THE DEPOPULATION OF PACIFIC RACES

BY

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INTRODUCTION

The history of European contact with the native races of the Pacific has been a tale of infliction on these natives of new diseases against which they had no immunity. Estimates of native population are available and it is therefore possible to gather some idea of the extent of depopulation following in the wake of the white man as far back as the time of Cook, 150-odd years ago. Missionaries and navigators have repeatedly told of epidemics following their visits, and in every island group natives tell of new diseases decimating their population as a result of visits from missionary and trading vessels.

There is a theory that Pacific peoples had already begun to decrease rapidly before the advent of the white man. This, I feel, is an untenable theory based on false conjecture. For the period previous to Cook's time no worth-while estimates of Pacific populations exist. The figures established by Europeans since then have shown that the visits of white men have almost invariably been disastrous to the natives. But before Cook entered the Pacific there were 250 years of Spanish, Portuguese, and Dutch visits to various islands, of which little is known. Many of these voyages were not even recorded.

Vessels can come to a native island with no apparent sickness on board, yet shortly afterward an epidemic of tuberculosis, pneumonia, dysentery, gonorrhea, measles, or syphilis may set in. The boat may stay a day or so and go on, entirely ignorant of the disaster which sweeps over the native non-immune population like a fire through a dry forest. According to navigators and missionaries, such disasters have been the experience of the Pacific islands since the earliest recorded days. Who can say what were the ultimate results in losses of population of unrecorded voyages? How, then, can one theorize as to the causes or the probabilities of losses in population in the days before Cook? It is not necessary to go so far, however, to see the phenomenon of depopulation. Even today it is occurring in certain

little-touched islands of the Pacific. When such things happen in 1933, despite our knowledge of the causes of immunity and infection and despite our efforts to protect the natives, it can easily be imagined what might have happened to an island group as a result of a visit from the earlier navigators.

That there has been a tremendous decrease in native population in the last 150 years is beyond question. The causes of this decrease have been much discussed in the literature. The principal causes are usually considered to be poor health, the decay or disruption of native customs, and the loss of will to survive. Hamlin says:

> What evidence have we that depopulation is occurring? The general formula is as follows: a death rate and birth rate in inverse proportion, favoring the number of deaths. This may take several forms—a static death rate and a decreased birth rate, a static birth rate and a high death rate, or a high death rate and a low birth rate.

If we could demonstrate that in typical South Pacific population groups the reverse of the above conditions exists, we should be able to prove that depopulation does not exist in those groups. If the number of groups is sufficiently varied, it ought then to follow that repopulation is occurring and that the same methods applied to similar groups will produce similar results. But for genuine repopulation, it would be necessary that those dying should be replaced by full-blooded natives and not by Asiatics of mixed blood. With a consistent birth rate, and a falling death rate, health should be improving; decayed or disrupted custom should be on the road to repair or suitable replacement; and there could be no evidence of loss of will to survive.

A geographical review of the situation shows that to the east of the 170th meridian all the population groups are Polynesian, except in Fiji, which is Melanesian, and in the Gilberts, which are Micronesian. In the eastern Pacific are the French Marquesas, Tuamotus, the Society Islands and the Austral Islands; to the north, Hawaii. In the mid-Pacific are the New Zealand (British) Cook Islands; New Zealand (British) Western Samoa (including the Tokelau Islands); American Samoa (including one of the Tokelaus); the Kingdom of Tonga (British Protectorate); to the northward the British Micronesian Gilberts and the Polynesian Ellices; and lastly Fiji, the meeting place of Melanesian and Polynesian cultures, but essentially

Melanesian. In the western Pacific, west of this 170th meridian, are, farthest south, the Polynesian Maoris in New Zealand; and to the north, French New Caledonia and the Loyalty Islands, the New Hebrides Condominium of the French and the British, the British Solomons, and the Australian territories of Papua and New Guinea on the mainland of the island of New Guinea, east of the 141st meridian, each with its contiguous large islands. All these populations are Melanesian except the Loyalty Islanders and the New Zealand Maoris, though around each are small scattered (fringing) Polynesian islands or atolls.

One of the difficulties in the way of deciding whether the populations of the Pacific islands are increasing or decreasing or what their ultimate destiny may be is the prejudice under which an interested person labors when he enters the field. He knows the story of the Red Indians of North America and of the aboriginals of Australia. His first visits may perhaps be made to eastern Polynesia, possibly to Hawaii, where modern civilization has ground a swarming population down to a few thousand. Perhaps Cook, Melville, and Stevenson, the classicists, or O'Brien, Hall, and Nordhoff, the romanticists, may have made an indelible impression. He may go to Tahiti and the Society Islands or extend his trip to the Marquesas. Thus far his impressions might correspond to the facts. The population of Tahiti, estimated by Cook at 204,000, has shrunk to 9,072 for Tahiti and Moorea, according to figures published by Roberts.

These preliminary experiences produce an almost ineradicable impression on the mind. But when one proceeds farther west and arrives in American Samoa and the British colonies of the Cook Islands, Western Samoa, Tonga, Fiji, the Gilberts and Ellices, and the Tokelaus, and when one visits the Maoris of New Zealand, one is shown facts and sees conditions that gradually wipe out the former impression. Here is no helpless attitude toward the future of the island races, and no calm sitting down to await a certain fate. Here one finds native races full of the will to live and not only to increase in numbers but to improve their mental and physical environment. Conditions that existed 40, 50, and 60 years ago have changed. Governments and missions have learned much and are not forcing natives into the white man's way of life; rather are they seeking to develop the factors that will gradually best fit them into their new environment.

I am not acquainted with Hawaii, the Marquesas, the Tuamotus, the Society Islands, or New Caledonia. The other colonies I have visited at intervals over a period of 15 years and most of them I know intimately. In the islands I know, the natives do not have access to habit-forming drugs and they have none of their own. Their kava is innocuous. There is no drinking problem among any of these natives except in the New Hebrides Condominium, where in 1925 and 1930 liquor was obtainable on most of the plantations on Saturday nights and a Saturday and Sunday "jag" was expected. Native labor had become difficult to obtain on plantations where strong wine could not be procured. In the Gilberts, however, coconut "toddy" has been driven into disrepute. Around Suva, a Fijian may on a rare occasion obtain a bottle of liquor surreptitiously, but the most rigid precautions are taken to prevent it and the strictest of punishments meted out. About 12 years ago Samoa and the Cook Islands were placed under a rather strict temperance ordinance. Europeans were allowed only one bottle of whiskey, or a corresponding amount of other alcoholic beverages, in two weeks, and in Samoa only one bottle a month for medicinal purposes only. The natives then learned from the Europeans to brew "bush beer." This also is now punished severely by the Government. But neither Samoa nor the Cook Islands can by any measure be said to have a liquor problem as yet, and elsewhere the question does not even arise. Continued care must be exercised, however. Europeans are immunized against alcohol by the usage of thousands of years; the native races have no resistance to it, and when they have access to it experience shows that the craving for liquor is disastrous to them. One of the first demands of an educated native is a drink permit. The question arises as to how long, with increasing education, the natives can be kept from its use and how they can best be immunized against this most recent affliction brought upon them by the white man. The fact that drinking among Europeans has moderated to a marked degree during the past 15 years may have some bearing on the problem.

The greatest factor in the change from depopulation to repopulation has undoubtedly been the expansion of medical effort, curative and preventive.

VITAL STATISTICS

The basis of progress in public health work is the proper collection and compilation of statistics relating to births, deaths, and diseases.

Without such figures little can be accomplished, for the results of the efforts made can not otherwise be measured. There are few accurate statistics of this nature for the islands of the South Pacific. It is estimated that 75 percent of deaths are unattended and that diagnoses of the causes of such deaths are made by lay persons. The reasons for this are obvious. The administrative areas are composed of many islands which lie widely scattered over the ocean. The area of the Western Pacific High Commission, for instance, is roughly 3,000,000 square miles. It is financially impossible to station sufficient European medical officers over so great an area.

During the past 20 years most of the colonies have had an accurate 10-year census from which to make annual estimates. In 1931 some governments failed to take the 10-year census, a retrograde step in an area where the demography of the important Pacific races has been built up with such painful effort. Administrators ought to understand that vital statistics are a method of bookkeeping, the only method by which an administration can show its accomplishments and measure the value of the methods it employs. It is a slack business that does not audit its accounts once in 10 years.

Cook Islands

Cook Islands, an administrative district that consists of Cook Islands proper and eight islands annexed to New Zealand in 1901, eleven inhabited islands, extends from the southern tropical line to about 8 degrees south. Manihiki and Rakahanga are 25 miles apart. No two others are less than 100 miles apart. The 6 southern islands are separated from the 5 northern islands by several hundred miles. The only harbors are a very poor one at Rarotonga and one inside the lagoon at Tongareva (Penrhyn). Two schooners trade between Rarotonga and the other islands, a fruit steamer comes down through the islands each month for six months, and a steamer touches at Rarotonga once a month on its way from San Francisco to Wellington.

Except on Rarotonga, the Europeans to be found in the Cook Islands are few, and they rarely move. The natives go to New Zealand to be educated and many return to settle in Rarotonga or on their own islands.

Here it is seen, possibly better than in other colonies, that the

native races can resist the inroads of imported diseases and can gradually adjust themselves socially to Western civilization. The medical attention given them has been limited because of the small units of population and their wide separation and because of limited resources. The Medical Department has consisted until recently of one Resident Medical Officer in charge of a small hospital on Rarotonga, and a second Medical Officer who makes intermittent visits to the outlying islands. The northern islands have been unvisited by a medical man for years at a time. A European nurse has now been stationed on Aitutaki and another on Mangaia, and in recent years the medical service has been augmented by Native Medical Practitioners, Cook Islanders trained in the Central Medical School at Suva. The aim of the Medical Department is to have a native doctor for each island. In 1932 two of these graduated and immediately began their service as practitioners.

For the past 20-odd years the population of the Cook Islands has shown a healthy increase. Such an increase has not always been the rule, however. In table 1 is shown the population of the Cook Islands taken by the Government enumerators in 1906.

Table 1. Population of Cook Islands in 1906

Name of Island	Number of Inhabitants	European	Chinese
Rarotonga	2,334	107	6
Aitutaki	1,154	8	....
Atiu	914	4	2
Mangaia	1,523	8	....
Manihiki	519	2	....
Rakahanga	351	1	....
Mitiaro	208	2	1
Mauke	444	2	1
Pukapuka	435	....	....
Palmerston	82	....	....
Tongareva (Penrhyn)	430	6	....
	8,394	140	10

By 1911 this figure had grown only to 8,626. The natives escaped the influenza epidemic of 1918 in its worst form, and since then, as is shown in figures 1 and 2, there has been a steady healthy increase of the population.

The declared policy of New Zealand for many years has been enunciated by Sir Apirana Ngata, Minister for the Cook Islands:

> The Taihoa policy applied to Rarotonga means that every element in immigrant culture, which by its substitution for the preexisting usage, fitted the Cook Islander better to live in a world where modern science has brought him into touch with other races and with other ideas, was introduced in ordered sequence to the extent that the Cook Islander was ready to receive and benefit by it. A steady pressure is being applied in all directions whereunder each succeeding generation may be influenced to advance gradually from one culture to another, or as is most likely, to a blending of elements of the old with the new.

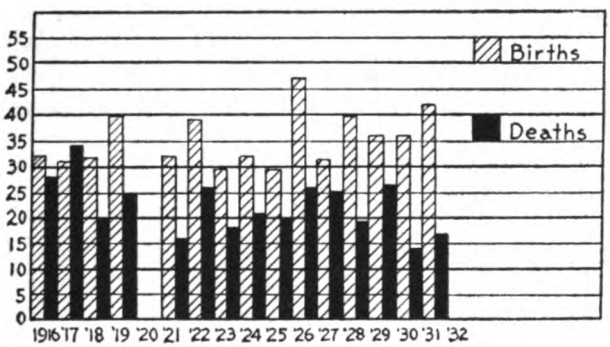

FIGURE 1.—Cook Islands, births and deaths.

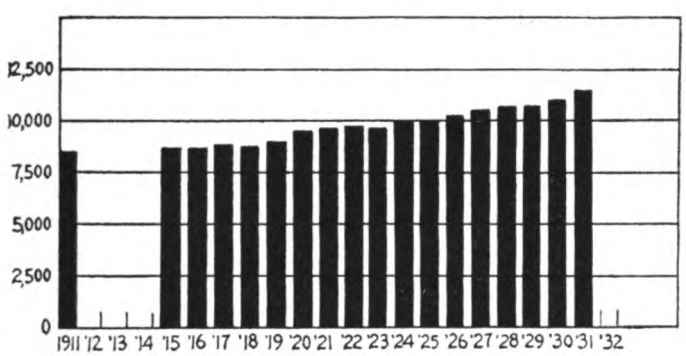

FIGURE 2.—Cook Islands, population.

Taihoa is a Maori word meaning "wait, go slow." The policy has been aptly called "purposeful inactivity." The outstanding success of this policy is demonstrated not alone by population figures. The people of the Cook Islands are, in my opinion, the most modern

in the Pacific; they have adjusted themselves best of all to Western civilization.

Samoa

The Samoan islands comprise two groups: Western Samoa, consisting of Upolu, Savaii, Manono, and Apolima, formerly a German colony, mandated to New Zealand; and American Samoa, consisting of Tutuila and a few small islands. In addition, three of the four small islands of the Tokelau (Union) archipelago have been detached from the Gilbert and Ellice islands and have been given to Western Samoa. The remaining small Tokelau island is American. This year Niue (Savage Island) was detached from the Cook Islands by New Zealand; it is now to be administered by the Department of External Affairs of New Zealand.

Western Samoa

For the purposes of this discussion Western Samoa is considered as former German Samoa. The Samoan Annual Medical Report for 1925 says:

> The first estimate of the population of Western Samoa available is that of Commodore Wilkes, of the United States Navy, who visited these islands between 1838 and 1842. His estimate was 46,000 for what is now known as Western Samoa—i.e., the islands of Upolu, Savaii, Manono, and Apolima.

In 1845 a census was taken by the London Missionary Society and the population given as 40,000. The Rev. J. B. Stair, who was resident in Samoa at the time this census was taken, considers this figure an underestimate but states that the population was certainly not more than 45,000. In 1849 Captain Erskine, R. N., reckoned the population at 32,000. The "Samoan Recorder," a paper published under the auspices of the London Missionary Society, in its issue of January, 1854, gave the population of Western Samoa as 29,237. These figures are probably fairly accurate. The London Missionary Society had by that time become firmly established, and its churches were dotted throughout the islands. It was probably in a very good position to obtain accurate census returns through its native pastors. The above figures, even if taken to be only approximately correct, show a rapid progressive decline in population during the period 1839 to 1854. The writings of the early missionaries and navigators furnish the reason for this. Erskine, in his journal of a cruise among

the islands of the western Pacific, after giving his estimate of the population, says:

> This number, it is to be feared, is still gradually, though slowly, diminishing. For some years past the islands are said to have been visited during the wet season (October to April) with a severe species of influenza, which has sometimes passed through the group twice during the time. From November to January, 1847, this epidemic was unusually severe, sixty deaths having been reported in one district of 2,500, and even a larger proportion in some marshy and damp situations. During the last year the whooping-cough, said to have been imported in a vessel from Tahiti, made its appearance for the first time, causing, in conjunction with the war, but in a larger proportion, a calculated reduction of 5 percent of the population in a period of 18 months.

The Rev. J. B. Stair, who resided in Samoa from 1838 to 1845, says, in "Old Samoa":

> The population of Samoa, when compared with that of other groups, is large, but there are good reasons for thinking that it was much larger formerly, before Europeans first settled amongst them. For many years before the introduction of Christianity it had been steadily decreasing, principally in consequence of the ferocious and bloody wars in which the natives so constantly engaged. In various parts of Upolu I have often noticed traces of a much larger population, and the general testimony of the natives confirmed this belief. Sites of deserted villages and remains of plantation walls could often be seen in the wild bush; and in many parts of the islands, places once largely populated have now very reduced numbers.
>
> Of the population in 1845 it is possible to speak with tolerable accuracy since a successful census was made at that time. But even then, through native prejudices, it was difficult to obtain correct returns from some of the districts. It was considered that the population at that time was about 40,000—an underestimate, probably, but it certainly did not exceed 45,000.

Sufficient has been written to show that the population of Samoa was decreasing, and decreasing rapidly, during the first half of the nineteenth century. Whether the decrease continued after 1854 or not there are no records available in Samoa to show, but in 1886 the population was estimated to be 29,000 (John B. Thurston, Correspondence respecting the Affairs of Samoa, 1885-1889, Blue Book, Samoa, no. 1, 1889), practically the same figures as for 1854. The increase in the population from that date onward must have been fairly rapid, for despite a serious setback in 1893, when measles was first introduced, the population, according to the German census of 1906, was 33,478. (See fig. 3.)

Fairly accurate figures show that except for the years 1907, 1911, and 1918 there was a steady increase in Samoan population. At the end of 1932 the population was estimated at 44,126, approximately the figure of a hundred years ago. The acceleration in population growth

between 1923 and 1927 was due to a brilliant public health campaign carried on during that period by a Chief Medical Officer, who was a Public Health man. During this campaign there were instituted in Samoa colony-wide free injections for yaws, hookworm treatment, soil sanitation, and, in many districts, piped water supplies.

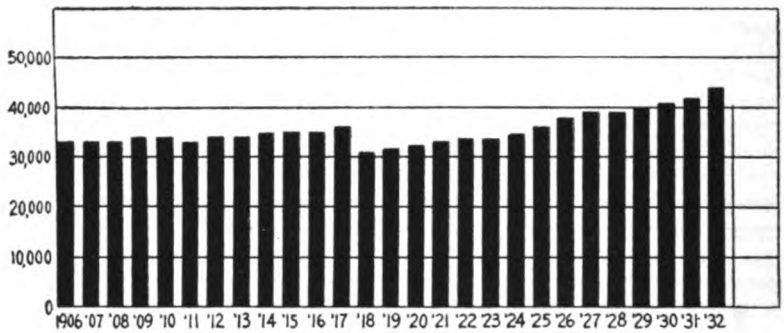

FIGURE 3.—Samoa, population.

Since 1928 there have been political disturbances in Western Samoa, largely manifested by civil disobedience, as a result of which vital statistics have suffered, as is seen in figure 4. It is evident that births and deaths have not been reported accurately. The estimated population for 1931 was 42,296.

I have given the figure 44,126 as the estimated population at the end of 1932. It is taken from a census obtained during a coöperative yaws campaign in Western Samoa which was conducted jointly by the Colony and the Rockefeller Foundation during 1932. The census was taken as carefully as possible under the circumstances and it was checked on each island in advance of the campaign, between April and July on Savaii, and between August and October on Upolu, Apolima, and Manono. It is an understatement of the actual population. It takes no account of excess of births over deaths on Savaii for practically 8 months, and on Upolu for about 5 months. There is reason to believe that the figures for Upolu, especially, are understated. Although I have charted the figures as 44,126, I believe 47,000 would be a more correct conservative estimate.

I have been in Western Samoa every year, except one, since 1923. The heat is gradually dying out of the Western Samoan political situation; the people seem to be settling down. Probably

some mistakes were made in the early era of civil administration by New Zealand, but, if so, they must have been mistakes due to over-zealousness for the welfare of the Samoans and to the efforts of New Zealand to do her duty by the mandate to her utmost ability. Even now, a calm retrospective survey of the situation does not show any great administrative mistakes to have been made. The statistics cited show that New Zealand's administration has been beneficial to the Samoan race; in fact, it has been highly successful so far as

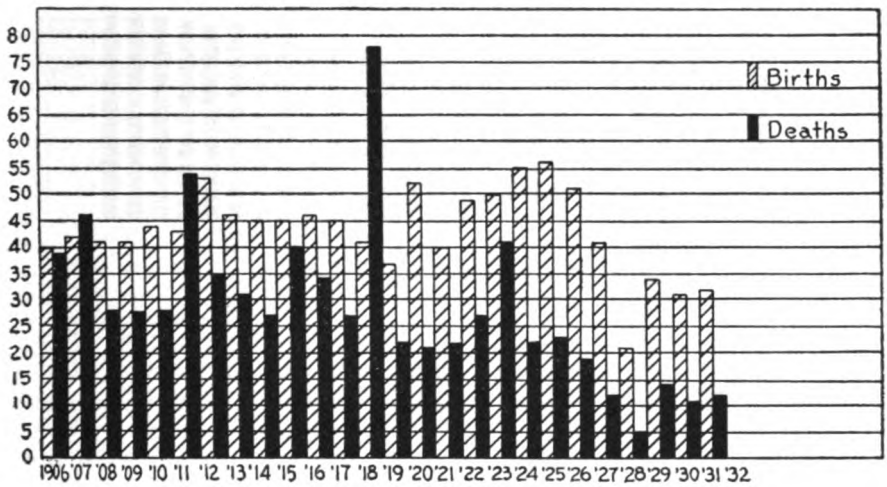

FIGURE 4—Western Samoa, births and deaths.

health and population are concerned. The Samoans, as a race, are astute and intelligent. Their diplomacy far excels that of Europeans. They are much too wise to reject the good features of what New Zealand has taught them. They have learned to value preventive medicine. During the past six years there has been plenty of evidence of the will of Samoans to endure and to progress as a race.

American Samoa

American Samoa, consisting of Tutuila, the Manua islands, and one of the Tokelau islands, Swaines Island, was taken over by the United States in 1900 and was placed under the control of the Department of the Navy as a Naval Station. The total area, including Swaines Island (area 1 square mile, attached in 1925), is 75 square miles. In 1930 the population of American Samoa was

10,055. The distribution of races constituting this number is as follows:

Polynesian	8,926
Mixed Blood	877
White	227
Others	25
Total	10,055

The white population consists of the naval personnel and missionaries, and has been a fairly constant number through the years.

Tables 2 and 3 are proof of the care with which the United States Navy has administered its health program for this section of the Samoan race which has been placed in its charge.

Table 2. Population of American Samoa, 1900 to 1932

Year	Number of Inhabitants
1900	5,679
1912	7,251
1920	8,056
1930	10,055
1931	10,184
1932	10,383

Table 3. Birth, Death, and Infant Mortality Rates in American Samoa, 1928 to 1932

Year	Death Rate per 1000	Birth Rate per 1000	Infant Mortality Rate per 1000 Births
1928	15.20	44.72	90.00
1929	21.39	41.35	118.80
1930	17.72	39.45	104.07
1931	20.62	40.16	80.68
1932	16.95	37.85	104.33

It is interesting to note that there has been a large increase in population with an excess of males, though the number of males has diminished during the last 10 years. The number of native males per 100 females was 104.6 in 1920, and 103.6 in 1930.

There is no way of knowing how many inhabitants to the square mile American Samoa can support. The average number of inhabitants per square mile in 1930 was 132.3, as compared with 106 in 1920. The following quotation is from a letter which I recently received from Captain G. B. Landenberger, Governor of American Samoa:

You ask, "Does the question of surplus population loom ahead? If so, what about it?" The population here has doubled during the last 30 years and there is a prospect of its doubling again in the next 30 years. Considering the amount of cultivated land in American Samoa at present, a food shortage would result, and steps have already been made to take care of the possible food shortage by increasing the size and number of small plantations.

Tonga

Tonga is a native kingdom in the Pacific, the last of the great Polynesian dynasties since the passing of the Hawaiian kings in the early nineties. It is ruled by Queen Salote and her consort, Prince Tugi, who are both of pure royal blood that can be traced back to the dim ages of the past. Tonga has a British Protectorate exercised by

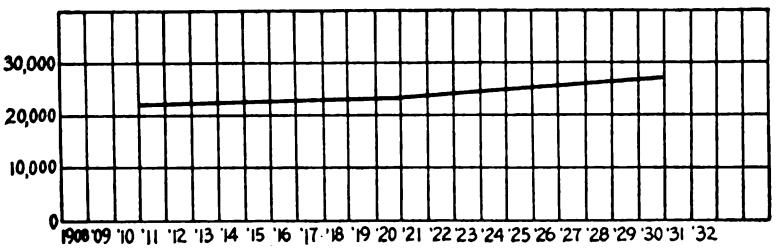

Figure 5.—Tonga, population.

a British Consul and Agent, but this is only an advisory Protectorate applying to finances. The rule is, in effect, a native one. I have great admiration for the intelligence and ability of Queen Salote, who, because of her judgment of its value, revived the Central Medical School scheme when it was prematurely dead in 1925 and made it an active, living thing. Tonga now has three graduates of the school who have returned to their native island to practice their profession.

The total population of Tonga, at the census taken in 1931, was 28,839. It was composed of 27,700 Tongans, 482 Europeans, 265 half-castes, 336 other Pacific islanders, and 56 individuals of other races. The average density of population of all races per square mile is 134.13. The increase in the Tongan population during the last ten years has been 16.58 per thousand. Figures for the years previous to 1911 are approximate only, but it seems reasonably certain that the Tongan population has not, during the past 150 years, been so large as it is today. In 1840 the early missionaries estimated the population at 18,500, and this figure is generally accepted as

approximately correct. Like the Samoans, the Tongans have been more resistant than most Pacific races. The increase in the Tongan population during the past 10 years is satisfactory. It should, however, be stated that 1,595 Tongans died in the influenza epidemic in 1918. (See fig. 5.)

Compared with other Pacific islands, the Tongan death rate and infant mortality rates are low. Table 4 shows the birth and death rates of the Tongan population for the five years ending December 31, 1931.

Table 4. Birth and Death Rates in Tonga, 1927 to 1931

Year	Birth Rate per 1000	Death Rate per 1000
1927	37.65	11.07
1928	36.09	17.80
1929	37.25	15.65
1930	39.91	12.03
1931	40.30	15.08

The figures for infant mortality for the same period, as shown in Table 5, are remarkable, but they are said by the British Consul and Agent to be accurate. They reflect the preventive work that has been done in infant and child welfare in combating yaws and typhoid fever, and in effecting soil sanitation.

Table 5. Infant Mortality in Tonga, 1927 to 1931

Year	Rate per 1000 Births
1927	37.90
1928	64.58
1929	71.42
1930	58.80
1931	62.80

Tonga is another administration whose problem is no longer decrease of population but the disposal of future surplus population, though such a situation may not occur in the immediate future.

Table 6 gives the figures for the European population of Tonga for the last four decennial periods.

Table 6. European Population of Tonga, 1901 to 1931

Year	Number of Inhabitants
1901	239
1911	380
1921	571
1931	482

The half-caste population for the island numbered 234 in 1911, 237 in 1921, and 265 in 1931. The present average sex distribution of the Tongan population shows a preponderance of females. In 1921 there were 51.53 percent males and 48.47 percent females; in 1931 the proportion changed to 48.41 percent males and 51.49 percent females.

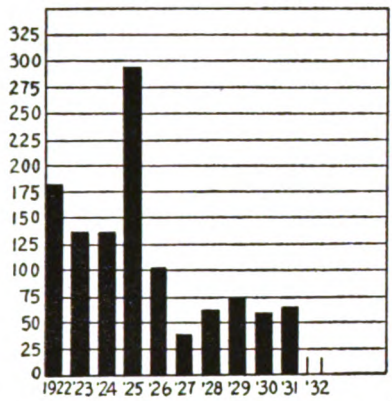

FIGURE 6.—Tonga, infant mortality.

THE GILBERT AND ELLICE ISLANDS COLONY

The Gilbert and Ellice Islands Colony includes the Ocean Island district, the Gilbert Islands district, the Ellice Islands district, the Phoenix Island district, Washington and Fanning islands, and the Christmas Island district.

Ocean Island is a phosphate island. The Phoenix Islands are uninhabited, except for 30 Ellice Islands laborers who pick coconuts there. Washington and Fanning Islands and Christmas Island are also coconut islands, worked by Gilbert Islands labor. Fanning is a station in the Pacific cable route. The Tokelau Islands have now been transferred to Western Samoa.

The Gilbertese and Ocean Islanders are Micronesians. The Ellice Islanders are Polynesians. The Gilbertese are a fairly compact racial unit, and the Ellice Islanders form a very compact unit. The Ocean Islanders are all Micronesians. The others have no indigenous population.

Despite the depression, the Gilbert and Ellice Island Colony has furnished an adequate census return for 1931, the decennial period.

The figures are well set out; they give the impression of being thoroughly accurate, and thus place the colony on a solid statistical basis. The reports contain too much detail to quote at length, but a summary of the population figures is given in Tables 7 and 8.

Table 7. Population of Gilbert and Ellice Islands Colony, by Districts, 1931

Islands	Number of Inhabitants
Gilbert	26,518
Phoenix	31
Ellice	4,074
Fanning and Washington	467
Ocean Island	2,609
Total	33,699

Table 8. Population of Gilbert and Islands Colony, 1931

Islands	Micronesian	Polynesian	Melanesian	European	Mongolian	Mixed	Others
Gilbert	26,106	66	5	94	37	210	....
Ellice	29	4,013	....	13	....	16	3
Phoenix	.....	30	....	....	....	1	....
Fanning and Washington	425	6	....	34	2	....	....
Ocean Island	1,715	65	....	129	698	....	2
Totals	28,275	4,180	5	270	737	227	5

The total population in 1931 was, in round numbers, 32,700 of Pacific islands blood. This excludes 737 Mongolians and 270 Europeans. Sixty percent of the Europeans are married. There are 39 Mongolians resident in the colony, of whom 37 are males; 698 Mongolians are indentured to Ocean Island for a given period only; these do not intermarry with the natives. There are 233 half-castes in the colony, and a few with a smaller admixture of European blood who are indistinguishable from the natives and are included in that classification. The others are 1 American negro and his progeny, 2 West Indian negroes, and 1 East Indian.

The first known estimate of the population of the Gilbert Islands was made by Captain Randall for the Wilkes Expedition in 1841.

His estimate was 50,000. He is said to have been well acquainted with the islands and in a good position to judge. Table 9 compares Randall's estimate with the figures of the 1931 census.

Table 9. Population of the Gilbert Islands in 1841 and in 1931

Name of Islands	Number of Inhabitants (1841)	Number of Inhabitants (1931)
Makin	500	724
Butaritari	1,500	1,673
Marakei	2,000	1,649
Abaiang	3,000	2,592
Tarawa	3,500	3,013
Maiana	4,000	1,406
Abemama	5,000	893
Kuria	4,000	223
Aranuka	1,000	292
Tabiteuea	8,000	2,255
Beru	2,000	3,702
Tamana	3,000	2,241
Arorae	2,500	1,674
Nonouti	.....	1,639
Nikunau	10,000	989
Onotoa	.....	1,451
Floating	.....	112
Totals	50,000	26,528

The details are unfortunately incomplete, because it was impossible to trace Captain Randall's estimates of the population of Nonouti, Nikunau, and Onotoa. It will be seen that the numbers of inhabitants in the northern islands, consisting of Makin, Butaritari, Marakei, and Abaiang, were practically the same in 1931 as in Randall's estimate. Makin, Butaritari, and Beru are the only islands that have actually increased their population. The central islands of Maiana, Abemama, Kuria, Aranuka, and Tabiteuea have suffered terrible losses since 1841, Abemama having decreased from 5,000 to 893 and Kuria from 4,000 to 223. The decreases on Abemama, Kuria, and Aranuka may possibly be attributed in large part to the wars resulting from the aggressive policy adopted by the famous Tem Binoka, high chief of Abemama, during the latter years of the last century. Reports and estimates made at the commencement of the present century show that the great decrease in the population of the Gilberts occurred after 1841 and before 1892, the date of the proclamation of the British Protectorate.

The censuses for the last 20 years are shown in table 10.

Table 10. Total Population of Gilbert and Ellice Islands, 1905 to 1931

	1905-1916	1921	1931
Gilbert	25,142	23,318	26,528
Ellice	3,340 (1911)	3,457	4,074

The first census (1905-1916) is the sum of the earliest good censuses of the Gilberts, by islands, over that period, plus an accurate Ellice Islands census in 1911. The 1921 census was accurate as to numbers and sexes. The 1931 census is also accurate.

From 1892 to 1921 the four northern islands began to show an actual increase of population, but the figures for most of the other islands remained almost stationary. The census of 1921 marked the turning point, and since then the increase has been steady and general. The only island showing a decline in the last few years is Nonouti, which had 2,273 inhabitants in 1914, and 2,255 in 1931. The greatest increase of the decade just past was in Tarawa, which in 1921 had a population of only 2,304 and in 1931 could boast of 3,013 inhabitants. The general increase in the population and the decrease in the number of males (table 11) lends support to the contention that the Gilbertese have weathered the storm caused by the influx of European civilization, which at first had threatened to have the same devastating effect there as it has had among the less hardy races of the central and eastern Pacific. The comparative figures for 1911, 1921, and 1931 show a correspondingly large increase in the population of the Ellice Islands.

Table 11. Percentage of Males in Total Population of Gilbert and Ellice Islands Colony, 1905 to 1931

	1905-1916	1921	1931
Gilbert	+ .48	+1.76	—1.62
Ellice	+2.04 (1911)	— .50	— .44

The percentage of males in the total Pacific islands population at each census is generally considered to furnish an indication of the prospects of the survival of a race. The figures given indicate that a change from a preponderance of males to a preponderance of females is usually followed by a large increase in the total population.

In the Gilberts and Ellices one finds no evidence of depopulation tendencies. On the contrary, officials have begun to worry about the problem of surplus population that they see ahead of them in a relatively short time if the present rate of increase continues. Under the present standard of living the Gilberts can not support more than 40,000 inhabitants, as the islands are infertile and inhospitable. However, the Phoenix Islands, which are said to have an area of 16 square miles and are fertile, could easily care for a large part of the excess Gilbertese population.

New Zealand Maoris

The New Zealand Maoris, a Polynesian race, should be considered with the mid-Pacific peoples. A discussion of their relations to other races would be too long for the purposes of this paper, but, to permit comparison, the Maori population figures are shown in table 12.

Table 12. New Zealand Maori Population, 1927 to 1932

	Male	Female	Total
1927	33,564	30,670	64,234
1928	33,828	30,989	64,817
1929	34,296	31,397	65,693
1930	34,985	32,032	67,017
1931	35,526	32,668	68,194
1932 (January)	36,167	33,299	69,466
1932 (December)	36,759	33,911	70,670

Fiji

Historical Sketch

The population of Fiji is 188,398 and the density per square mile, 25.47. Statistics of the births and deaths of native Fijians which have been kept since 1891 are trustworthy. Nowhere else, to my knowledge, is there a 42-year record of a native race. During this period the birth line has maintained itself consistently; no modern country has maintained its birth rate so well in the same period. These statistics give no indication of a racial apathy toward life, nor do they show the lack of will to survive ordinarily attributed to the Melanesian.

Figure 7 tells a story of British colonial administration in Fiji that volumes could not better; it is a statement of her trusteeship of

a native race for 42 years. Historically, the death line shows, to my mind, what constructive medical work can do for a native people. The gradual fall in the death rate can almost be measured in terms of expansion of medical effort.

The expansion of the European medical staff began in the late nineties. Unselfish young British medical men, poorly paid, began to brave the primitive conditions in the wilds of Fiji. They found a native population imbued with ideas of magic and not immune to the

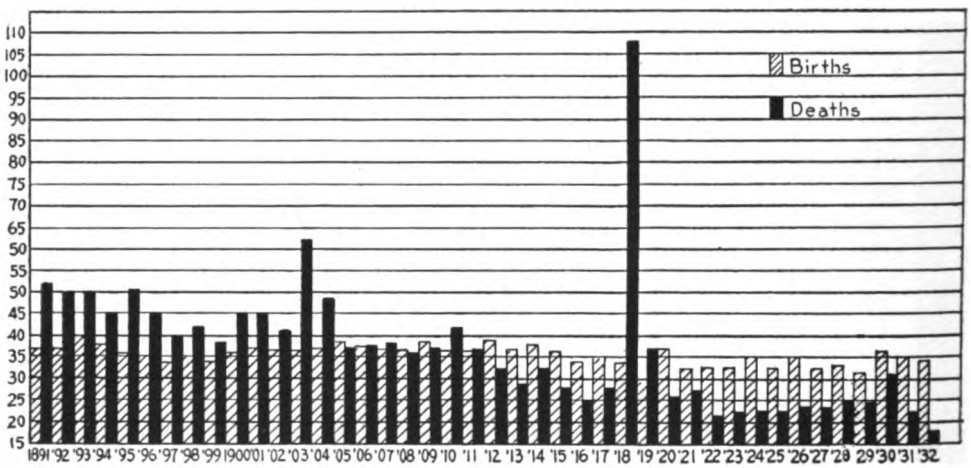

FIGURE 7.—Native Fijian birth and death rates.

ordinary Western diseases. The years since 1873 had built up another non-immune population. Measles had struck again; dysentery and other intestinal conditions were rampant; yaws, in a dreadful form, was universal; pulmonary diseases were cutting swathes through the population; and the infant mortality rate was estimated at almost 500 per 1,000 births. For years the struggle against odds continued until early in the century the work of these men began to tell. From 1904 to 1910 they gradually gained control of the situation. Since then, except during the world-wide influenza epidemic year of 1918, the number of deaths has not approached the number of births.

Meanwhile, these men were engaged in building up a unique branch of the medical service, the native medical practitioner system, through which natives are trained to care for the simpler medical

needs of their own people. This was a most important step in the welfare of the native race, because, under their white medical leaders, these native practitioners began to aid in the struggle.

Yaws was universal in Fiji in all its most hideous phases. Organic arsenicals for the treatment of yaws were introduced in 1912; their general use was begun in 1913-1915 and was extended each year. Between 1912 and 1915 marked attention began to be given to hookworm disease, which was sapping racial vitality. To these two campaigns, together with the control of epidemic dysentery, can fairly be attributed the rapid fall in the death rate for this period. In 1918 came the influenza epidemic, which brought the native population down to its lowest ebb. In 1922 mass treatment for hookworm disease was undertaken and an attempt was made to raise the standard of soil sanitation. The results of this work are reflected in the death rate for that year. The 1929 and 1930 rise in deaths was caused by a fresh epidemic of Shiga dysentery, which was soon stamped out. In 1928 infant welfare work was begun and has since been developed in several provinces. Between the years 1928 and 1931 there was also a colony-wide yaws campaign. This, in brief, is the medical section of the story of the revival of the Fijian race. The steady expansion of medical effort, the application of each newly discovered truth of modern prevention and control of disease, has enabled this poor colony to bring its death rate down from more than 50 per 1,000 to less than 18 within a period of 42 years.

Population

The census of Fijian population is taken every 10 years and is accurate. Between census years the population is estimated from births and deaths and arrivals and departures. For example, the 1911 census varied by only 200 from the estimated figures of the preceding 10-year period. Unfortunately, for reasons of economy, the census of 1931 was omitted.

In 1870 the population was estimated at 300,000. In 1881 it was 114,748, and in 1891, 105,800. This population diminished rapidly over a period of 14 years, until a low point just under 87,000 was reached. During this period there were several epidemics of dysentery, with endemic dysentery and whooping cough decimating the

population every year; there was also a second disastrous appearance of measles among a non-immune population.

From the year 1905 until 1911 the population remained at a stationary point; then from 1911 it rose definitely until it reached 91,000 in 1917. If the influenza epidemic had not touched Fiji in 1918, it is estimated that the native population would have returned, in 1928 to 1929, to the level of 1891. Since 1919, when the low point of 85,569 was reached, there has been a rapid, healthy increase in the

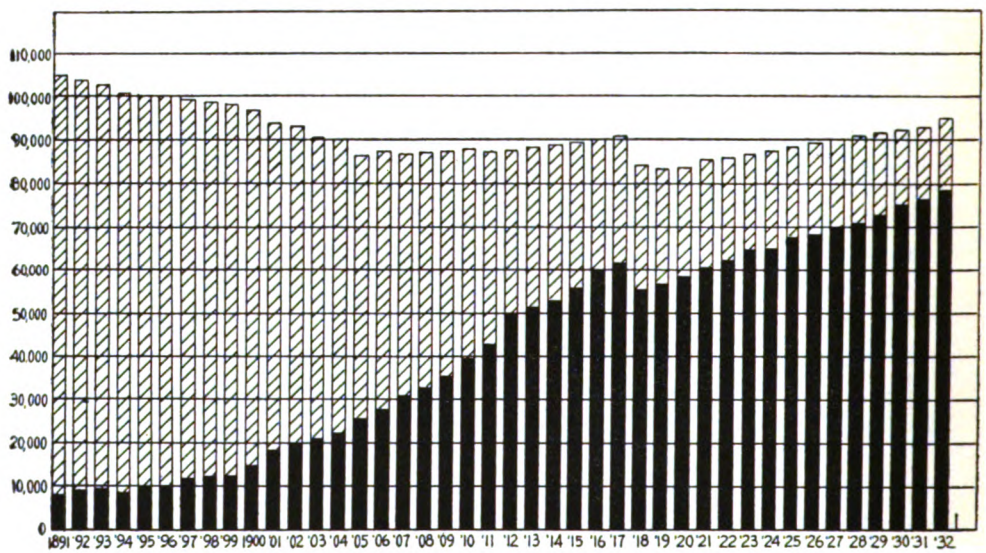

FIGURE 8.—Fijian (shaded) and Indian (black) populations.

number of Fijians until in 1932 the population numbered 94,976, its peak since 1900. Mere figures of population do not tell the whole story in Fiji any more than in any of the mid-Pacific islands. Some of the worst epidemics were caused by measles, whooping cough and dysentery. Measles and whooping cough have done their worst to a non-immune population and have become endemic as in other countries; dysentery is under better control each year. The future can discount many of the losses of the past. The Fijian race has had a greater number of difficulties to surmount in its adjustment to modern conditions than any other group, and those in charge of their welfare have had a more difficult task to face than has any other Pacific administration.

Economic development in Fiji demanded more labor than the natives could supply. Consequently, labor was imported first from the other Pacific islands and then from India. In 1881 and succeeding years, 40,000 to 50,000 coolies were brought from India. In 1932, these with their progeny numbered more than 78,000. In figure 8 the Indian population is compared with the Fijian. Ignoring epidemics, to which it may be said both races might be more or less equally susceptible, the extended lines of population show that in numbers these races may not be equal in Fiji for many years to come. However, if the Fijian birth rate is maintained and its higher death rate continues to fall, the lines of Fijian and Indian population may become nearly parallel.

Owing to the nature of the Indian population, the immigration of young adults, and the return of the old men and women to India, and because of the proportion of the sexes, it is impossible to evaluate Indian population statistics or to estimate the effect increasing education and the increasing economic pressure brought to bear on the Indians by greater density of population will have on their birth rate and death rate. At present, we see the spectacle of two racial streams flowing side by side with almost no intermingling. The Fijian-Indian half-caste is very rare indeed. The two peoples are antipathetic morally, socially, and sexually. The Fijians own the soil; they are slowly but surely changing from communalists to individualists; in some directions this movement is rapid. The natives, seeing the Indians living and working as individuals and keeping what they earn, have been stimulated to greater industry. And, as a race, they have begun to see that if they would not be engulfed by the Indians, they must adjust themselves to the conditions of modern life.

Thus the Fijians, a Melanesian race, have had to combat the social and economic effects of two totally different alien cultures, the Indian and the European. They have withstood them very well and have now for many years been physically and socially on the upgrade.

Infant Mortality

Records (figs. 9 and 10) which have the approval of the Registrar of Vital Statistics indicate that for 20 years there has been a gradual

decline in the death rates of both infants and children between the ages of 1 and 5 years.

Influenza in 1918, dysentery in 1921, whooping cough in 1925, and epidemic dysentery in 1929-1930 were much more severe in the 1- to 5-year age group than among the infants. The decline in mor-

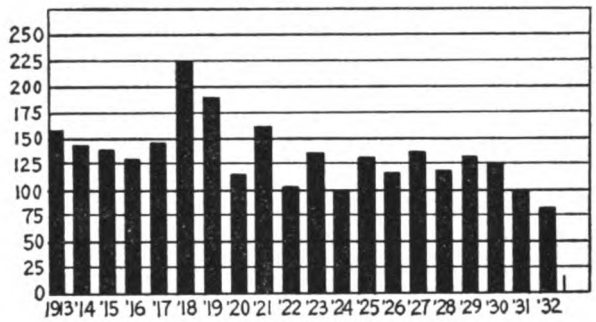

FIGURE 9.—Fiji, infant mortality.

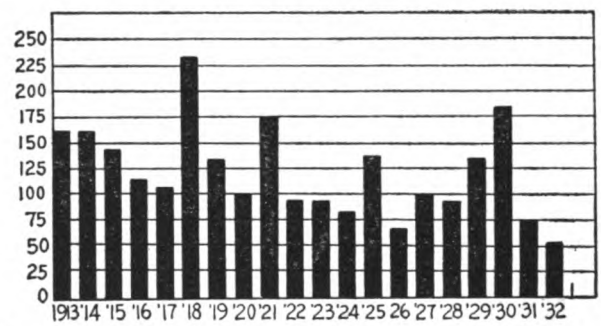

FIGURE 10.—Fiji, mortality of children 1 to 5 years of age.

tality has been greater in the 1- to 5-year group than in the infant group, especially in 1931 and 1932. This has been due largely to infant welfare work, which was undertaken during the past five years by the government alone in some provinces, and in coöperation with the Methodist Mission in others. Work was begun in two provinces in 1928 and it has been extended, during the past four years, to two additional provinces. The period has been too short to permit correct evaluation of this work. Moreover, it was handicapped by the dysentery epidemic of 1929-1930. An attempt has been made (fig. 11) to present a picture of these five years of work

by comparing the mortality in the 1- to 5-year group for 20 years in these six provinces with that in all other provinces which are low-lying and in the group of four mountain provinces.

As the population has been on the increase since 1913, except for the year 1918, and as the number of deaths in the age group 1 to 5 years has declined in each of these groups of provinces, it is apparent that in all provinces child death rates are lower than figure 10 shows. In the dysentery epidemic of 1929-1930, the mountain districts escaped to a great extent. The low-lying districts had a much greater number of deaths, proportionately more than the welfare districts, which are exactly comparable to them. This is additional proof of the beneficial influence of child welfare work.

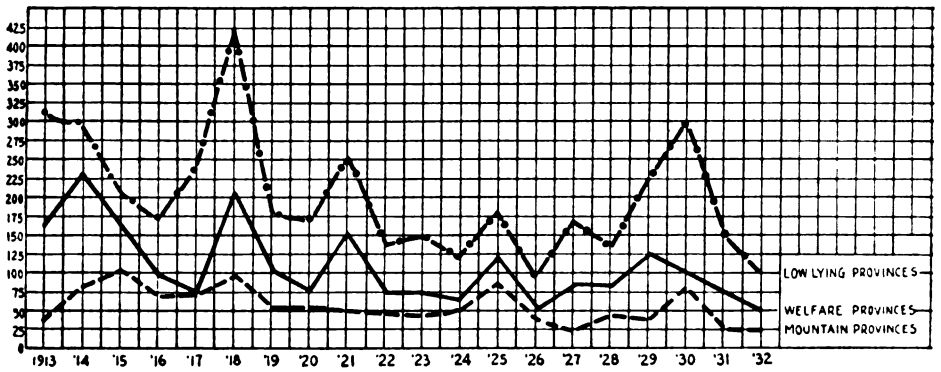

FIGURE 11.—Fiji, deaths of children 1 to 5 years of age (numbers, not percentages). "Welfare provinces" include all children who have benefited by welfare during the period 1928-1932.

On the whole, infant and child mortality rates are responding to the attention being given them. There is, in addition, a stimulating influence being disseminated from the welfare districts to the other provinces. It is interesting to note that the mountain people, the most primitive and least attended, who are quarantined by their measure of isolation, also have a decreasing child death rate.

The mortality of Fijian babies in the first month of life, based on the average for the past 20 years, is about as high as the entire infant mortality of New Zealand for 1931. The trend seems to have taken a distinctly favorable direction during recent years (table 13).

Table 13. Mortality of Fijian Infants in the First Month of Life, 1913 to 1932

Year	Rate per 1000 Births
1913	36
1914	39
1915	39
1916	35
1917	43
1918	53
1919	32
1920	29
1921	37
1922	25
1923	33
1924	25
1925	29
1926	29
1927	33
1928	31
1929	32
1930	39
1931	25
1932	21

An estimate of the percentage of total deaths of Fijians in the 0- to 5-year group shows that there has been a gradual decrease of the percentage of deaths in this group (table 14).

Table 14. Total Fijian Deaths in 0- to 5-Year Group

Year	Rate per 1000 Births
1913	39
1914	39
1915	37
1916	34
1917	34
1918	38
1919	23
1920	30
1921	39
1922	29
1923	34
1924	27
1925	38
1926	27
1927	33
1928	28
1929	35
1930	26
1931	28
1932	26

Although 4 to 5 years is too short an interval from which to judge results, it is evident that, on the whole, the infant welfare work in Fiji has, by direct action and by indirect stimulation of interest in infants, been valuable throughout the colony. Eventually, as the Native Medical Practitioners go out for service trained in this new feature of medical work by the Central Medical School, additional impetus will be given to child welfare work.

It seems fair to say that the figures of the mid-Pacific groups thus far presented show that all the groups have passed the point of decline and are safely on the upgrade.

Melanesia

The Melanesian islands other than Fiji have a cultural status little different from that of Fiji 60 years ago. They include the territory of New Guinea and the territory of Papua, both Australian; the British Solomon Islands Protectorate; the Condominium of New Hebrides, belonging to the French and the British; French New Caledonia; and the Loyalty Islands. New Caledonia and the Loyalty Islands, which I have never visited and of which I know little, are said to have declining populations.

New Hebrides

Table 15 gives the figures for the non-native population of New Hebrides, taken from the Colonial Report for 1931. The report says:

> The primitive state of the New Hebrides precludes the taking of any reliable census of the indigenous population. In certain islands which have been under missionary influence for a number of years it is possible to make a fairly accurate estimate of the inhabitants, but in the more uncivilized islands such as Malekula, Pentecost, and Santo, whose interiors are almost a closed book, it is not possible to form more than a rough estimate of their numbers.
>
> Malekula is credited with the largest population of some 9,000 natives; Santo and Pentecost come next with about 7,000 each. Tanna 6,500, Aoba 6,000, Ambrym 4,000, Epi 2,500, and Efate 2,000. Among the smaller islands whose population is worthy of note may be cited Paama with just over 2,000 and Tongoa with 1,300 inhabitants.
>
> In general the native population of the group is on the decline, but in recent years the islands of Tanna, Paama, and Tongoa have shown a slight tendency to an increase.

Table 15. Non-Native Population of New Hebrides Condominium, 1931

Description	British			French			
	Adult Males	Females and Children	Total	Adult Males	Females and Children	Total	Grand Total
Nationals	129	98	227	320	471	791	1,018
Foreigners opted under protocol	14	6	20	43	2	45	65
Asiatics opted under protocol	29	1	30	35	....	35	65
Protected subjects and citizens *							
Tonkinese	....	....	....	3,300			
Javanese	....	....	....	42			
Chinese	....	....	....	44		3,386	3,386
	172	105	277	398	473	4,257	4,534

* Totals only available.

The natives of the New Hebrides have had the hardest experience of any island race in the Pacific. They have been "black-birded," "shanghaied," "pirated," and "exploited" in one way or another for nearly 100 years. They have possibly the highest rate of present decline of any in the Pacific. There is no geographical reason for this. The archipelago is fairly compact and relatively well-developed; and simple medical services could be rendered to most of the natives at a not impossible expenditure. The population is estimated at 50,000 to 60,000. In table 16 I have listed certain actual censuses of a few islands on which estimated censuses are based. These are as accurate as can be obtained in the New Hebrides.

Table 16. Actual and Estimated Census Figures, New Hebrides

	Minimum Actual Census	Estimated Census
Lopevi	141	141
Epi	1,187	1,500
Ambrym	3,151	3,600
Atchin	437	450
Vao	332	350
Aoba	3,902	4,100
Maewo	514	650
Rano	231	235
Walla	297	300
Northwest Malekula	.....	1,600
(Big and Little) Nambos		
Pentecost	.....	5,000-6,000
Malo	.....	650

Tanna, Paama, Tongoa, and certain villages in the vicinity of Vila, which have been under the medical care of the Presbyterian Mission, are now increasing in population. The natives under the influence of the Melanesian Mission (Church of England) on Pentecost are also increasing. One of the most valuable pieces of work ever done in the Pacific by missions, is, in my opinion, that of the Presbyterian Mission in the New Hebrides. For the past 75 years this mission has fought tooth and nail for the welfare of the native race and during most of that time was the only bulwark against exploitation and degeneration.

Owing to various circumstances, political and economic, which have arisen since the New Hebrides first came into contact with Europeans, the welfare of the natives has received scant attention. One of the great needs in the New Hebrides has been a Condominium Medical Department with an organized plan of work. This is slowly, too slowly, being organized.

The New Hebrides has developed commercially during the past 10 to 15 years on a fairly large scale. The native labor supply, the former labor reservoir of other Pacific islands over a long period, proved to be inadequate, and 5,000 indentured Indo-Chinese were introduced by the French. This number has largely decreased in the last two years, because as a result of the depression in markets the French colonists could not pay them. But diseases resulting from this introduction of a new people will become apparent only in future years. A similar request for permission to import labor into the colony was refused the British by their government.

British Solomon Islands

The British Solomons include islands large and small spread over an area hundreds of miles long and hundreds of miles wide. A declining population in unexplored islands inhabited by untamed savages can not furnish sufficient labor for the economic development without which better medical services for natives are impossible. It is a vicious circle. Meanwhile, a small medical department makes strenuous efforts.

The population figures for the British Solomon Islands are based on very general estimates, but in most of the islands an attempt is being made to get an accurate census of the population.

The population of the Protectorate in April, 1931, was 94,066. The Protectorate Native Census was 93,415 (table 17).

Table 17. Native Population of British Solomon Islands, 1930

Administrative District	Over 16 Years of Age		16 to 6 Years of Age		Under 6 Years of Age		
	Males	Females	Males	Females	Males	Females	Total
N'Gela and Savo	2,149	1,300	254	247	700	650	5,300
Santa Cruz	1,865	1,596	347	193	575	504	5,080
Ysabel and Cape Marsh	2,324	1,312	877	581	323	283	5,700
Guadalcanar	4,559	4,387	1,944	1,338	1,028	959	14,215
Malaita	12,374	12,163	603	285	7,708	6,934	40,067
Eastern Solomons	2,430	2,160	245	213	1,382	1,130	7,560
Shortlands	612	382	99	41	81	86	1,301
Gizo	2,642	1,708	1,036	823	509	455	7,173
Choiseul	.....	.....	.....	.....	.....	.....	4,051
Lord Howe	.....	.....	.....	.....	.....	.....	750
Rennell and Bellona	.....	.....	.....	.....	.....	.....	1,500
Sikiana	.....	.....	.....	.....	.....	.....	235
Unclassified	.....	.....	.....	.....	.....	.....	483
Totals	28,955	25,008	5,405	3,721	12,306	11,001	93,415

In certain districts births and deaths are recorded and the records are believed to be accurate (tables 18 and 19).

Table 18. Vital Statistics, British Solomon Islands, 1930

District	Population			Births			Deaths		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Guadalcanar	7,407	6,986	14,393	201	175	376	399	299	698
Gizo	3,478	2,997	6,475	123	82	205	73	77	150
Eastern Solomons	4,320	3,656	7,976	104	115	219	148	139	287
N'Gela	2,046	1,846	3,982	24	43	67	31	34	65
Savo	398	350	748	18	13	21	12	7	19

Table 19. Birth and Death Rates, British Solomon Islands

District	1930		1929	
	Births per 1000	Deaths per 1000	Births per 1000	Deaths per 1000
Guadalcanar	26.1	48.4	25.0	25.7
Gizo	31.6	23.1	24.9	23.2
Eastern Solomons	27.2	35.9	25.7	22.7
N'Gela	17.2	16.7	27.9	31.2
Savo	28.0	25.4		

Even if the Protectorate Native Census is not highly accurate, it marks a great step in the right direction in that it furnishes foundation facts upon which reliable judgments can be based. Only one who has visited the Solomons can realize the incredible toil on the part of the officials of the Protectorate that the collection of these figures has meant.

The population is, at present, on the decline, and it is probably inevitable that it will continue to decline for some time to come. It is curious to note, however, that on the Polynesian island of Tikopia the population is increasing so rapidly that the administration is beginning to be troubled by the problem of disposing of surplus population in the not distant future. This is by no means a simple problem. Tikopia is free from malaria and there are few non-malarious islands in the Solomons. The Protectorate is a member of the Central Medical School scheme and has already begun to receive graduates. The hope of the native race in the Solomons, to my mind, lies in the gradual extension of the Native Medical Practitioner system so that natives well trained in medicine may carry Western ideas of treatment and living to their own people.

Papua and New Guinea

That portion of the island of New Guinea which lies east of the 141st meridian is divided by a line through its central mountain chain into two sections, the Territory of Papua and the Territory of New Guinea, each of which has, contiguous to its coast, islands that come within its territorial boundaries. Both territories have immense areas on the mainland and many large and scattered islands far flung from the coasts. The population of both is almost entirely Papuo-Melanesian.

Papua has an area of about 90,000 square miles, a European population of about 1,000, and a native population estimated at 250,000 to 300,000. It has been a British and Australian colony since 1886. The Territory of New Guinea has an estimated area of 92,000 square miles and an estimated native population of 475,000. The Territory of New Guinea, formerly German New Guinea, was mandated to Australia. Its civil administration by Australia began in May, 1921. Both territories have declining Papuo-Melanesian populations. The natives who a few short years ago were fierce

savages still have a culture resembling that of the Stone Age. Much of both territories is unexplored and some population groups have been barely seen, as yet, by Europeans. Although advances are being made in gathering statistical information for these two groups, population figures are, at present, only estimates. There is good evidence that in some places there has been a tremendous decrease in the population. Some small areas can be seen to be static or on the upgrade.

Dr. W. M. Strong, for many years Chief Medical Officer of Papua, has something interesting to say about depopulation in his report to the League of Nations on Health Conditions in the Pacific. In the section entitled "Question of population," he says:

> I think we must distinguish three periods in the history of the contact of Europeans with the natives of Melanesia.
>
> The first period dates up to, I suppose, 1500, and, in the case of Papua, to 1871. There is little or nothing in the way of records covering this period. It is perhaps interesting to note that the hookworm (and also the *Ascaris trichocephalus* and *Strongyloides intestinalis*) may quite likely have been introduced then. Perhaps the *Nysorrhyncus annulipes* (the only anopheline I know in Papua) was also, or perhaps one or more of the malarial fevers may have been introduced then. Bacillary dysentery was not (as I have been assured by an old resident) known in the Port Moresby area till 1888, when a minor gold rush led to a number of miners camping on Ela Beach, and the first case was a miner known as "Jack New Zealand." As previously noted, smallpox was definitely introduced to the south coast during this period, and there are indications that the northeast coast was also affected about the same time.
>
> During the same period—say, 1871 to after the war—there are no records worthy of the name of statistics. My own feeling, and the general feeling, I think, is that, during this period, there was a general decline in the population. Broadly speaking, we must attribute this to white influence. Malaria, yaws, and leprosy may have been introduced in this period. To my knowledge, bacillary dysentery for a time was widespread and serious. I look upon this as the period when the native population was becoming more or less immune to European infections—and especially the trivial respiratory European infections. The first overseas boat coming to Cape Nelson undoubtedly brought an influenzalike epidemic to Cape Nelson.
>
> The third period, dating from after the war, is only just beginning. I regard this as the period during which the natives have acquired (more or less) a resistance to trivial European infections, and in which a beginning is being made to extend modern methods of prevention and treatment to the native population.

This theory probably applies to all northwestern Melanesia, and with modifications to the rest of the Pacific. The natives in Strong's third stage will probably come back as rapidly or as slowly as measures of preventive medicine are applied.

The medical administration of the situations found in Papua and New Guinea is of such overwhelming proportions, especially when finances are considered, that its immensity can scarcely be visualized by one who has not studied the conditions existing there. All that can be done at present is to nibble at the edges.

New Guinea spends 18 percent of her budget, that is, about £50,000, on medical services; Papua spends 11 to 12 percent of her budget, or £16,000 to £18,000, on medical services in her territory.

Racial declines are not checked in a year, or even in 10 years. Economy of the right kind must be stressed, for any plan for racial regeneration will fail if it involves excessive cost. Fiji, the prototype, has found that natives trained in medicine, working under the direction of European medical officers, constitute the best approach to the problem. The administration of the British Solomons is taking the same course. The possibility that this would also prove to be the most economical solution to the problem in Papua and New Guinea should, I feel, be given further consideration by the authorities of these two territories.

No destructive criticism of administrative medical effort in any colony is intended in this paper. It is all well done. In fact, my idea of making currency elastic is the way in which Judge Murray (Sir Hubert) makes Papua's small budget stretch to cover urgent necessities, each pound seeming to do the work of two.

Buxton says, "It was Rivers who first suggested that the Melanesians die out owing to lack of interest in life rather than to any concrete cause." Buxton says he is beginning to question this conclusion of Rivers and to assign to disease the principal rôle in Melanesian depopulation.

Cilento, in various publications, also points to introduced diseases as the chief cause of native depopulation. In a paper published in the Medical Journal of Australia in October, 1932, he says that upon investigation he finds that the causes of depopulation other than medical are subsidiary or unimportant. He concludes:

> The various permanent agencies found operating might be tabulated as follows: 1, introduced or accelerated diseases, especially malaria and tuberculosis; 2, faulty conditions of sanitary environment; 3, privation and poverty of diet; 4, consequential lessened fertility with frequent miscarriage, deliberate abortion, and infanticide. These causes, again, are merely the two factors of disease and food deficiency, which constitute a vicious circle of decline.

Only one of the conditions mentioned by Cilento has not been shared by all the Melanesian islands in the past. In Fiji "accelerated malaria" has never existed. The other conditions are to be found everywhere in Melanesia. Over the years, and still continuing, an effort has been made to improve the sanitary environment of the native, especially the Fijian. As far as diet is concerned, New Guinea is more fertile than Fiji so that the native dietary is as good there as in Fiji. And in Fiji contact with Europeans has meant no upheaval in the native diet such as would affect the race. The proof is a rising population curve. At no time since births have been recorded has there been a lowering of the birth rate over a period which would indicate a lessened fertility.

I agree that the problem is largely a medical one and also that northwestern Melanesia has the added problem of malaria which Fiji does not have. Still, malaria is not a new condition to northwestern Melanesia. It has been there since before the European arrived and like other causes of depopulation which have been discarded for the same reason can not account for present-day depopulation. Nor is malaria an omnipresent cause, or always an auxiliary cause of depopulation in Melanesia.

The most dramatic illustration I have seen of the effect of white contact upon natives occurred back in the mountains in central Papua, where, it must be 30 or 40 years ago, the Catholic padres fought their way into the heart of New Guinea, through regions almost impassable, inhabited by the most ferocious cannibals. Here, 100 miles from the coast, I found no malaria; there was fertile soil, good rainfall, a plentiful food supply, and a minimum of interference with native custom, only a few Fathers and Brothers, later a few Sisters, for the entire 120 miles. I stayed with Father Fastre at Mafulu, 5,000 feet high, overlooking miles of beautiful valleys with not another village in sight. Father Fastre said, "Doctor, when I first came here, I could stand at my door and see ten thousand people. Today the nearest village is Mando, three or four hours away." He said the decline in population was due to epidemics of dysentery and pneumonia that had swept down into his district from tribes more remote in the interior who had acquired these diseases originally from white men or white settlements. It showed me, more clearly than any other experience I have had, the inevitability of the destruction of native races when they come into contact with Euro-

peans; a once populous landscape may be swept clean by imported diseases.

"Lessened fertility, with frequent miscarriage, deliberate abortion and infanticide" ought to have statistics to support them. That was the line of argument in Fiji 50 years ago.

Northwestern Melanesia has in general the same problems, social, economic and medical, that Fiji had 60 years ago, with the addition of malaria, which Fiji never had. As an offset, the Fijian race has had to contend, since then, with an increasingly large influx of people of an Asiatic race who introduced special imported diseases. Such a handicap has not been placed on northwestern Melanesia. Fiji has turned a declining population into an increasing one, largely through the expansion of medical effort along economical lines.

THE NATIVE MEDICAL PRACTITIONERS

The medical care of the natives is the most difficult part of the task of conserving their races. It is possible by quarantine to keep out most diseases; it is possible by concentration on one endemic disease to bring it under control; but to care for epidemics that enter despite quarantine and to care for current sicknesses in scattered island groups with a large population is difficult, with limited finances. One can enlist the services of qualified men to operate hospitals and to care for people at central points, but white men can not endure for long the hardships involved in caring for natives under primitive conditions. Moreover, even when such men are available, they are handicapped for years by ignorance of the native language; and although some of them eventually learn the language, few attempt to acquaint themselves with native customs or to study the mental processes of the native patient; yet by these means alone can they serve the natives to advantage. On the other hand, while it is perfectly true that native races have members mentally capable of qualifying for the practice of medicine, training such natives would not solve the problem, for then they would be men educated to the point where they could be paid little less than qualified Europeans. Besides, they would have little taste for bush life. Above all, it must be emphasized that whatever one has to offer primitives must be carried to them; one cannot expect them to come for it. This fact still remains largely true in the mid-Pacific groups, not only in regard

to medicine but also in every other type of effort for their betterment. One can reach them only in their village surroundings.

In Fiji an attempt was made to solve this problem 50 years ago by establishing, in connection with the Suva Hospital, a native medical school. Bright boys were selected by competitive examinations in the "three R's." They were then placed in the hospital, where they made the rounds of the wards with the physicians, assisted in surgery, did dressings, and put up medicines. They received regular courses of lectures, delivered by physicians. After three years, if they passed their examinations successfully, they received the degree of Native Medical Practitioner and were established with small hospitals throughout the colony, under the supervision of white medical officers. On the whole this plan has worked remarkably well.

Here is the answer to many Pacific island medical problems. The native practitioners receive small salaries; they understand the native language and customs; and they know the native mind. Some of them have been more successful in groups other than their own.

Other island governments have tried to adopt this plan, but they have been comparatively unsuccessful because no other medical center as large as the school at Suva exists in the Pacific. Consequently there has arisen in the past few years a general feeling among the British that this school ought to be expanded. The feeling was easily crystallized and since 1928 there has been established in Suva, in connection with the fine War Memorial Hospital of 100 beds, the several buildings necessary for the enlargement of the old school. From a small school, able to accommodate 16 students, the Central Medical School has developed into an institution equipped to train 40 students for service in the seven South Pacific groups which are now coöperating in maintaining it. These are Western Samoa, Cook Islands, British Solomons, Gilbert and Ellice Islands, Tonga, and the New Hebrides. American Samoa joined the school scheme in 1933.

The course of study originally covered three years, but in 1931 this was expanded to a four-year course. In 10 years there may be a five-year course, with Suva licentiates in medicine and surgery. There is one full-time medical instructor and a medical faculty of 14 honorary lecturers, including 7 qualified medical men. The courses include chemistry, physics, biology, anatomy (modern dissection included), physiology, medicine, surgery, materia medica, public

health, obstetrics, infant welfare and diseases of children, eye, ear, nose, and throat, and dentistry. The students attend all postmortems and assist with them. They act as dressers in the hospital, doing all manner of practical nursing. They serve, in turn, as assistants to the pharmacist, as anesthetists, and as assistants to the surgeon.

Since the inception of the school, the entrance requirements have been raised gradually and the course is steadily being elaborated. According to a quota based on population, the coöperating groups send boys to Fiji to be educated and returned to them. The graduates of this school will gradually fill the medical blanks of the South Pacific and should cause a profound change in health conditions.

The graduates of the school go out on annual salaries of £60 to £120, rising, in various localities, according to the prevailing living conditions, to a maximum of £150 to £170. The cost of their education in the school is moderate, averaging under £77 a year. As the number of students increases this sum will diminish, for a large portion of the cost is a fixed overhead which will not increase. Included in the annual cost are board, room, laundry, clothing, and pocket money—everything except transport to and from Suva. In the British Solomons the difficulty has been that there is practically no schooling available, and few natives are sent outside for education. This situation will be met in the future by the selection of younger boys who will come to Fiji for several years' schooling in the government schools, at a cost of £35 to £40 a year, in preparation for the Central Medical School. It is planned, as is done in Fiji, to select them as young as possible, preferably between the ages of 10 and 12, before they have become completely set in the native mental mould. In Fiji they will be educated, from the beginning of their schooling through their medical course, by instructors who understand the native's mind and his attitude toward life. They will be taught, from a wealth of clinical material, by precept, example, and actual practice, how to treat the conditions they will meet in native life. The only disease condition not met commonly in Fiji which occurs in the rest of Melanesia is malaria. When they graduate they are, for the most part, native gentlemen, since the Fiji Medical School is patterned on the English schools.

New Guinea and Papua need this system as much as Fiji or the Solomons. Medical Tultuls (natives from districts in New Guinea who are brought in for three months and taught simple dressings

and the simplest treatments), though they represent an advance over previous conditions, are not comparable to the Native Medical Practitioners. Good Native Medical Practitioners are more capable than the white medical assistants I have seen in Melanesia; this is due to the superior medical education they receive; and they cost far less both to educate and to maintain. While they need occasional direction, they bloom under sympathetic handling; moreover, they have the true concept of the responsibility of the medical man to his profession. Old Fiji medical men give the credit for the improvement in native disease conditions largely to the Native Medical Practitioners. Their cost is moderate compared with the results they have achieved.

THE CENTRAL LEPER ASYLUM, MAKOGAI, FIJI

In addition to coöperation in the Central Medical School scheme, the following territories have, during the past few years, also coöperated in maintaining the Central Leper Asylum on Makogai, in Fiji: New Zealand, Western Samoa, Cook Islands, Tonga, and Fiji. The Gilbert and Ellice Islands elected to establish their own asylum, probably a retrograde step.

Fiji has maintained lepers on Makogai since 1911. The condition of lepers in most other groups was deplorable in the extreme. Each of the groups could not alone support a proper institution giving modern treatments. But through continued joint effort they succeeded in establishing an institution which today is second to none in the world, and where at a low cost lepers may live in comparative happiness and receive the best modern treatment. In the Central Leper Asylum at Makogai members of 12 different races live in harmony and contentment.

COÖPERATION IN THE PACIFIC

These two enterprises, the Central Medical School and the Central Leper Asylum at Makogai, show what coöperation in a common cause can accomplish. The problems of medical education and the proper care of lepers, each important to the native races, were possible of solution, with the limited funds available, only by joining forces.

I have been told that the School of Tropical Medicine in Sydney

plans to undertake the training of natives in medicine. However, this school has many disadvantages over the Central Medical School, in addition to greater cost of maintenance.

Considering the harmony with which schemes of coöperation have operated in the Pacific and their successful issue, a united British Medical Service in the South Pacific does not seem impossible. A nucleus for such an organization already exists in the Western Pacific High Commission territories, where the Chief Medical Officer, Fiji, has been a Central Medical Authority to the High Commission since 1928. Such a service offers many advantages in the sharing of experience and in the exchange and shifting of personnel; it can also serve many other purposes which will immediately occur to the experienced lay administrator as well as to the professional man stationed in the tropics.

If Australia should join the coöperative schemes in progress in the Pacific, the logical consequence would necessarily be an expansion of the usefulness of the Sydney School of Tropical Medicine. Her own tropical possessions would then have access to a greater body of experienced tropical medical men, and more of her better graduates in medicine would be attracted to such careers.

CONCLUSION

From the standpoint of population, the Pacific is divided as follows: 1, the eastern Polynesian islands, whose populations have declined to a point that seems to preclude their racial regeneration; 2, the mid-Pacific islands of Polynesians, Micronesians, and Melanesians, which have passed through the period of decline and are safely on the upgrade; 3, the purely Melanesian islands to the west, which are still in the throes of decline. There is presented a summary of the population data available and the conclusion is reached that the cause of native decay is largely disease. Fiji is taken as an example and evidence is presented that the Native Medical Practitioners, natives trained in simple medicine, have played a large part in the racial recovery of the Fijians. The other mid-Pacific groups and the British Solomons have joined forces with Fiji to provide themselves and Fiji with better education for these native practitioners. It is urged that northwestern Melanesia consider carefully whether this would not be the solution of her problem of racial regeneration.

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