REPORT OF A WHO-SUPPORTED LEPROSY SURVEY, 1957, OF THE BRITISH SOLOMON ISLANDS[1]

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INTRODUCTION

The Solomon Islands consist of 10 large islands and clusters of smaller ones situated between latitudes 5° and 12°S. and longitudes 154° and 163°E. They form a double chain of islands which stretch roughly northwest to southeast over 900 miles of ocean, and includes mainly Choiseul, Ysabel, Russell, Malaita, Guadacanal and San Cristoval. The total land area is 12,000 square miles.

The main islands are mountainous, heavily wooded and well watered. The climate is hot (76° to 89°F), with a heavy rainfall which averages 128 inches annually. The relative humidity is high and constant (78 to 83%).

The population, as estimated in mid-1955, includes about 94,000 Melanesians, 4,350 Polynesians, 590 Europeans, 250 Chinese and 10 other Asiatics, or a total of about 99,200.

PREVIOUS LEPROSY SURVEYS

The first systematic and extensive leprosy survey was carried out by Dr. J. Ross Innes between August 1937 and March 1938, who personally examined 21,615 people among whom 221 cases of leprosy were found, giving a prevalence rate of 10.2 per 1,000. He made useful observations on the customs, social order, housing, sanitation, nutrition, temperament, and attitude toward leprosy of the Melanesian people, and discussed other predisposing factors towards the disease. His report, a printed official document of the B.S.I.P. (2), is now difficult to obtain. His table giving, among other essential data, the area, density of population and prevalence of leprosy was found very useful in the present survey.

Another survey was made in 1952 for the South Pacific Commission by Dr. J. C. Austin (1). He was able to visit the government leprosarium at Tetere and all of the mission leprosaria, as well as the Auki and Sidu leprosy villages, the government dispensary at Matakwalow, and some villages including Kia on Ysabel Island, and the Buma Mis-

[1] This article is based on the report of a survey of the British Solomon Islands Protectorate (B.S.I.P.) which the author, serving as a WHO Medical Consultant (Leprosy), made in September-November 1957. It is published by permission, appropriately modified as to text and with certain of the tables of the original document.

sion and Adagege on Malaita. He also examined the inmates of the prison at Honiara, among whom he found one tuberculoid case. At the time of the survey there was a total of 228 known cases under treatment or observation in the Protectorate, 7 more than the total reported by Ross Innes about 14 years previously. Assistant Medical Practitioner (A.M.P.) Maceu Sulato made a small leprosy survey (unpublished) in connection with his tuberculin testing of inhabitants of Guadalcanal, the largest island in the Protectorate. This was done as part of the Yaws-Leprosy Control Project.

PURPOSE AND METHOD

Itinerary.—There would be no particular purpose in recounting details of the itinerary of my visit, unless to illustrate the truly formidable difficulties of such travel in the Protectorate. Suffice it to say that, from headquarters at Honiara on Guadalcanal, the following islands and leprosy units of various kinds were visited.

Guadacanal: The Tetere Government Leprosarium. This leprosarium is on a site occupied and developed as a U. S. Marine Corps camp, and has excellent facilities.

Malaita: Abofo leprosy villege, near Auki; Melanesian Mission leprosarium, at Fauabu; Seventh Day Adventists (S. D. A.) Mission leprosy hospital, at Kwalibisi; Faoao, Mene'fao and Faufania, examining known leprosy cases; and Fo'odo, Malu'u and Matakalou, villages where groups of people were examined for cases.

South (or small) Malaita: With two of the yaws-leprosy teams, to observe and advise their search for leprosy cases in groups of people at Welendi and Pulu.

Ysabel: Sidu leprosy villege (found to have been abandoned, but a few old patients living in the neighborhood were examined).

Kolombangara: S. D. A. Mission leprosarium, at Kuduku.

Ozama: Biloa Methodist Mission leprosy station, at Ozama.

Purposes of the visits.—It was planned that the survey should cover the following points, all of which were accomplished.

(*a*) To visit all of the leprosaria in order to evaluate the qualifications of the personnel, to examine the patients to determine the predominent types of the disease, to become acquainted with the classification and methods of treatment used, and to secure lists of their in- and outpatients.

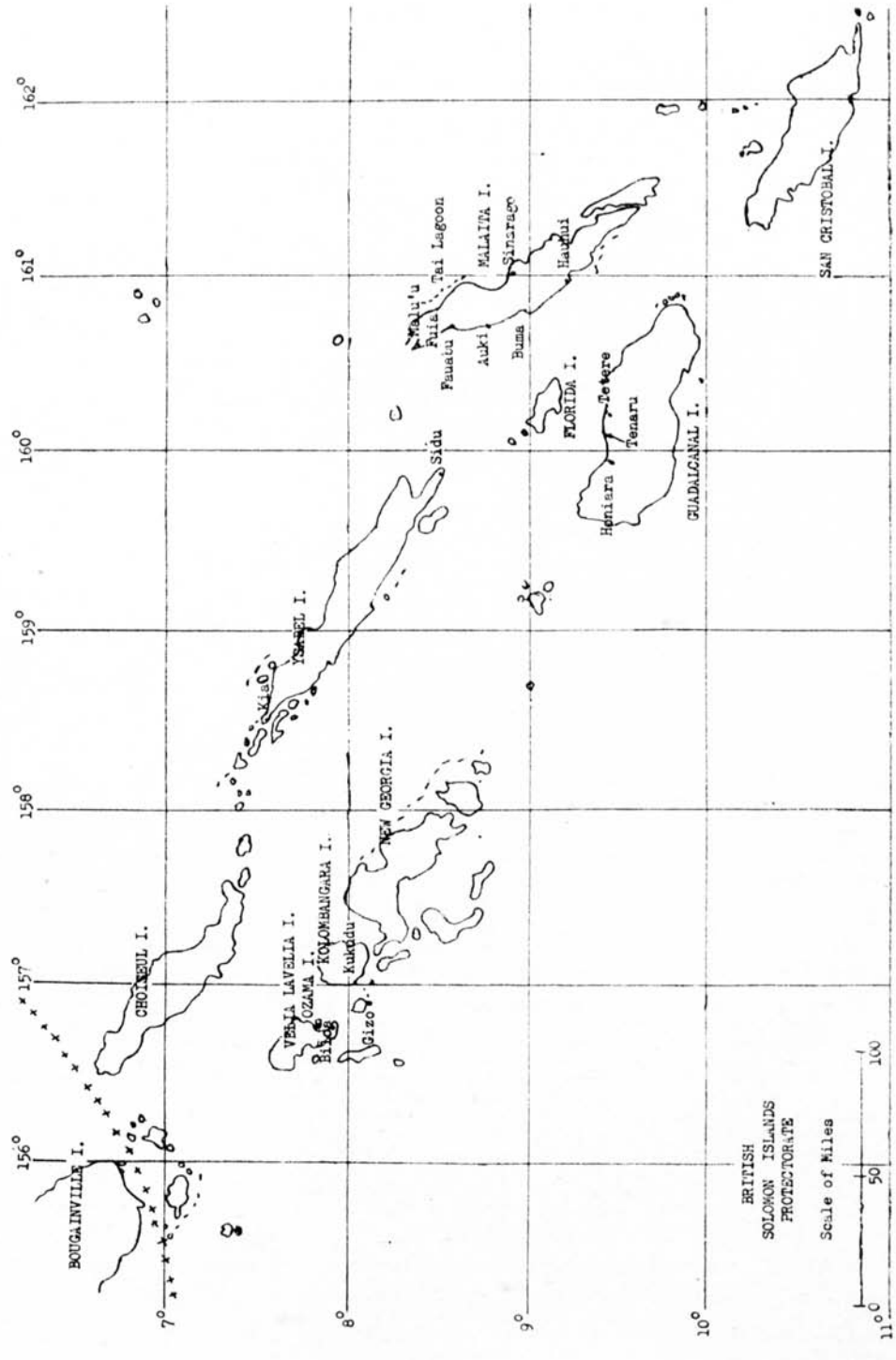
(*b*) To reexamine some of the leprosy cases previously detected by the specialized yaws teams in order to check the diagnoses.

(*c*) To examine samples of the population for leprosy, and to observe their customs, health habits, diet and attitude toward the disease.

(*d*) To visit the "leprosy villages." (Two of the 4 known to exist were seen; one of them was found to have been abandoned.)

The yaws-leprosy control project.—Special mention must be made of a WHO/UNICEF-Assisted Project which is charged with the search for leprosy cases in the course of its antiyaws campaign.

Field work was started, in June 1956, as a small pilot project on the islands of South Malaita, Rennel, and Bellona. The mass survey, for which there are now three "specialized yaws teams," was subsequently extended to the large islands of Guadalcanal, Malaita, Ysabel, Choiseul, New Georgia, Kolombangara and Vella Lovella. The Nggela Group, San Cristoval and the nearby islands of Sta. Anna and Sta. Catalina, as well as the Reef islands group, remain to be mass surveyed.


162°
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BOUGAINVILLE I.
CHOISEUL I.
VELLA LAVELLA I.
OZAMA I.
KOLOMBANGARA I.
Kukudu
Gizo
NEW GEORGIA I.
Kia
ISABEL I.
Sidu
Malu'u
Fuia
Tai Lagoon
Fauatu
MALAITA I.
Auki
Sinerago
Buma
Hauhui
FLORIDA I.
Tetere
Tenaru
Honiara
GUADALCANAL I.
SAN CRISTOBAL I.
BRITISH
SOLOMON ISLANDS
PROTECTORATE
Scale of Miles
100
50
0

When a suspected case of leprosy is discovered during the rapid mass-survey the patient is made to return after the yaws treatment for that day has been completed, for further clinical examination and the taking of bacteriologic smears. It has now been arranged that antileprosy treatment will be initiated by the yaws teams, after which the patients will be referred to another agency which will continue the treatment, such as the government or a mission leprosarium, a "leprosy villege," a mission station, or the government dresser nearest to the home of the patient.[2]

As of October 1, 1957, the three specialized teams had discovered 303 new cases of leprosy in the islands where the mass-surveys had been completed. This total includes 253 cases on Malaita, 29 on Ysabel, 20 on Choiseul, and 1 on Sekiana. Cases found on Guadalcanal have not been included in this report because the mass survey of this island was not yet completed at the time of my survey. Many more cases will doubtless be found when the teams survey the Nggela group, St. Cristoval, Sta. Anna, Sta. Catalina, Sta. Cruz and the Reef Islands.

INSTITUTIONS SURVEYED

The Tetere Leprosarium.—The activities of this institution, the only government leprosarium in the Protectorate, under the administration of Sisters Mary Joseph and Mary John, have steadily increased since its beginning on a humble scale in 1949. This is evidenced by the following data on the numbers of patients under treatment in the past several years (figures as of January 1st each year).

Year	*Inpatients*	*Outpatients*
1952	46	62
1953	63	143
1954	96	148
1955	99	311
1956	73	499
1957	86	503

It will be seen that the outpatient department had shown a truly remarkable increase. These patients include those who have been discharged from the leprosarium itself, but most of them are new cases brought in by the released patients from their villages, encouraged by the good results of the treatment and the enthusiastic activities of the Sisters. The increase of inpatients during 1953 shown by the 1954 figure was made possible by an increase in the bed capacity and resulted from the interest of the responsible medical officers in bringing in patients from the distant islands of the Protectorate.

Data on the 589 cases at the leprosarium as of January 1, 1957, with respect to the type of leprosy and age distribution by island, are given in Table 1.[3] Distinction of the indeterminate group in classification is not practicable in the Solomon Islands at the present time, due to lack

[2] A simple manual on leprosy and its diagnosis and treatment prepared by the author for the guidance of the specialized yaws teams and to aid in the training of dressers and personnel of mission stations was attached as an annex to the original version of this report.—EDITOR.

[3] The ratio of tuberculoid to lepromatous cases among the inpatients was 2.6 to 1, while among the outpatients this ratio was 5 to 1. Among the cases discovered by the specialized yaws teams, on the other hand, there were 7 lepromatous cases to 1 tuberculoid case.

of facilities and especially of trained personnel; cases belonging to this group discovered are classified as tuberculoid.

TABLE 1.—*Patients of the Tetere Leprosarium (56 inpatients, 503 outpatients), showing distribution by island of origin, type of leprosy, sex, and age grouping, as of January 1, 1957.*

Island of origin	Type		Males, total	Males, age			Females, total	Females, age			Total patients
	L	T		0-14	15-39	40+		0-14	15-39	40+	
Guadalcanal	75	383	222[a]	46	127	48	236[a]	44	160	31	458
Malaita	22	38	43	2	32	9	17	5	11	1	60
Nggela	0	17	10	1	7	2	7	2	3	2	17
San Cristoval	2	13	11	—	8	3	4	1	3	—	15
Reef I.	0	13	8	4	4	—	5	2	2	1	13
Savo	2	6	1	—	—	1	7	3	4	—	8
Sta. Catalina	1	5	3	1	2	—	3	—	3	—	6
Sta. Cruz	3	2	1	—	—	1	4	1	2	1	5
Sta. Ysabel	0	3	3	—	2	1	0	—	—	—	3
Howe Atoll	1	0	1	—	1	—	0	—	—	—	1
Ulawa	0	1	0	—	—	—	1	—	1	—	1
Russell I.	1	0	0	—	—	—	1	—	—	1	1
Sta. Anna	1	0	0	—	—	—	1	—	1	—	1
Total	108	481	303[a]	54	183	65	286[a]	58	190	37	589

[a]Ages of 1 male and 1 female not given.

It is interesting to note that there were more female than male patients among the inpatients at Tetere, and that about 30 per cent of them were children below 15 years of age. In the outpatient group, there were slightly more males than females, and there was also a marked preponderance of the younger age-groups below the age of 30 years.

It will be noted that of the 589 at Tetere, 458 came from Guadalcanal Island, and 60 from Malaita. The remaining 71 cases were collected from the other islands of the archipelago.

Ross Innes reported that out of the 221 cases found by him in the Solomons, 138 were from Malaita and only 44 from Guadalcanal. Actually, the center of interest with regard to leprosy in the Protectorate has shifted from Malaita to Guadalcanal. Although some increase of cases from the latter island would be expected due to the location of the Tetere Leprosarium on it, it is believed that this circumstance cannot fully account for the remarkable proportionate increase of cases found on Guadalcanal in recent years. There is no doubt that this apparent increase is also partly due to the fact that many districts on this island which formerly were practically inaccessible to the government and to the missions have now been opened to these agencies, and the people are much more cooperative. This has led to the voluntary presentation of persons with leprosy, particularly since the success of the treatment has become apparent to the people. New cases are literally pouring out of the "bush" in the districts of Gorogana, Wanderer

Bay, Oola, Avúavu, Talice No. 1 and No. 3, Visale, and Marau on Guadalcanal.

On the other hand, it is very probable that the disease is actually spreading silently in many villages on this island. A particular instance is cited by Sister Marie Joseph.

> Kueto Paulo, an advanced lepromatous case, was admitted to Tetere on December 4, 1949, aged 50 years. While working as a dresser at Tulagi in 1934 he was found to have the disease, together with another dresser by the name of Andre, also from Guadalcanal. They both returned to live at Hingoria Villege, Gorogana District, where they were the first known cases of leprosy. Not many years afterwards other people of this village and the surrounding bush got the "sickness." Paulo, who proved to be an intelligent patient, was convinced that he and Andre introduced the disease into their village and other villages in the Gorogana District 23 years ago. There were 121 cases from this one district in the outpatient register at Tetere as of January 1, 1956.

The Fauabu Leprosarium.—This old institution of the Melanesian Mission, of the Episcopal Church, was the only institution for leprosy patients situated on Malaita in the old days, when that island was the main focus of leprosy. It may be expected to continue in the future to play an important role in the control of this disease in the Protectorate.

The dedicated nurse in charge, Sister Crawford, is adequately trained in the modern treatment of leprosy and she also does the necessary laboratory work. The clinical and laboratory records are well kept. However, there does not seem to be much room for expansion of its present capacity of 36 inpatients, but its work is being extended by an active outpatient clinic where 108 were registered at the time of my visit.

The Kuailibisi Leprosarium (*S.D.A.*).—The present capacity of 28 inpatients will probably be increased with the expected acquisition of more land suitable for farming, while its outpatient clinic should also increase beyond its present number of 19 cases because of its location in a highly endemic area.

The Kukudu Leprosarium (*S.D.A.*).—Of the 10 inpatients, 3 were lepromatous and the rest were major tuberculoid cases, several of which are in a clinically arrested stage and had been in the institution for many years. There had been only 4 admissions during the last 5 years, according to the dresser in charge. These came from the New Georgia group, the islands around the Raviana and the Morovo Lagoons.

It appears that the disease is no longer prevalent in the islands which formerly supplied patients for this old institution, and unless it should become possible to bring in patients from highly endemic islands this old institution is bound to become even smaller. Naturally, it has no outpatient clinic.

The Ozama Leprosarium.—This well-known institution, located on a small island off the coast from the Biloa Methodist Mission on Vella Lavella, is reached by small canoe. It had 36 inmates at the time of my survey, about twice as many as when Austin visited it. It was not pos-

sible to obtain information as to the villages and islands of origin of the inmates, but it seems that in recent years the island of Choiseul had been the main source of new admissions. There were scanty clinical or laboratory records available which could be of use in typing the cases.

The disadvantages of island leprosaria are apparent at Ozama, where there is the ever-present problem of the patients having to cross the sea to reach their gardens, as mentioned by Austin.

THE "LEPROSY" VILLAGES

These villages have been established by District Councils for the care and treatment of patients within their districts. A dresser whose salary is paid by the council is employed to take care of the patients. However, according to information, their salaries have not been regularly provided for and their positions have always been insecure. The patients achieve self-support by working in the gardens belonging to the village, while the antileprosy drugs and other medicines are supplied by the medical officer of the district, who is expected to inspect the village from time to time.

Of the three known leprosy villages in actual operation, I was able to visit the Obafao Village near Auki, which had 18 inmates and 9 outpatients. It is self-supporting with regard to food, and the patients themselves had constructed their own dormitories and a sturdy central clinic building. This village had been promised a donation of £500 for new buildings by the New Zealand Lepers Trust Board, no doubt encouraged by the spirit of self-help shown by the patients under the leadership of Dresser Mallon Moe.

This successful leprosy village, established and supported by the District Council of Malaita, proves that such an institution, if established in the center of a prominent focus of the disease and properly supervised, could play an important role in the management of the leprosy problem in the Protectorate.

On the other hand, the checkered history of the Sidu village on Ysabel Island shows what can happen when interest in the project is not maintained. This small village was started near the government station at Tatamba several years before the last World War at the initiative of A.M.P. George Bugese, who soon after was transferred to another district whereupon the patients returned to their homes. Shortly before the war reached the Solomons, the Council reestablished the village at Sidu under Dresser Albert. What happened to it during the War is not known, but after the Solomon battles were over Dresser Albert was still in charge of the little village. Between 1946 and 1951 it was visited twice by a government physician. At the time of Austin's visit in 1952 there were 9 inmates at Sidu, of whom 4 were found to be "inactive" clinically. Shortly thereafter the position of dresser was taken over by Sodu, who was later found to have the disease himself. When Sodu died in 1953, old Dresser Mati of the nearby Melanesian

Hospital took over, but he was not successful and the village was closed after a few months.

The last twist occurred only a month before my visit when the Council, at its monthly meeting held in September 1957, decided to re-establish the village. The first step approved was to make arrangements for the trip of a certain Moses Manisouia to Tetere for special training, so that he might be employed as a dresser. For some reason or other, after staying at Honiara for 3 days he was ordered to return to Tatamba without reaching Tetere.

At the time of my visit to the old site I found it totally deserted. The two main dormitories had completely collapsed but the clinic building was intact, with a tin basin and bottle of disinfectant on the dressing table, as if ready for business the following day.

It seems that with just a little interest shown by the corresponding authorities, the Sidu village could be reestablished without any difficulty. A survey of Sidu seems to be indicated, however, to determine its suitability as a permanent site with respect to sufficiency of land for gardens and the water supply.

I was able to locate and examine 4 of the former inmates who showed active manifestations of the disease, and one tuberculoid case was found among their contacts.

Lack of time did not permit visits to two leprosy villages reported to have been recently established on Guadalcanal Island.

MISSION STATIONS GIVING LEPROSY TREATMENT

There are several mission stations of different denominations on Malaita and Guadalcanal and other islands known to be giving DDS and other leprosy treatment to patients living within their territories. This work is being done at their own initiative, apparently without any aid or recognition from the government. Among the Roman Catholic missions, the Buma and Takua stations on Malaita and the Ruavato, Makina, Avuavu, Tangarare, Visale and Tanagai stations on Guadalcanal are said to be supplying medicines to outpatients previously diagnosed at the Tetere Leprosarium. The number of patients thus treated is not known. These mission stations could be incorporated into the leprosy control program of the Protectorate after proper training of their personnel in this work, without much additional expense to the government.

MASS EXAMINATION OF A SAMPLE OF THE GENERAL POPULATION

During the period of my survey I was able to examine a total of 596 villagers on Northern Malaita and 7 new cases were found among them, giving a prevalence rate of 1.17 per cent. Since the villages where they lived had already been mass-surveyed for yaws and leprosy by the specialized teams, these cases must have been either missed by the teams or else their lesions had appeared after the survey.

PREVALENCE OF LEPROSY BY ISLANDS

Table 2 gives the numbers of cases discovered on the different islands of the Protectorate, and the agencies which discovered them. The new figures on estimated population were of necessity taken from the Pacific Islands Year Book, seventh edition (1956). It is expected that when the mass-treatment phase of the present yaws campaign is completed, a good census of the population of most of the large islands and of some of the smaller ones will become available; it is estimated that the total population will reach 110,000 people. Austin believed this total to be around 94,000 in 1938.

TABLE 2.—*Total known leprosy cases in the Protectorate, inpatients and outpatients, by islands of origin and agencies which discovered them.*[a]

Island (and population)	Yaws team	Leprosaria					Miscellaneous[b]	Total
		Fauabu	Obofou	Tetere	Kwalibisi	Kukudu		
Malaita District								
Malaita (46,471)[c]	253	144	27	60	47	—	7 (R)	538
Ulawa				1				1
Sikiana	1							1
Sta. Ysabel (6,000)	29			3			1 (R)	33
Central District								
Guadalcanal (15,000)[d]				458				458
Nggela		3		17				20
Russell I.				1				1
Savo				8				8
Western District								
Choiseul	20					4		24
Vella Lavella							4	4
Randova						2	5	7
Morovo Lag. I.						3		3
Raviana Lag. I.						1		1
Shortland							1	1
Simbo							1	1
Eastern District								
San Cristoval (8,000)		5		15				20
Sta. Anna				1				1
Sta. Catalina				6				6
Reef I.				13				13
Sta. Cruz				5				5
Island District								
Howe Atoll				1				1
Total	303	152	27	589	47	10	19	1,147

[a]Ozama not included.
[b]The case indicated "(R)" were discovered by the author.
[c]Census by District Officer in 1956.
[d]Yaws-leprosy mass survey not completed.
[e]Yaws-leprosy mass survey not started.

The total of about 1,147 cases given in this table is 21 cases short of the total number of registered cases, because the island of origin of the inmates of the Ozama leprosarium could not be determined. Probably 11 of the cases in the "miscellaneous" column were also Ozama

patients. As has been said, 303 were discovered by the specialized yaws teams; 798 were discovered by the leprosaria (not including Ozama), 27 by the only active leprosy village visited, and 19 by "miscellaneous" means, including the 8 discovered by me. It is estimated that when the necessary information becomes available the prevalence rate of leprosy on Guadalcanal Island will be found to be around 30 per thousand, while the average for the rest of the archipelago it will be in the order of 10 per 1,000. These rates indicate that leprosy constitutes a serious public health problem in the Protectorate, and the fact that the disease seems to be spreading in some of the islands is an indication that immediate steps to control the situation are necessary.

Ross Innes also reported that, although he had not visited Choiseul, there was evidence that there were then no persons with leprosy there. However, as has been said, most of the new admissions to the Ozama leprosarium now come from Choiseul, and 20 cases were found there during the mass survey by one of the specialized teams.

Table 3 gives data from the report of Ross Innes regarding the prevalence of leprosy in some of the larger islands in 1937-1938, for comparison with the numbers of registered cases at the time of my survey. Due to paucity of more recent figures, the population estimates given in his report have been used in estimating the present prevalence rates.

TABLE 3.—*Prevalence of leprosy in some of the larger islands in 1937-1938 (Ross Innes) and in 1957 (Rodriguez).*

Island or district	Ross Innes							Rodriguez	
	Area (sq. miles)	Population	Density of pop. (sq. mi.)	No. of people examined	No. of cases found	Prevalence (per cent)	Est'd. no. of cases	No. of cases known	Prevalence (per cent)
Malaita	1,450	40,000	27	10,245	138	1.35	600	538	1.35
Nggela	235	5,300	24	1,410	14	0.99	40	20	0.38
Guadalcanal	2,500	14,880	5-6	5,023	44	0.89	120	458	3.04
Ysabel	1,802	4,200	2-3	2,717	15	0.55	25	33	0.79
Russell	70	853	12	853	4	0.47	4	1	0.12
Savo	12	700	58	249	1	0.44	4	8	1.14
Cristoval	1,789	7,560	4	1,118	5	0.45	35	20	0.26
Total	7,858	73,493	6-7	21,615	221	1.02	828	1,078	1.46

Ross Innes' rates are based on the number of people examined personally by himself. His estimate of probable total number of cases for the island of Malaita was quite close; those for Nggela and St. Cristoval, which remain to be mass-surveyed by the specialized teams, have not yet been reached. The number of cases registered for Guadalcanal in 1957 is almost four times his estimate for this island, where he actually discovered 44 cases and estimated the total to be 120. It is to be noted that the number of cases found by the specialized teams on Guadalcanal have not been included in the total of 458 registered cases, as the mass survey of this island has not yet been completed.

Ross Innes further noted that, as shown in Table 3, density of popu-

lation did not necessarily coincide with a high incidence of leprosy, as indicated in some of the surveys conducted in other countries. It is the intimate person-to-person contact present in closely-packed small groups or families under certain conditions which appears to favor the spread of the disease, even if there are only a few such groups occupying a territory.

COMMENTS

Great impetus was given to the leprosy work in the British Solomon Islands Protectorate by the establishment and gradual development of the only government leprosarium at Tetere on Guadalcanal. Previous to its establishment, the only agencies engaged in this activity were the mission leprosaria at Fauabu, Ozama, Kukudu and more recently at Kwalibisi. Two "leper villages" had been set up by District Councils; one of them has closed. However, early this year, two others are said to have been established on Guadalcanal Island.

The teams of the WHO/UNICEF-Assisted Yaws-Leprosy Control Project which started field work in 1956 have given another big push to the undertaking of an adequate leprosy control program. Up to September 30, 1957, these teams have discovered 303 new cases. The work of this project has not yet been completed, so that more patients may be expected to be found. The problem of administering the treatment of the newly-found cases is a problem for the health service headquarters at Honiara.

The establishment of more leprosy villages, which would impose very little additional financial burden upon the central government, should bring more patients under proper treatment, while the activities conducted by many mission stations in this field may be taken advantage of and brought within the scope of the government leprosy control program. If all these activities are fully coordinated and given due impetus, an adequate control program for the Protectorate may be developed without imposing too heavy a financial burden upon the government.

With regard to the type of the disease, it is apparent that the predominating one is tuberculoid, 85 per cent of all known cases being of that type. Nerve involvement among these cases is relatively frequent, while paralyses leading to wrist- and foot-drop are by no means uncommon.

As to the treatment, since the cases are predominantly tuberculoid they tolerate relatively high doses of DDS and other sulfones. The occurrence of erythema nodosum leprosum is not as important as an impediment to full-scale treatment in these islands as in countries where the lepromatous type predominates. For outpatient administration, the use of a repository injectable DDS preparation would seem to be the method of choice in the Solomon Islands.

ACKNOWLEDGMENT

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