-62).
- Bellam, M.E.P. 1970 "The colonial city: Honiara, as a Pacific island case study", Pacific Viewpoint, Vol.11, No.1, pp.66-95.
- Belshaw, C.S. 1954 "Changing Melanesia : The social economics of culture contact", Oxford Univ.Press, Melbourne.
- 1963 "Pacific island towns and theory of growth", in 'Pacific Port Towns and Cities : A symposium', ed. A.Spoehr, Bishop Mus., Honolulu.
- 1964 "Under the Ivi Tree : Society and economic growth in rural Fiji", Univ. of California Press, Berkeley & Los Angeles.
- Belshaw, H. 1960 "Some Pacific island problems", Pacif. Viewpoint, Vol.1, No.2, pp.125-42.
- Benedict, B. (ed.) 1967 "Problems of smaller territories", Institute of Commonwealth Studies, Commonwealth paper series, 10, Athlone Press.
- Benjamin, B. 1968 "Demographic Analysis", Allen and Unwin, London.
- Beyer, H.O. 1925 "History of racial movements in the Pacific", Bishop Mus., Honolulu.
- Black, R.H. 1955 "The geographical distribution of malaria in the southwest Pacific", Australian Geographer, Vol.6, pp.32-35.
- 1956 "The epidemiology of malaria in the southwest Pacific: changes associated with increasing European contact", Oceania, Vol.27, pp.136-42.
- Bloomfield, E. 1968 "The Pago Pago Bay Area", South Pacific Bulletin, Vol.18, No.1, pp.53-59.
- Boardman, D. 1969 "From atoll to city - the migration of the Tokelau Islanders to New Zealand", Seminar on Urbanization and Resettlement in the South Pacific, Victoria Univ., Wellington.
- Bogue, D.J. 1969 "Principles of Demography", John Wiley, New York.
- Borrie, W.D. 1970 "The Growth and control of World Population", Weidenfeld & Nicolson.
- Borrie, W.D. and M.Cameron (eds.) 1969 "Population change: Asia and Oceania", (Proc.Sydney Conference, 21-25 Aug.1967, of the IUSSP), A.N.U., Canberra.
- Borrie, W.D., R.Firth & J.Spillius 1957 "The population of Tikopia, 1929 and 1952", Population Studies, Vol.10, pp.229-52.

- Boserup, E. 1965 "The conditions of Agricultural Growth: The economics of agrarian change under population pressure", Allen and Unwin, London.
- Boyd, M. 1968 "Independent Western Samoa", *Pacif.Viewpoint*, Vol.9, No.2, pp.154-72.
- Boyer, D.S. 1967 "Micronesia: The Americanization of Eden", *National Geog. Mag.*, Vol.131, No.5, pp.702-44.
- Brookfield, H.C. 1957 "Mauritius : Demographic upsurge and prospect" *Population Studies*, Vol.11, pp.102-22.
1960 "Population distribution and labour migration in New Guinea: a preliminary survey", *Australian Geographer*, Vol.7, pp.233-42.
- Brookfield, H.C. (ed.) 1969 "Pacific Market Places", A.N.U. Press, Canberra.
1970 "Population, society and the allocation of resources" in 'Geography of a crowding world', ed. by Zelinsky, W., L.A. Konsinski and R.M. Prothero, Oxford Univ. Press, New York.
- Brookfield, H.C. and P. Brown 1969 "The People of Vila", Dept. of Human Geography Publications HG/1, A.N.U., Canberra.
- Brookfield, H.C. and D. Hart 1971 "Melanesia : A geographical interpretation of an island World", Methuen, London.
- Brown, J.M. 1927 "Peoples and problems of the Pacific", Fisher Unwin, London, 2 vols.
- Brown, P. and G. Winefield 1964-5 "Some demographic measures applied to the Chimbu Census and field data", *Oceania*, Vol.35, No.3, pp.175-90.
- Brown, P. and H.C. Brookfield 1967 "Chimbu settlement and residence: A study of patterns, trends and idiosyncrasy", *Pacif.Viewpoint*, Vol.8, pp.119-51.
- Buck, P.H. 1954 "Vikings of the sunrise", Whitcombe & Tombs, Christchurch.
- Bugotu, F. 1969 "The impact of Western culture on Solomon Islands society: A Melanesian reaction", *South Pacific Bull.*, Vol.19, No.1, pp.47-56.
- Burrows, E.G. 1938 "Topography and culture on two Polynesian islands", *Geographical Review*, Vol.28, pp.214-23.
- Burrows, E.G. and M.E. Spiro 1953 "An atoll culture", Human Relations Area Files, New Haven.
- Buxton, P.A. 1926 "Depopulation and disease in the New Hebrides", *Nature*, Volume 118, p.62.
- Buzacott, A. 1886 "Mission life on the islands of the Pacific", Snow, London.

- Campbell, E.M.J. 1952 "Land and population problems in Fiji",
Geographical Journal, Vol.118, No.4, pp.477-82.
- Capella, A. and R.H. Lester. 1941-2 "Local divisions and movements in Fiji", Oceania,
Vol.11, No.4, pp.313-41, & Vol.12, No.1, pp.21-48.
- Carlson, G. 1970 "Nineteenth century fertility oscillations",
Population Studies, Vol.24, No.3, pp.413-22.
- Carr-Saunders, A.M. 1964 "World population: Past growth and present trends",
Frank Cass, London, (2nd impression).
- Cato, A.C. 1955 "Fijians and Fiji Indians: A culture contact
problem in the South Pacific", Oceania, Vol.26,
No.1, pp.14-34.
- Chang, K., G.W. Grace and W.G. Solheim 1964 "Movements of the Malayo-Polynesians: 1500B.C. to
A.D.500", Current Anthropology, Vol.5, pp.359-406.
- Chandrasekhar, S. 1954 "Hungry people and empty lands: An essay on
population problems and international tensions",
Allen and Unwin, London.
- Chapman, M. 1969 "A population study in South Guadalcanal: Some
results and implications", Oceania, Vol.40, No.2,
pp.119-47.
- Church, J.W. 1919 "A vanishing people of the South Seas. The tragic
fate of the Marquesan cannibals", Nat.Geog.Mag.,
Vol.36, pp.275-306.
- Churchward, W.B. 1888 "Blackbirding in the South Pacific", Swan
Sonnenschein, London.
- Cilento, R.W. 1924 "The depopulation of the Pacific", Govt.Printer,
Melbourne.
- Clark, C. 1967 "Population growth and land use", St.Martins, New York
- Clarke, J.I. 1965 "Population Geography", Pergamon Press, Oxford.
1971 "Population Geography and the Developing Countries",
Pergamon Press, Oxford.
- Clifford, J.J.(ed.) 1970 "Readings in the Sociology of Migration", Pergamon
Press, Oxford.
- Clyde, P.H. 1939 "Germany's former colonies. The Mariana, Caroline
and Marshall Islands", Geog.Mag., Vol.8, pp.215-24.
- Coates, A. 1970 "Western Pacific Islands", H.M.S.O., London.
- Cochrane, D.G. 1969 "Conflict between law and sexual mores on San
Cristobal", Oceania, Vol.39, No.4, pp.281-9.
1969 "Racialism in the Pacific: A descriptive analysis",
Oceania, Vol.40, No.1, pp.1-12.
- Collocott, E.E.V. 1923 "Marriage in Tonga", Journal of the Polynesian
Society, Vol.32, pp.221-28.
n.d. "Koe Tau 'E Teau", William Clowes, London.
- Corlette, E.A.C. 1934-6 "Notes on the natives of the New Hebrides",
Oceania, Vol.5, pp.474-87 & Vol.6, pp.48-65.

- Coulter, J.W. 1942 "Fiji, little India of the Pacific", Chicago Univ. Press, Chicago.
1947 "Environment, race and government in the South Sea Islands", Scottish Geog. Jour., Vol. 63, pp. 49-56.
- Couper, A.D. 1968 "Indigenous trading in Fiji and Tonga : a study of changing patterns", New Zealand Geographer, Vol. 24, No. 1, pp. 50-60.
- Crocombe, R.G. 1962 "Development and regression in New Zealand's island territories", Pacif. Viewpoint, Vol. 3, No. 2, pp. 17-32.
- Crocombe, R.G. & M. 1968 "The works of Taunga: Records of a Polynesian traveller in the South Seas, 1833-96", Pacif. Hist. Series, No. 2, A.N.U., Canberra.
- Cumberland, K.B. 1962 "The future of Polynesia", Jour. Poly. Soc. Vol. 71, pp. 386-96.
- Cumberland, K.B. & J.W. Fox, (eds.) 1962 "Western Samoa; land, life and agriculture in Tropical Polynesia", Whitcombe & Tombs, Christchurch.
- Cunningham, G. 1961 "Food for Tahiti", Economic Geography, Vol. 37, pp. 347-52.
- Curson, B.H. 1968 "Some demographic aspects of Cook Islanders in Auckland", Proc. 5th N.Z. Geographical Soc. Conf., Christchurch, pp. 67-74.
1969 "Births and illegitimacy in Rarotonga", Jour. Poly. Soc., Vol. 78, No. 1, pp. 112-22.
1970 "Polynesians and Residential Concentration in Auckland", Jour. Poly. Soc., Vol. 79, No. 2, pp. 421-32.
1970 "The Cook Islanders" in 'Immigrants in New Zealand' ed. by K.W. Thomson & A.D. Trlin, Massey Univ., Palmerston North.
- Davidson, J.W. 1967 "Samoa mo Samoa", Oxford Univ. Press, Melbourne.
- Davidson, J.M. 1969 "Settlement patterns in Samoa before 1840", Jour. Poly. Soc., Vol. 78, No. 1, pp. 44-82.
- Deacon, A.B. 1934 "Malekula : A vanishing people in the New Hebrides", Routledge, London.
- de Bruijn, J.V. (ed.) 1959 "Urban Problems in the South Pacific", South Pacific Commission Tech. Paper, No. 152, Noumea.
- Demko, G.A., H.M. Rose & G.A. Schnell, (eds.) 1970 "Population Geography: A Reader", McGraw-Hill, New York.
- Dening, G.M. 1962 "The geographical knowledge of Polynesians and the nature of inter-island contact", Jour. Poly. Soc. Vol. 74, No. 4, pp. 102-31.
- Derrick, R.A. 1946 "A history of Fiji", Govt. Printer, Fiji.
- Doumenge, F. 1966 "L'Homme dans le Pacifique sud: Etude Geographique", Societe des Oceanistes, Paris.
- Duncan, O.D. 1957 "The measurement of population distribution", Population Studies, Vol. 11, pp. 27-45.

- Egon, S. (ed.) 1964 "Studies on Fertility and Social mobility", Proc. of the Internat. Demographic Symposium, 1962, Budapest, Akademiai Kiado, Budapest.
- Ella, S. 1899 "The War of Tonga and Samoa and the origin of the name Malietoa", Jour. Poly. Soc., Vol. 8, pp. 231-4.
- Emory, K.P. 1963 "East Polynesian relationships", Jour. Poly. Soc., Vol. 72, pp. 78-100.
1965 "Kapingamarangi : Social and religious life of a Polynesian atoll", Bulletin 228, Bishop Mus., Honolulu.
- Erskine, J.E. 1853 "Journal of a cruise among the islands of the Western Pacific... in H.M.S. 'Havannah' ", Murray, London.
- Fairbairn, I.J. 1961 "Samoa migration to New Zealand, the general background and some economic implications for Samoa", Jour. Poly. Soc., Vol. 70, No. 1, pp. 18-30.
- Farewell, G. 1968 "Seven Thousand Islands", Reed, Wellington.
- Farrell, B. 1958 "Some human problems in the agriculture of Western Samoa", Proc. 2nd N.Z. Geog. Soc. Conf., Christchurch, pp. 99-103.
- Ferdon, E.N. Jr. 1958 "Pitcairn's island, 1956", Geog. Review, Vol. 18, pp. 69-85.
- Finney, B.R. 1965 "Polynesian Peasants and Proletariats : Socio-economic change among the Tahitians of French Polynesia, Jour. Poly. Soc., Vol. 74, No. 2, pp. 269-328.
1966 "Resource Distribution and Social structure in Tahiti" Ethnology, Vol. 5, No. 1, pp. 80-5.
- Firth, R. 1936 "We, the Tikopia : A sociological study of kinship in primitive Polynesia", Allen and Unwin, London.
1939 "Primitive Polynesian economy", Routledge, London.
1959 "Social change in Tikopia", Allen and Unwin, London.
1967 "Tikopia Ritual and Belief", Allen and Unwin, London.
- Fischer, A.M. 1963 "Reproduction in Truk", Ethnology, Vol. 2, No. 4, pp. 527-40.
- Fischer, J.L. & A.M. 1957 "The Eastern Carolines", Human Relations Area Files, New Haven.
- Fisk, E.K. (ed.) 1966 "New Guinea on the threshold", A.N.U., Canberra.
1970 "Political Economy of Independent Fiji", A.N.U., Canberra.
- Fosberg, F.A. (ed.) 1965 "Man's Place in the island ecosystem", Bishop Mus., Honolulu.
- Foye, W.G. 1917 "Lau Islands of Fiji", Geog. Review, Vol. 4, pp. 374-86.
- Fraser, R.M. 1968 "A Fiji-Indian rural community", Pacif. Viewpoint, Monograph No. 3, Wellington.
- France, P. 1969 "The charter of the land: customs and colonization in Fiji", Oxford Univ. Press, Melbourne.

- Freeman, O.W. (ed.) 1951 "Geography of the Pacific", Chapman and Hall, London.
- Geddes, W.R. 1945 "Acceleration of Social Change in a Fijian Community", Oceania, Vol.16, No.1, pp.1-14.
- Gifford, E.W. 1929 "Tongan Society", Bishop Mus., Bull.61, Honolulu.
- Giles, W.E. 1968 "A cruize in a Queensland labour vessel to the South Seas", ed. by D.Scarr, Pacific Hist.Series No.1, A.N.U., Canberra.
- Gillion, K.L.O. 1950 "The sources of Indian emigration to Fiji", Population Studies, Vol.10, No.2, pp.139-57.
1962 "Fiji's Indian migrants", Oxford Univ.Press, Melbourne.
- Gladwin, T. 1970 "East is a big bird", Harvard Univ.Press, Cambridge, Mass.
- Gladwin, T. and S.B. Sarason 1953 "Truk : Man in Paradise", Viking Fund Pub. in Anthropology, No.20, New York.
- Goldman, I. 1970 "Ancient Polynesian Society", Univ. of Chicago Press, Chicago.
- Goodenough, W.H. 1949 "Premarital Freedom on Truk: Theory and Practice", American Anthropologist, Vol.51, pp.615-20.
- Griffith, T. 1951 "Fiji: A study of Tropical Settlements", Econo. Geog., Vol.27, No.2, pp.148-62.
- Grimble, A. 1952 "A pattern of islands", Murray, London.
- Guiart, J. 1963 "Noumea, New Caledonia", in 'Pacific Port Towns and Cities', ed. by A.Spoehr, Bishop Mus., Honolulu, pp.25-32.
- Hamlin, H. 1932 "The problem of depopulation in Melanesia", Yale Jour. of Biology and Med., Vol.4, pp.301-21.
- Harrison, T.H. 1937 "Savage Civilization", Gollancz, London.
- Hauser, P.M. and O.D. Duncan, (eds.) 1964 "The study of population: An inventory and appraisal", Univ. of Chicago Press, Chicago.
- Heyerdahl, T. 1952 "American Indians in the Pacific", Allen & Unwin, London.
1950 "The Kon-Tiki Expedition", Allen & Unwin, London.
- Hill, E. 1957 "The old Kanaka days", Walkabout, Vol.23, No.6, pp.17-18.
- Hirschman, A.O. 1958 "The strategy of economic development", Yale Univ. Press, New Haven.
- Höffman, W.G. 1936 "Pacific relations: The races and nations of the Pacific area and their problems", McGraw Hill, N.York.
- Hogart, A.M. 1929 "Lau Islands, Fiji", Bull.62, Bishop Mus., Honolulu.
- Hogbin, H.I. 1930 "The problems of depopulation in Melanesia as applied to Ontong Java (Solomon Islands)", Jour. Poly.Soc. Vol.39, pp.43-66.
1937-8 "The Hill people of northeastern Guadalcanal", Oceania, Vol.8, pp.62-89.

- Hooper, A. 1961 "The migration of Cook Islanders to New Zealand", Jour. Poly.Soc., Vol.70, No.1, pp.11-17.
1961 "Cook Islanders in Auckland", Jour.Poly.Soc., Vol.70, No.2, pp.147-93.
- Hopkins, R.S. 1963 "Micronesia", Focus, Vol.13, No.10.
- Hornbostel, H.G. 1930 "The island of Guam and its people's tragic history", Mid-Pacific Mag., Vol.40, pp.73-80.
- Howard, A. 1961 "Rotuma as a hinterland community", Jour.Poly.Soc., Vol.70, No.4, pp.272-98.
1964 "Land tenure and social change in Rotuma", Jour.Poly.Soc., Vol.73, No.1, pp.26-52.
- Howard, A. and I.Howard 1964 "Premarital sex and social control among the Rotumans", American Anthropologist, Vol.66, pp.266-83.
- Hunt, E.E. and N.R. Kidder 1954 "The depopulation of Yap", Human Biology, Vol.26, pp.21-51.
- Hutchinson, J.(ed.) 1969 "Population and food supply: Essays on human needs and agricultural prospects", Cambridge Univ.Press.
- Jackson, J.A.(ed.) 1969 "Migration", Social Studies 2, Cambridge Univ.Press.
- Johnson, S. 1970 "Life without births: a journey through the Third World in search of the population explosion", Heinemann, London.
- Johnston, W.B. 1953 "Pacific Island agriculture: The contemporary position in Western Samoa and some wider implications", Econo.Geog., Vol.29, No.2, pp.26-38.
1953 "Land, people and progress in the Cook Islands", Econo.Geog., Vol.29, No.1, pp.107-24.
1959 "The Cook Islands: Settlement in an island group of the Southwest Pacific", Jour.of Tropical Geog., Vol.13, pp.38-57.
- Johnston, K.M. 1967 "Village agriculture in Aitutaki, Cook Islands", Pacif.Viewpoint, Monograph No.1, Wellington.
- Jones, L.W. 1966 "The population of Borneo: A study of the peoples of Sarawak, Sabah and Brunei", Athlone Press, London.
- Jupp, K.M. 1961 "Population expansion in Western Samoa", Jour.Poly.Soc., Vol.70, No.4, pp.401-09.
- Kay, P. 1963 "Aspects of social structure in a Tahitian urban neighbourhood", Jour.Poly.Soc., Vol.72, No.4, pp.325-71.
- Keesing, F.M. 1934 "Modern Samoa: Its Government and changing life", Allen and Unwin, London.
1935 "Standards of Living among the native peoples of the Pacific", Pacif.Affairs, Vol.24, pp.143-69.
1938 "Western Samoa and Nauru", Geog.Mag., Vol.7, pp.354-60.
1945 "Native peoples of the Pacific World", McMillan, N.York.
1945 "The South Seas in the Modern World", John Day, N.York.
- Keesing, R.M. 1967 "Christians and pagans in Kwaio, Malaita", Jour.Poly.Soc., Vol.76, No.1, pp.82-100.

- Kennedy, T.F. 1958 "Village settlement in Tonga", N.Z.Geographer, Vol.14, pp.161-72.
 1959 "Geography of Tonga", Govt.Printer, Nukualofa.
 1961 "Land, food and population in the Kingdom of Tonga", Econo.Geog., Vol.37, No.1, pp.61-71.
- Keyfitz, N. 1971 "Migration as a means of population control", Population Studies, Vol.25, No.1, pp.63-72.
- Koch, G. 1955 "Sudsee-Gestern und Heute Der Kutterwandel. Bei Den Tonganern und Der Versuch Einer Dieser", (Trans.by P.E.Klarwill), Wellington.
- Kolff, J. 1965 "The economic implications of self-government for the Cook Islands", Jour.Poly.Soc., Vol.74, p.119.
- Krieger, H.W. 1943 "Island peoples of the Western Pacific. Micronesia and Melanesia", Smithsonian Inst., Washington.
- Kuczynski, R.R. 1937 "Colonial population", Oxford Univ.Press, Oxford.
- Lambert, S.M. 1931 "Health survey of Rennell and Bellona Islands", Oceania, Vol.2, No.2, pp.136-73.
 1934 "The depopulation of the Pacific Races", Special Pub.23, Bishop Mus., Honolulu.
 1938 "East Indian and Fijian in Fiji: Their changing numerical relation", Special Pub.32, Bishop Mus., Honolulu.
 1942 "A doctor in Paradise", Dent, London.
- Larson, E.H. 1970 "Tikopia plantation labour and company management relations", Oceania, Vol.40, No.3, pp.195-210.
- Latukefu, S. 1967 "Tonga after Queen Salote", Jour.of Pacif.Hist., Vol.2, pp.159-62.
- Leñördmand, M.H. 1953 "The population of New Caledonia and the Loyalty Islands", Proc.7th Pacific Science Congress, Auckland, 1949, Vol.7, Christchurch, pp.609-13.
- Lessa, W.A. 1955 "Depopulation in Ulilhi", Human Biology, Vol.27, pp.161-83.
- Lessa, W.A. and G.C. Myers 1962 "Population Dynamics of an atoll community (Ulilhi in Micronesia)", Population Studies, Vol.15, No.3, pp.244-57.
- Lewis, W.A. 1963 "Theory of Economic Growth", Unwin Univ.Books, London.
- Lind, A.W. 1955 "Hawaii's people", Univ. of Hawaii, Honolulu.
- Lockwood, B. 1970 "Market Accessibility and Economic Development in Western Samoa", Pacif.Viewpoint, Vol.11, No.1, pp.47-65.
- Lonie, T.C. 1959 "Housing problems in the South Pacific", South Pacific Commission, Q.Bull., Vol.9, No.1, pp.56-64.
- Lowry, J.H. 1970 "World population and food supply", Arnold, London.
- Luke, H. 1945 "From a South Seas diary, 1938-42", Nicholson & Watson, London.

- Marden, L. 1958 "The islands called Fiji", *Nat.Geog.Mag.*, Vol.114, pp.526-61.
- Marino, A. 1970 "Family Fertility and sex ratios in British Caribbean", *Population Studies*, Vol.24, No.2, pp.159-72.
- Martin, J. 1818 "An account of the natives of the Tonga Islands.. from the ...communications of William Mariner", 2 Vols., London.
- Mason, L. 1950 "The Bikinians: A transplanted population", *Human Organization*, Vol.9, pp.5-15.
- Massal, E. 1955 "Village hygiene", *South Pacific Commission, Q.Bull.*, Vol.5, pp.2-5.
- Maude, A. 1970 "Shifting cultivation and population growth in Tonga", *The Jour.of Tropical Geog.*, Vol.31, pp.57-64.
- Maude, H.E. 1959 "Tahitian interlude; the migration of the Pitcairn Islanders to the Motherland in 1831", *Jour.Poly.Soc.*, Vol.68, No.2, pp.115-40.
 1964 "Beachcombers and Castaways", *Jour.Poly.Soc.*, Vol.73, No.3, pp.254-87.
 1968 "Of islands and men : Studies in Pacific history" Oxford Univ.Press, Melbourne.
- Maude, H.E. and E. Doran, Jr. 1966 "The precedence of Tarawa Atoll", *Ann.Assoc. American Geographers*, Vol.56, No.2, pp.269-89.
- May, J.M. 1958 "The ecology of Human Disease", MD Publications, N.York.
- May, J.M.(ed.) 1961 "Studies in disease ecology", Hafner Publishing Co, N.Y.
- Mayer, A.C. 1963 "Indians in Fiji", Oxford Univ.Press, Oxford.
- Mead, M. 1928 "Coming of age in Samoa", Penguin Books.
- Mercer, J.H. and P. Scott 1958 "Changing village agriculture in Western Samoa", *Geog.Jour.*, Vol.124, pp.347-60.
- Micklin, M. 1970 "Demographic, Economic and Social change in Latin America: An examination of causes and consequences", *Jour. of Developing Areas*, Vol.4, No.2, pp.173-96.
- Moncrieff, A.R.H. N.D. "The world of today - A survey of the lands and peoples of the globe as seen in travel and commerce", Vol.IV, Gresham Publishing Co., London.
- Morrell, W.P. 1960 "Britain in the Pacific Islands", Clarendon, London.
- Murphy, R.E. 1948 "Landownership on a Micronesian atoll", *Geog. Review*, Vol.38, pp.598-614.
 1949 "High and Low Islands in the Eastern Carolines", *Geog.Review*, Vol.39, pp.425-39.
 1950 "Economic Geography of a Micronesian atoll", *Ann. Assoc.Amer.Geographers*, Vol.40, No.1, pp.58-83.

- Myrdal, G. 1957 "Economic Theory and Under-developed Regions", Methuen, London.
 1968 "Asian Drama : An inquiry into the poverty of Nations", 3 Vols., Penguin Books.
 1970 "The challenge of World poverty: A world anti-poverty programme in outline", Penguin Books.
- McArthur, N. 1955 "The populations of the Pacific Islands", Parts I-VI, A.N.U., Canberra.
 1959 "Fijians and Indians in Fiji", Population Studies, Vol.13, pp.202-13.
 1961 "Population and social change: prospect for Polynesia", Jour. Poly.Soc., Vol.70, No.4, pp.393-400.
 1961 "Introducing Population Statistics", Oxford Univ. Press, Melbourne.
 1963 "Projected populations and their Labour potential", in 'Urbanization in the South Pacific', South Pacific Commission Tech.Paper 137, Noumea, Appendix 4.
 1964 "Contemporary Polynesian emigration from Samoa and the Cook Islands", Jour.Poly.Soc., Vol.73, No.3, pp.336-39.
 1966 "Essays in multiplication : European seafarers in Polynesia", Pacific Hist., Vol.1, p.91.
 1967 "Island Populations of the Pacific", A.N.U., Canberra.
- McKeown, T. 1967 "Social and biological influences on foetal and infant deaths", in 'Social and Genetic influences on life and death', ed. by Lord Platt and A.S.Parkes, Oliver & Boyd, Ediburgh.
- McMillan, A.W. 1944 "The Indians in Fiji", Govt.Printer, Suva.
- Nam, C.B.(ed.) 1968 "Population and Society", Houghton Mifflin Co., Boston.
- Naval Intelligence Division, Gt.Br. 1945 "Pacific Islands", 4 Vols., H.M.S.O., London.
- Nayacakalou, R.R. 1959 "Land tenure and social organization in Tonga", Jour.Poly.Soc., Vol.68, No.2, pp.93-114.
 1960 "Land tensure and social organization in Western Samoa", Jour. Poly.Soc., Vol.69, No.2, pp.104-22.
 1963 "The urban Fijians of Suva", in 'Pacific Port Towns and Cities', ed. by A.Spoehr, Bishop Mus., Honolulu.
- Newton, W.F. 1967 "The early population of the Ellice Islands", Jour. Poly.Soc., Vol.76, No.2, pp.197-204.
- Norman Taylor, W. 1960 "Public health progress in Melanesia", South Pacific Commission, Q.Bull., Vol.10, pp.37-8.
- Oliver, D.L. 1961 "The Pacific Islands", Anchor Books, New York.
- Oram, N.D. 1968 "Culture change, economic development and migration among the Hula", Oceania, Vol.38, No.4, pp.243-75.
- Parsonson, G.S. 1966 "Artificial islands of Melanesia; the role of malaria in the settlement of the Southwest Pacific", N.Z.Geographer, Vol.22, No.1, pp.1-22.

- Parnaby, O.W. 1956 "Regulation of indentured labour to Fiji, 1864-88", Jour.Poly.Soc., Vol.65, No.1, pp.55-66.
- Petersen, W. 1962 "Population", MacMillan, New York.
- "Pacific Islands Monthly", Pacific Publications, Sydney, various dates.
- Pirie, P.N.D. 1958 "The geographic implication of population growth in Western Samoa," Proc.2nd N.Z.Geog.Soc.Conf., Christchurch, pp.91-8.
- 1960 "The population of Western Samoa : A preliminary report based on the 1956 census", A.N.U., Canberra.
- 1967 "Samoa : Two approaches to population and resource problems", paper presented at the symposium on the 'Geography of Population Pressure on Physical and Social Resources', later included in 'Geography and a Crowding World', ed. by Zelinsky, W., L.A.Kosinski and R.M.Prothero, Oxford Univ.Press, New York, pp.493-508.
- Pirie, P. and W. Barrett 1962 "Western Samoa : Population, production and wealth", Pacif.Viewpoint, Vol.3, No.1, pp.63-95.
- Pitt, D.C. 1970 "Tradition and Economic Progress in Samoa", Clarendon, Oxford.
- Pool, D.I. 1968 "The isolation of various components of the New Zealand Maori Mortality decline, 1945-61", in Proc. of the IUSSP Sydney Conf., 21-25 Aug.1967, A.N.U., Canberra, pp.509-20.
- Rivers, W.H.R. (ed.) 1922 "Essays on the depopulation of Melanesia", Cambridge Univ.Press.
- Rogers, G. 1969 "Some comments on the 'Report on the Results of the 1966 Census', Kingdom of Tonga, 1968", Jour.Poly.Soc., Vol.78, No.2, pp.212-22.
- Ronne, A.F. 1966 "Pitcairn's new mutineers?", Geog.Mag.Vol.38, No.9, pp.669-78.
- Ross, A. 1964 "New Zealand's aspirations in the Pacific in the nineteenth century", Longmans Paul, Auckland.
- Ross, A. (ed.) 1967 "New Zealand's record in the Pacific islands in the twentieth century", Longmans Paul, Auckland.
- Sahlins, M.D. 1962 "Moala : Culture and nature on a Fijian Island", Ann Arbor: Univ. of Michigan Press.
- Sandhu, K.S. 1961 "The population of Malaya : Some changes in the pattern of distribution between 1947 and 1957", Jour. of Tropical Geog., Vol.15, pp.82-96.
- Sauvy, A. 1961 "Fertility and survival: Population problems from Malthus to Mao Tse-Tung", Chatto & Windus, London.
- 1969 "General theory of population", Weidenfeld & Nicholson, London.
- Scarr, D. 1967 "Fragments of an Empire: A history of the Western Pacific High Commission, 1877-1914", A.N.U., Canberra.

- Schmitt, R.C. 1962 "Urbanization in French Polynesia", *Land Economics*, Vol.38, No.1, pp.71-5.
- 1965 "Garbled population estimates of Central Polynesia", *Jour.Poly.Soc.*, Vol.74, No.1, pp.57-62.
- 1965 "Unmarried parenthood in French Polynesia", *Jour. Poly.Soc.*, Vol.74, No.3, pp.356-9.
- 1967 "The missionary censuses of Tahiti, 1797-1830", *Jour.Poly.Soc.*, Vol.76, No.1, pp.27-33.
- Schneider, D.M. 1955 "Abortion and depopulation on a Pacific island: (Yap)", in 'Health, culture and community', ed. by B.D.Paul, R.Sage Foundation, New York, pp.211-35.
- Scragg, R.F.R. 1968 "Mortality decline in a sample population in New Guinea", in 'Proc.of the IUSSP Sydney Conf., 21-25 Aug. 1967', A.N.U., Canberra.
- Shadbolt, M. 1962 "Western Samoa, the Pacific's newest nation", *Nat. Geog.Mag.*, Vol.122, No.4, pp.573-602.
- Shapiro, H.L. 1944 "Peoples of the Pacific", *Nat.Hist.*, Vol.53, pp.168-81.
- Sharp, C.A. 1957 "Ancient Voyages in the Pacific", Penguin Books.
- 1960 "The discovery of the Pacific Islands", Clarendon, Oxford.
- 1964 "Ancient Voyages in Polynesia", Univ. of California Press, Berkeley and Los Angeles.
- Simkin, C.G.F. 1945 "Modern Tonga", *N.Z.Geographer*, Vol.1, No.2, pp.99-118.
- Slater, M. 1970 "The economy of the South Pacific", *Pacif.Viewpoint*, Vol.11, No.1, pp.1-26.
- Smith, T.E. 1960 "The Cocos-Keeling Islands: A demographic laboratory", *Population Studies*, Vol.14, No.2, pp.94-129.
- Spoehr, A. 1963 "Pacific Port Town and Cities", Bishop Mus., Honolulu.
- South Pacific Commission 1963 "Urbanization in the South Pacific", South Pacific Commission Tech.Paper 137, Noumea.
- 1967 "Urban Problems in the South Pacific", SPC Tech. Paper 152, Noumea.
- Stephen, E. 1936 "Notes on Nauru", *Oceania*, Vol.7, No.1, pp.34-63.
- Stoddart, D.R. 1968 "Catastrophic human interference with coral atoll ecosystems' geography", *Jour.Geog.Assoc.*, Vol.53, pp.25-40.
- Stolnitz, G.J. 1970 "The Demographic Transition: From high to low birth rates and death rates", in 'Population Geography: A Reader', ed. by Demko, G.J., H.M.Rose and G.A.Schnell, McGraw-Hill, New York.
- Suggs, R.C. 1960 "The island civilizations of Polynesia", Mentor, New American Library, New York.
- Szabady, E.(ed.) 1968 "World views of Population Problems", Akademiai Kiado, Budapest.

- Taeuber, I.B. 1962 "Hawaii", Population Index, Vol.28, No.2, pp.97-125.
1965 "Demographic Instabilities in Island Ecosystems",
in 'Man's place in the Island Ecosystem', ed. by
F.A.Fosberg, Bishop Mus., Honolulu, pp.226-253.
- Taeuber, I.B. and 1960 "Micronesian islands under the United States
C.C.Han Trusteeship: Demographic paradox", Population Index,
Vol.16, pp.93-115.
- Taylor, G. 1951 "Fiji: A study of tropical settlements", Econo.Geog.,
Vol.27, pp.148-62.
- Taylor, J.L. 1951 "Saipan: A study in land utilization", Econo. Geog.,
Vol.27, pp.340-7.
- Thomlinson, R. 1967 "Demographic problems: Controversy over population
control", Dickenson, Belmont, California.
- Thomson, L. 1949 "The relations of men, animals and plants in an
island community (Fiji)", Amer.Anthropologist, Vol.51,
pp.253-67.
- Thompson, W.S. 1953 "Population problems", McGraw-Hill, New York.
- Thomson, B.C. 1902 "Savage Island. An account of Sojourn in Niue and
Tonga", Murray, London.
- Thomson, B.H. 1894 "Divisions of a Prime Minister", Blackwood, Edinburgh.
1968 "The Fijians: A study of the decay of customs",
Reprint of the 1908 edition, Dawsons of Pall, Mall,
London.
- Trewartha, G.T. 1969 "A Geography of Population: World Patterns",
John Wiley, New York.
- Tudor, J. (ed.) 1968 "Pacific Islands Year Book and Who's Who, 1967",
10th edition, Pacific Publications, Sydney.
- Turbott, I.G. 1949 "Diets, Gilbert and Ellice Island Colony", Jour.
Poly.Soc., Vol.58, pp.36-46.
- Tupouniua, M.U. 1960 "Economic development in Tinga", Jour.Poly.Soc.,
Vol.69, pp.405-8.
- Valentine, C.A. 1963 "Social status, political power and native responses
to European influence in Oceania", Anthropol.Forum.,
Vol.1, No.1, pp.3-55.
- Van Amelsvoort, V.F.P.M. "Culture, stone age and modern medicine", Van Gorcum,
1964 Netherlands.
- Vandercook, J.W. 1937 "Dark Islands", Harper, New York.
- Vason, G. 1810 "An authentic narrative of four years' residence
at Tongataboo, one of the Friendly Islands",
Longman, London.
- Vayda, A.P. 1958 "A voyage by Polynesian exiles", Jour.Poly.Soc.,
Vol.67, No.4, pp.324-9.
- Victoria Univ. 1958 "Western Pacific: Studies of man and environment in
the Western Pacific", Dept. of Geog., Victoria Univ.,
Wellington.

- Walsh, A.C. 1967 "Politics, culture and resource utilization in Tonga", Proc. 5th N.Z.Geog.Soc. Conf., in Auckland, Christchurch, pp.119-24.
- 1967 "Tonga's Development Plan", Pacif.Viewpoint, Vol.8, No.1, pp.96-9.
- 1969 "A Tongan urban peasantry: Conjecture of reality", in 'Pacific Peasantry', ed.by I.G.Bassett, Massey Univ., Palmerston North, pp.87-107.
- 1970 "Population changes in Tonga : An historial overview and modern commentry", Pacif.Viewpoint, Vol.11, No.1, pp.27-46.
- Ward, M.W. 1960 "Recent population growth and economic development in Asia", Pacif.Viewpoint, Vol.1, No.1, pp.205-24.
- Ward, R.G. 1959 "The population of Fiji", Geog.Review, Vol.49, pp.322-41.
- 1961 "A note on population movements in the Cook Islands", Jour.Poly.Soc.Vol.70, No.1, pp.1-10.
- 1961 "Internal migration in Fiji", Jour.Poly.Soc., Vol.70, No.3, pp.257-71.
- 1964 "Rural Fijians' income from export crops", Pacif. Viewpoint, Vol.5, No.1.
- 1964 "Cash Cropping and the Fijian Village", Geog.Jour., Vol.130, pp.348-507.
- 1965 "Land Use and Population in Fiji", H.M.S.O., London.
- 1967 "The problem of Smallness in Polynesia", in 'Problems of smaller territories', ed. by B.Benedict.
- Ward, R.G. and W. Moran 1959 "Recent population trends in the Southwest Pacific", Tijdschrift voor Economische en Sociale Geographie, Vol.50, pp.235-40.
- Wawn, W.T. 1893 "The South Sea islanders and the Queensland labour trade...1875-1891", Swan Sonnenschein, London.
- Walters, R.F. 1958 "Cultivation in Old Samoa", Econo.Geog., Vol.34, pp.338-51.
- 1958 "Settlement in Old Samoa: 1840", N.Z.Geographer, Vol.14, No.1, pp.1-18.
- 1960 "Some forms of shifting cultivation in the Southwest Pacific", Jour. of Tropical Geog., Vol.14, pp.35-50.
- 1961 "Problems of development in Fiji", Pacif.Viewpoint, Vol.2, No.2, pp.155-76.
- 1965 "The development of agricultural enterprise in Fiji", Jour.Poly.Soc., Vol.74, No.4.
- 1969 "Koro : Economic development and social change in Fiji", Clarendon, Oxford.
- 1970 "The economic response of the South Pacific societies", Pacific Viewpoint, Vol.11, No.1, pp.120-44.
- Wedgewood, C.H. 1936-7 "Report on Research work in Nauru Island, Central Pacific", Oceania, Vol.6, No.4, pp.359-384; Vol.7, No.1, pp.1-13.
- 1942 "Notes on the Marshall Islands", Oceania, Vol.13, No.1, pp.1-23.
- White, G.M. 1965 "Kioa, an Ellice community in Fiji", Dept. of Anthro., Univ. of Oregon, Eugene.

- Walsh, A.C. 1967 "Politics, culture and resource utilization in Tonga", Proc. 5th N.Z.Geog.Soc. Conf., in Auckland, Christchurch, pp.119-24.
- 1967 "Tonga's Development Plan", Pacif.Viewpoint, Vol.8, No.1, pp.96-9.
- 1969 "A Tongan urban peasantry: Conjecture of reality", in 'Pacific Peasantry', ed.by I.G.Bassett, Massey Univ., Palmerston North, pp.87-107.
- 1970 "Population changes in Tonga : An historial overvæw and modern commentry", Pacif.Viewpoint, Vol.11, No.1, pp.27-46.
- Ward, M.W. 1960 "Recent population growth and economic development in Asia", Pacif.Viewpoint, Vol.1, No.1, pp.205-24.
- Ward, R.G. 1959 "The population of Fiji", Geog.Review, Vol.49, pp.322-41.
- 1961 "A note on population movements in the Cook Islands", Jour.Poly.Soc.Vol.70, No.1, pp.1-10.
- 1961 "Internal migration in Fiji", Jour.Poly.Soc., Vol.70, No.3, pp.257-71.
- 1964 "Rural Fijians' income from export crops", Pacif. Viewpoint, Vol.5, No.1.
- 1964 "Cash Cropping and the Fijian Village", Geog.Jour., Vol.130, pp.348-507.
- 1965 "Land Use and Population in Fiji", H.M.S.O., London.
- 1967 "The problem of Smallness in Polynesia", in 'Problems of smaller territories', ed. by B.Benedict.
- Ward, R.G. and W. Moran 1959 "Recent population trends in the Southwest Pacific", Tijdschrift voor Economische en Sociale Geographie, Vol.50, pp.235-40.
- Wawn, W.T. 1893 "The South Sea islanders and the Queensland labour trade...1875-1891", Swan Sonnenschein, London.
- Walters, R.F. 1958 "Cultivation in Old Samoa", Econo.Geog., Vol.34, pp.338-51.
- 1958 "Settlement in Old Samoa: 1840", N.Z.Geographer, Vol.14, No.1, pp.1-18.
- 1960 "Some forms of shifting cultivation in the Southwest Pacific", Jour. of Tropical Geog., Vol.14, pp.35-50.
- 1961 "Problems of development in Fiji", Pacif.Viewpoint, Vol.2, No.2, pp.155-76.
- 1965 "The development of agricultural enterprise in Fiji", Jour.Poly.Soc., Vol.74, No.4.
- 1969 "Koro : Economic development and social change in Fiji", Clarendon, Oxford.
- 1970 "The economic response of the South Pacific societies", Pacific Viewpoint, Vol.11, No.1, pp.120-44.
- Wedgewood, C.H. 1936-7 "Report on Research work in Nauru Island, Central Pacific", Oceania, Vol.6, No.4, pp.359-384; Vol.7, No.1, pp.1-13.
- 1942 "Notes on the Marshall Islands", Oceania, Vol.13, No.1, pp.1-23.
- White, G.M. 1965 "Kioa, an Ellice community in Fiji", Dept. of Anthro., Univ. of Oregon, Eugene.

- Whitelaw, J.M. 1967 "Production and the mining community in Fiji",
N.Z. Geographer, Vol.23, No.1, pp.1-15.
- Wiens, H.J. 1962 "Atoll Environment and Ecology", Yale Univ.Press,
New Haven.
- Wilkes, C. 1845 "Narrative of the U.S.Exploring Expedition...1838-42",
5 Vols., Lea & Blanchard, Philadelphia.
- Wilson, J.S.G. 1966 "Economic survey of the New Hebrides", H.M.S.O., London.
- Wilson, M.G.A. 1968 "Population Geography", Nelson, Melbourne.
- Wood, A.H. 1952 "History and Geography of Tonga", Wilson & Horton,
Auckland.
- Woylinsky, W.S. & 1953 "World population and production: Trends and
E.S.Woylinsky outlook," Lord Baltimore Press, Baltimore.
- Zelinsky, W. 1970 "A prologue to Population Geography", Open Univ.,
Press, London.
- Zelinsky, W., 1970 "Geography and a Crowding World: A Symposium on
L. Kosinski, and Population pressures upon physical and social
R.M.Prothero (eds.) resources in the Developing World", Oxford Univ.Press,
New York.