GILBERT AND ELLICE ISLANDS COLONY.

REPORT ON

CERVICAL ADENITIS

IN THE GILBERT ISLANDS

BY

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REPORT BY THE SENIOR MEDICAL OFFICER ON CERVICAL ADENITIS IN THE GILBERT ISLANDS.

FROM THE SENIOR MEDICAL OFFICER to THE RESIDENT COMMISSIONER.

R.C. No. 8.

Medical Department,
Tarawa, 31st March, 1930.

Sir,

I have the honour to refer to your letter No. 14 of 10th October, 1928 (received 15/3/29), enclosing a copy of a despatch from the Secretary of State concerning the recommendations of the Colonial Advisory Medical and Sanitary Committee, in which in paragraph 3 the Committee express their concern at the continued prevalence of Tubercular Adenitis, particularly amongst the children of the Colony. The Committee also asked that they might be furnished with information as to the diet of the children in the islands and informed whether the possibility of the cause of this disease being dietetic had been considered.

2. In your letter quoted, Your Honour has drawn my attention particularly to the question of there being a dietetic explanation of the prevalence of Tubercular Adenitis. In replying, I feel best able to discuss that part of the subject by giving you my general impressions of the contributory causes of Cervical Adenitis amongst the children of this Colony. It is most usual to conclude a letter or a report with a summary, but in this instance I propose to insert my summary at this stage, with numbers corresponding to the appropriate paragraphs dealing with the subject head. My reason for so doing is to show at a quick glance the arguments I have set forth and so that any portion of the letter may be readily referred to and found. Without further apology, I have the honour to insert—

THE SUMMARY.

3. With intention I have used the term " Cervical Adenitis " and in support of this appellation I have the honour to quote from my Medical and Sanitary Report for 1926–27, part II., Public Health—Communicable Diseases—Tuberculosis, as follows:—

> " In my report for last year I pointed out that the examination of large numbers " of children taken at random had revealed to me that enlargement of the lymphatic " glands in the submaxillary triangle was very common and that it was almost always " accompanied by chronic enlargement of the faucial tonsils and adenoids. Boys " and girls of all ages appeared to be affected alike. A minor proportion of these " had in addition enlargement of the glands along the course of the internal jugular " vein."

And also from my Medical and Sanitary Report for 1928, again under Tuberculosis, as follows:—

> " I do not mean to suggest that all these cases examined were cases of tubercular " disease of the glands, but, since any inflamed and enlarged gland may develop " dangerously, I regard them along with the hypertrophied tonsils and adenoids as " potential starting points of scrofula." (I made a similar statement in my report " of 1925–26, page 3). " My object was, therefore, to attack the disease at the source " or in its early stages, as a measure of prophylaxis in tubercular and catarrhal condi- " tions. There has been little opportunity for bacteriological investigation of the " problem, but in a series of 150 smears of glands excised in the course of this work, " I have found the tubercle bacillus in six per cent. of the examinations. I have " introduced guinea-pigs into the Colony and if a sufficient number can be raised here " I intend to make use of them in a further investigation. I understand that Von " Pirquet's test was applied here some years ago, but this method of determining " tubercular subjects was abandoned as being untoward and dangerous in its reactions " and no records of that work are available."

(It is one year since the above was written and it appears to me unlikely that sufficient guinea-pigs can be reared in the Gilbert Islands. Also, there is some doubt as to the particular tuberculin test used in the past, and I have decided to introduce the Von Pirquet test, both human and bovine strains, as an aid to diagnosis).

4. The Cervical Adenitis exhibited by the juvenile population of these islands falls into two main groups which are:—

(*a*) septic glands: those due to chronic sepsis of the tonsils and adenoids;

(*b*) tubercular glands: those due to chronic sepsis of the tonsils and adenoids and superimposed tubercular infection via the tonsils, or due to tuberculosis of the tonsils.

In passing, I may mention that impetigo, scabies, septic wounds, abrasions and decay of the teeth are responsible for a few scattered cases of glandular inflammation usually of a more acute and rapid nature than that I am dealing with.

5. The initial focus of these diseases—(*a*) and (*b*)—of the glands, I am fully convinced, is the pathological conditions of the tonsils and adenoids, which are almost always exhibited in patients showing simultaneously glandular swellings in the neck and at the angle of the jaw. In support of this view, I quote from a paper on the subject—*Tonsils and Adenoids, their Medical and Surgical Aspects*—(read in opening a discussion in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Manchester, 1929, by J. Arnold Jones, F.R.C.S., Ed., B.M.J., 24th Aug., 1929, page 337), where it is stated amongst the indications for tonsillectomy, as follows:—

> " Chronic enlargement of the cervical glands. This may be due to chronic sepsis " of the tonsils or to tubercle. The incidence of tubercle in tonsils which have the " clinical appearance merely of chronic hypertrophy and inflammation has been " studied at various times by different observers with results varying from 0·3 to 9 " per cent."

In addition, various authorities might be quoted, who have given it as their opinion that though the function of the tonsils is still *sub judice*, it seems reasonable to regard them as organs for the defence of the respiratory and digestive systems during the early years of childhood, but their frequent and lasting hypertrophy after an infectious process or repeated infections and the frequency with which they appear to be starting points of infection show that they serve as ports of entry for infection.

6. At the moment of writing, I have just completed a survey of the inhabitants of Nonouti, where I have examined the children as to the condition of the tonsils and adenoids and also the glands of the lymphatic system. The figures are very similar to those I have already given for the islands I have surveyed.

COMPARISON OF NONOUTI WITH FIVE OTHER ISLANDS, VIZ., MAKIN, BUTARITARI, MARAKEI, ABAIANG AND TARAWA.

	Average of five islands.	Nonouti.	Average of six islands.
Number of children	2,541	707	3,248
Percentage with enlarged glands ..	82·5	89·24	83·65
Percentage with enlarged tonsils and adenoids	83·5	84·01	83·62
Percentage with enlarged both ..	74·8	..	..
Percentage with either or both ..	91·8	86·57	90·90

Being desirous to notice the effects of tonsillectomy (with adenoid curettage) alone in these cases where there was only a single gland or so palpable at the angles of the jaw, I selected for operation for removal of glands those cases only which showed enlargement of the deeper glands along the course of the internal jugular vein in addition to swelling of the gland at the angle of the jaw. Of the 631 children who had cervical adenitis, I operated on 55 children, representing 8·72 per cent. of the above number, or 7·77 per cent. of the total of 707 children examined in the survey. Every one of those 55 patients had a chain of glands under the sterno-mastoid muscle, showing caseation in one or more members of the chain. I feel therefore entitled to consider that tubercular adenitis occurs in at least 8 per cent. of the children of Nonouti.

7. These figures can readily be accepted as representative of the whole group of the Gilbert Islands. Further 8 per cent. is a "rock-bottom" proportion, where the pathological appearance of the glands prompted a diagnosis of tuberculosis. There is a large possibility that tuberculin tests applied to the other children would give positive results in many instances and swell the proportion of scrofulous children; and I hope in the near future to give more comprehensive results. Lately, however, I have observed that quite a goodly proportion of these small glands at the angle of the jaw rapidly settle down, become smaller and less tender very quickly after the removal of the tonsils. But in all fairness it must be stated that these same cases have received at the same time treatment by arsenical compounds for yaws.

8. Previously, in a series of 150 excised submaxillary lymph glands, not including glands of definite pathology, I found the mycobacteria of tubercle in 6 per cent. In his *Health Survey of the Gilbert and Ellice Islands* (1924), Lambert of the Rockefeller Foundation stated in his remarks on tuberculosis that " tuberculous adenitis is common in the islands " and that " cervical adenitis is almost universal." Again, in a paper entitled *Medical Conditions in the South Pacific* (*Med. Jour.*, Australia, 22nd Sept., 1928) he states, while remarking on my observations on tuberculosis in my 1925–26 Medical and Sanitary Report, that " tuberculous cervical adenitis is almost universal in the Gilbert and Ellice Islands." This expression of opinion may not be an over-statement of the true position, but up to the present it has not been fully confirmed.

9. Several principal factors may be involved in our tuberculosis problem: firstly, that tuberculosis in its high incidence is due to a racial characteristic—a lack of resisting power; secondly, that diet deficiency, an unbalanced diet and/or insufficiency of vitamins may be present; and thirdly, that a lowering of the general standard of bodily health occasioned by universal yaws infection may predispose to tuberculosis.

10. In a Memorandum, *Tuberculosis in the Tropics*, by Sir James Kingston Fowler (1924), the view is expressed that the high incidence of tuberculosis amongst coloured peoples is due to a racial lack of resisting power. While this theory is accepted by some, it is not always regarded as a complete explanation. How far this principle is applicable to these islands is not at all easy to determine.

11. Recent medical researches have indicated that a deficiency of any or all of the essential food factors, vitamins, in the diet causes a lowering of the bodily resistance to the disease and infective processes, vitamins A and D especially being concerned when tuberculosis and rickets loom largely in the foreground of the picture. It is also believed that an excessive proportion of carbohydrates in the diet predisposes to infection and a lowering of disease-resisting powers. On the contrary, an adequate supply of the vitamins A, B ,C and D, and a correctly proportioned diet of carbohydrates, fats and proteins with mineral salts is said to sustain and build up the bodily resistance to disease.

12. The food supply of the Gilbertese consists of (1) *the young coconut*, the drinking nut full of a clear sweet watery fluid with only a tissue-paper lining of " flesh " inside the shell. The nut is used, the fluid being drunk and the flesh being eaten through all stages until there matures (2) *the ripe coconut* containing a thick layer of flesh and a small amount of rather unpalatable fluid which is not used. I imagine that the young coconut has mainly a carbohydrate content while fat (coconut oil) accumulates in the fruit until there is 50 per cent. fat in addition to carbohydrate at maturity. (3) *Babai*, a native name for an edible tuber, which has been described as an inferior form of *Calladium esculentum*, the true taro. This is, I think, of the same nature as our potato, composed of carbohydrates. (4) *The fruit of the pandanus palm*, used in the fresh ripe state and also preserved. This, again, probably has a high starch and sugar composition. (5) *Fish and shell-fish*, of many varieties, large and small. Proteins are here the main constituents, but since this source of food entails considerable exertion on the part of a people not disposed to diligent efforts and is also influenced by weather conditions, the supply is inconstant and seldom abundant. Frequently the fish livers are cooked and eaten, these most likely providing vitamins A and D. (6) *Toddy* which is the sweet sap of the coconut spathe. The sap is collected morning and evening in a coconut shell; it has a quaint taste and on prolonged boiling a very delicious molasses is obtained, which, if properly cooked, will keep for a considerable time. The fresh toddy is sweet, due to a 15 per cent. sugar content; it contains yeast, principally *Saccharomyces cerevisiæ* and *S. ellipsoideus* and thus the toddy is readily fermented on standing, becoming fully fermented in five or six days, having a sharp vinegary taste, with a very small sugar content and an alcohol content of 5 per cent. produced by the activity of the yeasts on the sugar. The fresh toddy is largely used by all ages of the population and is fed to infants when the mothers' milk is not abundant enough. By law the native is forbidden the use of the fermented toddy owing to his abuse of it. It would appear, therefore, that the presence of the yeasts provides a source of vitamin B, much enhanced in the fermented toddy. The molasses has no vitamin B.

13. The above are the main foods of the Gilbertese. Quantitatively, the food is nearly always sufficient for their needs, but qualitatively it is poor and has a large percentage of indigestible material. This is evidenced, and an excessive carbohydrate content suggested, by their evacuations which are copious, soft formed motions, bovine in nature. Abscess with resulting fistula-in-ano is common and this might be to some extent responsible as in some animals, such as the dog. Within recent times there has commenced an increasing consumption of bread-fruit, mammee-apple (paw-paw) and pumpkin, whilst sick persons are occasionally indulged in a chicken, but seldom in eggs. Pigs are killed and eaten on festive occasions. The regular water-supply of the native is well water very free of foreign matter by percolation through the coral sand, contains calcium and phosphorus, and is usually found sweet, but becomes brackish during a prolonged drought. Those natives who can afford it supplement the regular food supply by the addition of rice, navy biscuits, flour, sugar, tinned meats and fish—but rice is the only one of these in great use. Government employees receive regular ration issues of biscuits, rice, sugar, fresh fish (when available) or tinned meat or salmon.

14. Casually I feel that the diet of the Gilbertese is excessively carbohydrate, with a liberal amount of fat, but poor in proteins. Also, to my mind, there is not a sufficient supply of the essential vitamins. Meantime, I am endeavouring to obtain analyses of these food-stuffs and hope soon to supply more accurate information about their chemical composition. Probably it will be seen that dietetic deficiencies are a large and important factor in the incidence of tubercular disease and in the high infantile mortality. The infantile mortality rate is 250–300 per thousand births, whilst 50 per cent. of the total deaths is under the age of 16 years.

15. What must be regarded as an important factor in the causation of cervical adenitis is the universal prevalence of yaws in the Gilbert and Ellice Islands. This is without doubt a serious constitutional disease which saps the vitality of the whole native race. However, we are ardently fighting this disease with the most modern methods of treatment, and the results are extremely gratifying. The Ellice people have additional burdens of filariasis (almost universally) and a moderate hookworm infection (about 50 per cent. of the population being affected).

16. The various factors I have discussed appear to be the main predisposing factors in this people exhibiting such a prevalence of cervical adenitis and showing a large proportion infected with tuberculosis. I have now briefly to describe what are aggravative personal and local causes which tend to spread an already present disease to other members of the community and increase the number of unhealthy people.

17. It may seem absurd to consider the question of climate and its effects on a people who have known no other during many generations. But I think it is worth recording that the natives of these islands are surprisingly sensitive to changes of temperature of the atmosphere and especially they feel chilly and " out of sorts " on heavily-clouded (even calm) days when the relative humidity is extremely high, approaching saturation point. During my stay in these islands, the shade temperatures I have known have ranged from 96° F. to 73·5° F., while the relative humidity is most frequently between 70 per cent. and 80 per cent., but ranging sometimes as high as 99 per cent. and only falling to 65 per cent. on a very bright cloudless day during a spell of dry weather. This hyper-sensitiveness may be a feature of these islanders since the introduction of tuberculosis and yaws, which appear to have been first known amongst them within recent times—yaws in 1864. This idiosyncrasy cannot be an advantage to a people showing generally a low bodily resistance to infective processes.

18. They are primitive people with socialistic customs. Intimate articles of clothing—very often strangers to soap and water—are quite frequently exchanged without regard to the apparent health of donor or receiver; little attention is paid to any wet or dampness in a garment be it a hot day or a wet day. The same drinking vessels, eating dishes and utensils may in like manner answer for the requirements of a number without intermediate cleansing. There is a general disregard of real cleanliness of the person or of clothing; soap is a scarce commodity—in many cases without doubt because of poverty. " Passing the pipe " in smoking is a very common custom, again without regard to the health of the participators, their sense of hospitality and pride forbidding them to consider individual states of health. I have myself seen in hospital a patient in the last stages of pulmonary consumption enjoying a smoke with his healthy visitor. Also they have the habit of congregating around a sick relative either to attend to his needs, handling his discharges in the most care-free manner and without thought of consequences, or to satisfy an idle curiosity. These indulgences and practices must be factors in the incidence of cervical adenitis and other affections.

I have, &c.,

D. MURRAY YOUNG,
Senior Medical Officer.

APPENDIX A.

COMMENTS OF DR. J. W. HUNT, CENTRAL MEDICAL AUTHORITY, ON DR. D. M. YOUNG'S REPORT ON CERVICAL ADENITIS IN THE GILBERT ISLANDS.

The extraordinary prevalence of tubercular adenitis amongst the Gilbert and Ellice Islands as described by Dr. Murray Young is of peculiar interest, having no parallel, so far as I am aware, in any other of the South Pacific Groups. It would appear almost certain that the invasion takes place through the medium of the tonsils and that the Senior Medical Officer is acting on the right lines in trying to eliminate that particular avenue of infection. It will be interesting to hear later the result of this procedure.

2. The subject of diet, in relation to resistance to tuberculosis in South Sea Islanders is well worth investigation. One of the greatest deficiencies in the diet of the Gilbert and Ellice Islander, in common with some others, appears to be animal fat. The importance of this in building up resistance to tuberculosis is well known, depending as it does upon its valuable vitamin A content. The vegetable fats are notably deficient in this vitamin. I gather from Dr. Young's paper that while fish and pork are occasionally consumed most of the fat content of the diet is of vegetable origin, and it appears likely that a greater and more constant consumption of animal fat might result in the increased resistance to the invasion of the tubercle bacillus. If it were feasible to administer regular small doses of cod liver oil to all children I believe that the incidence of tuberculosis would markedly decline.

3. The lines upon which the war against tuberculosis among the South Sea peoples may best be waged appear to be:—

(*a*) the building up of increased resistance by an adequate diet containing a sufficiency of animal fat—a difficult measure;

(*b*) the elimination of debilitating diseases such as ankylostomiasis and yaws; and

(*c*) the removal where possible of infected foci before the disease can become generalised.

4. Further reports from Dr. Murray Young will be awaited with interest.

J. W. HUNT,
Central Medical Authority.

APPENDIX B.

COMMENTS OF DR. S. M. LAMBERT ON DR. D. M. YOUNG'S REPORT ON CERVICAL ADENITIS IN THE GILBERT ISLANDS.

To the Central Medical Authority,

Tuberculosis in the Gilbert and Ellice Islands Colony is peculiar. The Tokelau Group (Union Group) lies east of them with natural environment almost exactly the same and inhabited by a people closely related to the Ellice Islanders. The dietary is similar to that of the Gilbertese, if anything being more limited, but they have no unusual amount of cervical adenitis. No other South Pacific Island has a comparable condition. Tuberculosis is probably an introduced disease in the Gilbert and Ellice Islands, to which the natives are only slowly acquiring a resistance. That they have acquired some is evidenced by the fact that in the face of such tremendous cervical adenitis and the prevalence of pulmonary tuberculosis, the race reproduces itself. I am growing to feel that T.B. will probably only be controlled as the native acquires immunity. In their cultural stage little can be done by a campaign of education along modern lines. All that can be done Dr. Young is doing with his direct attack on the affected glands, tonsils and adenoids, and the treatment of such debilitating diseases as yaws and hookworm. This latter in the Ellice Islands, added to their other diseases, is of moment. The discouragement of insanitary practices, which with them is a habit of centuries, is a difficult and thankless task which will take generations. As there is not a cow in the Gilbert Islands the adenitis there can hardly be bovine T.B. in origin, which is against the rule.

S. M. LAMBERT.