

## REVIEWS.

**International Journal of Leprosy**, Vol IV, No. 4. Oct.-Dec., 1936

The first article introduces the first of a series of reports on the *Skin Lesions of Neural Leprosy*, by H. W. Wade. The material used was collected during a tour in India and Ceylon. The term "lepride" is applied to these lesions and they are primarily divided into "simple", "minor tuberculoid" and "major tuberculoid" according to the amount of infiltration and the degree of visible and palpable infiltration. Further considerations in classification are based on the depth of the lesion, the involvement of related cutaneous nerves and the increase or abatement of activity at the time of examination. The surgical, pathological and bacteriological technique used are described.

E. Burnet describes the *International Centre for the Study of Leprosy at Rio de Janeiro*. This centre is of benefit not only to Brazil but forms the chief centre for the whole of the South American continent. The main objectives are : experimental research, keeping leprology in contact with dermatology; and, secondly, epidemiological research with a view to prophylaxis. The public health departments, both federal and state, have placed their staff and dispensaries, etc. at the disposal of the Centre. Also, in the State of Sao Paulo about 9,000 lepers are segregated in institutions, and there is a group of workers engaged in the study of leprosy. The League of Nations, which sponsors the international centre at Rio, invites governments, hygiene administrations and important leprosy associations in other countries to take cognisance of the centre and of the services which it is able to render towards international control of leprosy.

T. M. Clouston writes on *Children of Lepers at Nauru*. The children born of leper mothers are separated at birth.

"When an infant is born in the leper station the usual procedure is for it to be bathed by the orderly in charge, who is an arrested case, after which it is handed over the fence to the 'caretaker' who dries and clothes it and thenceforth acts as a foster mother. As far as possible, it is seen to that the caretaker is not even attending the clinic for non-infectious leprosy cases, though in practice it is not always possible to follow this rule, because all the available relatives may be attending the clinic. The welfare of the child is carefully guarded by regular attention at the baby-health clinics, which are held weekly. It is probable that the foster mother, having to feed the child artificially, cannot do all that the real mother could; however,

this is problematical, as almost half the native mothers feed their children artificially.

The infant mortality rate for these children, in the very small series available, is rather above that for the island as a whole over the past fifteen years. Nine have died (21 per cent.) at less than 5 years of age, five of them under 12 months. The causes of death were ordinary infantile conditions, no death being due to leprosy.

Of the thirty-four children still alive, ten may be excluded as less than 3 years of age and consequently below the age at which signs of leprosy can reasonably be expected to appear—though I realise that children less than 3 years old have been reported to have had leprosy. Out of the remaining twenty-four children born to infectious mothers and removed at birth, five have developed the disease, three in an infectious form. This is an incidence of 20 per cent. Three of these five have been admitted to segregation as infectious cases, at the ages of 9, 7 and 4 years respectively, but one of them has been released after three years' treatment. Two other children attending the clinic for closer observation and treatment exhibit small hypopigmented areas with slight sensory disturbances, but no signs of cutaneous activity and no acid-fast bacilli in skin sections. They correspond somewhat to the type described by Muir as 'juvenile leprosy'."

In India and in other places removal from parents at birth and careful guarding under European supervision from contact afterwards has practically never been followed by the development of leprosy. In view of this one would like to have more details of the precautions taken to prevent contact and the degree of European supervision.

R. M. Wilson gives a second report on *Marriage among Lepers*.

"One group of eleven carefully selected, strong and able-bodied couples in whom the disease was arrested were allowed to marry after vasectomy of the male, and to adopt a child and support themselves upon land within our colony. There have been no relapses of the disease after three years, and the experiment has proved a happy one.

"A second group with whose selection and marriage we had nothing to do came under our care. Among seventeen couples nine have had babies, and in four of the women concerned the disease has relapsed due to the strain of pregnancy and lactation.

"Lepers will marry, as do other people. Relapses follow and children are born who create new problems. For a limited number of selected suitable cases it seems to be highly desirable to permit marriage after sterilization and to aid these families in becoming self-supporting."

*Purification and Esterification of Chaulmoogra Oils* is the subject of a paper by H. I. Cole and H. Cardoso. The methods and apparatus are fully described and should be read in the original by those who wish to prepare esters.

L. Rogers writes on *The Epidemiology of Leprosy*. The various factors influencing the incidence of leprosy are fully

described. The plan for the control of leprosy is based on the facts: (a) that most infections (probably about 80 per cent.) are contracted by living in the same house with an infective leper; (b) that the earliest symptoms appear in most cases (probably some 80 per cent.), especially in the case of children, within five years of exposure to infection; and (c) that by prolonged modern treatment in the early stages the great majority can be prevented from going on to an infective stage.

"As the key to the problem is the early discovery and treatment of as many cases as possible, it is essential to examine from head to foot the household and other close contacts of every discovered case of leprosy every few months for at least five years, and if possible for ten years."

A very instructive article by K. Mitsuda on *The Significance of the Vacuole in the Virchow Lepra Cells and the Distribution of Lepra Cells in Certain Organs* is translated from Japanese and reprinted. The author noticed that the vacuolar substance in lepra cells was remarkably well stained with Sudan III, the bacilli being only slightly stained.

"In the preparation of gross visceral specimens of leprosy, if a formalin or Kaiserling specimen is placed in a saturated alcoholic solution of Sudan III for an hour or more, and, after washing in half-strength alcohol, is stored in Kaiserling III solution, a splendid specimen will be obtained that keeps its colour for a long time. The general process of leprosy, when the infiltrations are generalized, is such as to permit naked-eye determination of whether a lesion is old or recent. For example, when a skin leproma is new, its surface will present a pale, pearly colour, while old lepromata or infiltrations are dark grey or yellow, or yellowish brown."

Regarding the chemical composition of the vacuolar substance he sums up:—

"Since the lipid substance in the lepra cells stains by either the Smith, Ciaccio or Fischler method, it cannot be a neutral fat. Because it is not doubly refractile it is not the cholesterol ester. Consequently, it must be one of the so-called lipid substances. Its chemical formula has not been established, but it may very well be of very complex structure. Since the fresh leprosy bacillus can also be stained with Sudan III or by the Smith and Fischler methods, it also contains a lipid substance. On the whole the lipid content of the bacillus is similar to that of the lepra cell, the only difference being that the bacillus resists the fat solvent, and that its acid-fastness is much greater than that of the vacuolar substance; moreover, it is stained more rapidly by osmic acid."

With the aid of Sudan III the author describes the nature and position of leprosy lesions in the various internal organs:—

"In cases of nodular leprosy, examination of the heart by means of Sudan III often shows that histiocytes in the intermuscular connective tissue give rise to the lipid reaction, and they grow to form

tubercles similar to the rheumatic nodule. Lepra cells giving rise to this reaction, whether they occur singly or in groups of several, usually contain one or more bacilli. It is to be noted that, although these cells sometimes contain at the same time some needle-like fatty crystals, no error can be made on that account if specimens defatted by ether, alcohol or acetone are studied.

"Rarely are macroscopically visible nodules found in the lung, but the bacillus is to be seen in the histiocytes in the interstitial tissue, in the endothelial and perithelial cells of the blood vessels, and in the dust cells.

"In the case of nodular leprosy the bacillus is unmistakably present in the glomerulus of the kidney, where it causes hyalin degeneration of the glomerulus and interstitial nephritis. In addition, there are a few microscopic groups of lepra cells in the interstitial tissue around Bowman's capsule and the interlobular arteries and veins.

"The fact of the matter is that whenever there are leprosy nodules in the liver or spleen, some of them are usually to be found in the suprarenal. Indeed, even in cases where such lesions are difficult to see in the liver and spleen, either because of their small size or other changes that obscure them, the suprarenal may show conspicuous nodules."

The author considers that the lipid material may result from the degeneration of lepra bacilli. He also suggests that this substance may be responsible for positive Wassermann and other tests which are often found, especially in advanced cutaneous cases in which the lipid material is present in largest amount.

### **Revista de Higiene, Vol. XVI, April, 1935.**

*Communication from Dr. E. Burnet from Rio de Janeiro, June 11th, 1935.*

The Brazilian Government founded in 1934 an "International Centre for the Study of Leprosy" under the auspices of the League of Nations. This Centre has as its Administrative Council the Committee of Hygiene of the League of Nations, and has a directorate of seven members, including four Brazilians, one delegate of the League of Nations, one Argentine (Prof. Balina) and one Colombian. The Director of the Centre nominated to succeed Prof. C. Chagas, who died in November, 1934, is Prof. Rabello, specialist and professor of dermatology, syphilis and leprosy in the Faculty of Medicine of Rio de Janeiro. (Revista de Higiene 137-163).

### *Leprosy and Children.—R. F. Parra.*

In an article by Dr. Ricardo F. Parra of Colombia on "Leprosy and Children", the writer quotes from the chief authorities on the subject in other parts of the world, but also goes into the details of his experience in his own

country. In his series of 726 children of both sexes 81.68 per cent. had leprous relatives—father, brothers, etc.—who lived or were in frequent contact with them for varying periods; such period of exposure to contagion varying from one month to fifteen years, the average period being often years judging from the appearance of the first visible symptoms of the disease, which was mostly between the ages of eleven and twelve. In the year (1st May, 1926 to 30th April, 1927) there were examined in the colony "Agua de Dios" 120 children of both sexes, admitted as infected or suspected cases, some having resided in the lazareto; of this group 24 per cent. became lepers. In 1928 of 135 children examined, 23 per cent. were found leprous within one year. and in 1929, 24.38 per cent. of 324 examined were leprous.

Comparisons are made with the percentages as found in the Philippines, Hawaii, Japan, British Guiana, French Guiana and the Punjab.

In Colombia in the "Agua de Dios" Colony, the children under 15 years of age who were diagnosed as lepers in the period between 1920 and January, 1934, reached the number of 726, both sexes being in equal proportion.

The high percentage, 81.68 per cent., of those who had leper relatives, shows clearly the danger of the cohabitation of children with lepers, and the enormous propagation of the disease in such circumstances. There were the remaining 18.32 per cent. cases who had no leper relatives, but may all possibly have had contact at an early age with lepers, contact that may not have been noticed, as often happens, because the lepers in such cases may not have shown any visible signs of their disease in their uncovered parts.

There is mentioned the high proportion, 32%, of children born in the lazareto or living in it from an early age and remaining in long intimate contact with the lepers. The percentage does not cover all the children born in the lazareto during the period mentioned, but only those diagnosed as leprous during that time. It is impossible to get the exact total of all the children born in the Agua de Dios Colony, because the greater number of the children are smuggled out to be baptised and registered in other villages, so as not to have the stigma of having been born in the lazareto, while many people outside the lazareto bring or send their children into it to get them baptised, because the ceremony performed inside costs less than when performed by a priest outside, the parents never worrying at all as to what the consequences may be!

Attention is drawn to the contrast between the proportion

of leprous children, one only of whose progenitors was leprous (20.93% and 28.23% respectively) which is a very high percentage—more than half of the cases that could be verified—and the proportion 11 per cent. of those born of two leper parents. This may be accounted for by the relative infecundity of those patients and also perhaps because the children are born with a certain degree of acquired immunity. It is often observed that children born of two leper parents are weaker than the others, and of cachectic appearance, and yet they live on for many years, and may even reach an advanced age without having presented any active signs of leprosy.

In a series of 514 children in whose case it had been possible to fix the age more or less accurately when the first visible signs of the disease appeared in them, the biggest proportion of them were 11 to 12 years old, as already stated. This may depend on the physiological changes and the alteration of the metabolic equilibrium at puberty, and also on the fact that children who have reached that age have had the optimum period of contact with the sources of infection, and the average length of incubation period has now been passed. It was found that the next highest percentage after that of the 11 to 12 years children, was that of 13 to 14, namely 8.75%, and then 8 to 9 years, 8.56%, ages included in the periods of the change of puberty and of second dentition.

The writer draws attention to the high proportion of "cutaneous" cases of leprosy (63.22%) in children at the time when they were admitted as "infected". Such advanced cases were those that had remained hidden away in the very worst hygienic conditions for a long period, in many cases (13.19%) as long as 10 years, if one may judge from the date at which the first visible signs of disease were said to have appeared.

The Colombian Medical authorities are now well aware of the necessity for making proper provision for leprous children, as also for the children of lepers, and are establishing "Nursery Annexes" and "Children Annexes" in connection with the various adult leper institutions, as well as "School Dispensaries" in connection with the Municipal Leprosy Dispensaries.

The author gives a resumé of his conclusions:

1. The frequency of leprosy among children is due to their great susceptibility to the infection and to contact with leprous parents.

2. To avoid their contracting leprosy, children ought to

be separated from all contact with their leper parents immediately after birth.

3. The "Nursery Annexes" under special conditions of isolation, are the best method for carrying out this idea.

4. When they leave the "Nursery Annexes" children, who cannot be handed over to healthy relatives, must be brought up and educated in separate institutions, such as agricultural colonies.

5. All children of school age ought to be examined periodically by leprosy specialists, and this service must be organised in all the schools throughout the country.

6. Infected children not interned in lazaretos, will be attended at "School Dispensaries".

7. All the isolated cases must be classified according to the form and gravity of the disease, and must be educated in the same way as healthy children, but must be kept separated from adult patients.

J. W. LINDSAY.

**Public Health in Iceland.** *The Lancet*, December 5th, 1936.

The total population of Iceland is 114,000, nearly a third of the total being concentrated in Reykjavik. The report for 1934 has 152 closely printed pages and a 5 page summary in English for readers unfamiliar with Icelandic.

Leprosy continues to decline; in 1925 there were 50 lepers alive, and in 1934 only 31. But it should be noted that in this year the diagnosis was made for the first time in three cases.

**Leprosy in France.** *The Lancet* of May 8th, 1937 reports as follows:—At the end of 1934 the leprosy service of the Saint-Louis Hospital in Paris was confided to Dr. C. Flandin who, in association with Dr. J. Ragu, presented a disquieting report on the subject at a meeting of the Academy of Medicine on March 16th. When Dr. Flandin took charge of this service there were only 4 lepers in it; now it houses 26, and 69 others are under his observation either at the hospital or elsewhere. There are several reasons for this remarkable rise in so short a period from 4 to 95 cases of leprosy. In the first place the greatest tact has been shown in dealing with the lepers, who are most sensitive to being treated as exhibits for medical students. In the second place, these patients have been assured that professional secrecy will be preserved with regard to them and that no step will be taken to intern them against their wills. A third inducement to lepers to come

forward and submit to diagnosis is the success here believed to result from intravenous injections of a new preparation of chaulmoogra oil and cholesterol. Among the 95 patients were 41 whites who had passed some time in the colonies, 17 whites who had been born in the colonies, and 6 whites who had never left France. The remaining 31 patients were coloured or half-breeds. Four of the Europeans who had contracted the disease in the colonies had stayed there only 4 to 10 months; their incubation period ranged from 8 months to 25 years. The enormous differences in the length of the incubation period may in part be explained by a reference to the mode of infection; the comparatively short incubation period of 6 to 8 months is to be observed in patients contracting the disease by sexual intercourse with a leper, whereas comparatively long incubation periods are the result of mere residence in a leprous milieu. This was the case with 2 of the 6 cases of leprosy in persons who had never left France. In the remaining 4 cases the infection was conjugal. Now that it is definitely proven that leprosy can be contracted in France there may be a renewed clamour for compulsory notification and isolation; but Dr. Flandin is definitely opposed to such a course, being convinced that it will defeat its own object by driving leprosy underground. The measures he favours include facilities for diagnosis and treatment at a hospital, such as the Saint-Louis, which should be in touch with all the bodies working on behalf of lepers in France. In the course of the discussion following this communication to the Academy, Dr. Marchoux agreed with Dr. Flandin as to the undesirability of compulsory notification, and he considered the best solution of the problem to be the leprosy dispensary and supervision of the lepers by visiting nurses. His suggestion that a commission should be appointed by the Academy to deal with this problem was accepted and Dr. Flandin and Dr. Ragu's report was referred to a commission on which five leading members of the Academy will sit.

**“La Sensibilité au Virus Lépreux n'est pas plus grande chez les Jeunes que chez les Adultes.”** *“Annales de l'Institut Pasteur,”* December, 1936. E. MARCHOUX et V. CHORINE.

The main contention of this paper is that children are not more susceptible to leprosy than adults but that, due to their inexperience and other circumstances connected with childhood, they are more likely to be subjected to infection. The chief argument is based upon the analogy of rat leprosy.



The statements of some workers that there is an ultra-virus form of Stafinsky's bacillus is denied by the writers, as Peltier and Mlle. Choucroun, working in the same laboratory, found that the bacillary rods themselves will pass through a filter candle. They consider that the presence of Hansen's bacilli in the umbilical cord and the internal organs of newborn offspring of leprous parents found by Pineda and others is accounted for by contamination of instruments used at previous autopsies, as boiling and other forms of sterilisation do not always remove adhering acid-fast bacilli.

The writers therefore consider that leprosy is never hereditary and that there is no ultra-virus which can pass through the placental membranes. It was found that adult rats are as easily infected as new born rats by contact with leprous animals which show bacillus-bearing ulcers, the infection taking place apparently through the conjunctiva and infecting first Harber's gland and subsequently the adjacent sublingual and submaxillary lymph nodes. Rat leprosy was induced in new born rats kept in contact with a mother having an ulcerating leprous lesion of the nipple. The larger the dose of bacilli inoculated in the skin of rats the greater and more rapid the infection, also the more widely a given dose of the infection is distributed over the skin surface, the more rapid and severe will be the infection.

Marchoux and Chorine therefore conclude that the apparently increased susceptibility of children to Hansen's infection is due to their greater exposure to infection, and the greater likelihood of infection taking place over their whole skin surface by their close contact in a naked condition with their infected parents.

It is doubtful to what extent it is justified to argue concerning human leprosy from the rat leprosy analogy. It is true that the two diseases resemble each other in certain respects. The organisms are similar in morphology and staining reactions; both show difficulty or impossibility in culture *in vitro*; and progressive disease has been produced by each organism in only one genus. But one of the most characteristic phenomena in human leprosy is the affinity of *M. leprae* for the peripheral nerves, and this characteristic appears to be entirely lacking in rat leprosy. The contention that children are not more susceptible to leprosy than adults is not borne out by the *Leprolin Test*, which there is good reason to believe is a delicate indication of the degree of response of the human skin to the invasion of Hansen's bacilli. The skin of children reacts very much less than that of adults to intradermal injection of a sterilised suspension of

leproma, and it is not unreasonable to suppose that this variation of reaction has an important bearing on the comparative resistance of adults and children.

**Journal of Tropical Medicine and Hygiene**, April 1st, 1934  
and April 1st, 1936.

In two articles Dr. Socrates Lagondaky describes methods and results of inoculating himself three times with material from lepers.

There seems to be no doubt that Dr. Socrates Lagondaky infected himself with leprosy. Whether the infection was the result of the first two inoculations which were intramuscular, or of the third, which was intravenous, it is impossible to say. For the inoculations he took blood from three different patients, but does not state the types of these cases, nor does he say whether the skin covering the veins from which the inoculation was taken was free from lepra bacilli, or if any precautions were taken in puncturing the skin over the donor's veins to prevent bacilli from the skin entering the needle. As shown by Lowe (*Ind. Med. Gaz.* Vol. 68, No. 9, Sept. 1933, pp. 503) bacilli enter the needle from the skin if blood is taken from a vein covered by leprous skin. The appearance of the skin cannot be trusted, as films taken from healthy-looking skin in the neighbourhood of the vein puncture will often show marked infection.

There is no record given of bacteriological examination of the lesions previous to the beginning of treatment, although it is recorded that bacteriological examination was negative after the period of treatment. This is unfortunate, as the best proof of improvement would have been positive findings followed by negative.

Also there does not appear, from the recorded facts, to have been any increase in the size of the skin lesions. It is only stated that spots the size of sixpence to half-a-crown appeared and later cleared up, and that the colour of the outer side of the thigh was pinker than the inner.

From the point of view of the results of this interesting experiment it is unfortunate that treatment was begun, against the will and judgment of the patient it is noted, without waiting for further developments. It is not unlikely that progress towards recovery would have been equally, or even more rapid, if treatment had not been given, and the power of the tissues to deal unaided with the infection would have been demonstrated.

We may hypothesize the course of events as follows.

Leaving aside the two first inoculations, which were intramuscular, and any organisms contained in which may have been dealt with locally, we may suppose that the intravenous injection contained a considerable number of bacilli which had entered the needle as it passed through the skin to puncture the vein. These bacilli found their way through the blood stream to various parts of the body where they were arrested in the skin and subcutaneous plexuses, and possibly the nerves. These leprous foci began, after a few weeks, to produce signs of their presence in the form of larger or smaller macules, areas of anæsthesia, etc. These signs were caused by local reaction of the tissues to the bacilli in their neighbourhood. None of the lesions appear to have increased in size or shown any signs of spreading. According to the records in the second paper they appear to have cleared up steadily. This is attributed to the effect of treatment, but there is at least a reasonable chance that in a healthy subject, such as he appears to have been, the lesions would have cleared up equally rapidly without treatment.

**International Journal of Leprosy**, Vol. V, No. 1. January-March, 1937.

A second article appears in the series of *Skin Lesions in Neural Leprosy* by H. W. Wade and J. N. Rodriguez. Material is taken from two groups of cases, 18 being gathered in the course of an intensive survey, and 34 at the Cebu dispensary. All the cases were found to be bacteriologically negative except two, which however were both " frank tuberculoid ". The lesions are grouped as follows:—

- (A) Anesthetic patches, non-macular.
- (B) Residual macular leprides. (Healed lesions, usually non-tuberculoid).
  - (1) Non-atrophic.
  - (2) Atrophic.
- (c) Simple macular leprides. (Not elevated or only slightly so, surface smooth or only coarsened in texture.)
  - (1) Quiescent. (Non-erythematous, flat or practically so. Frequently slight tuberculoid histologically.)
  - (2) Active. (Almost always tuberculoid histologically. Divisible into two main groups according to elevation, each further divisible.)
    - (a) Flat. (Not elevated; erythematous: (1) marginally, and (2) diffusely throughout.)
    - (b) Raised. (Slightly elevated; divisible into (1) erythematous, usually only marginally, and (2) non-erythematous.)
- (D) Minor tuberculoid leprides. (Frank tuberculoid, recognizable clinically, elevation more than slight, surface characteristically irregular.)

- (1) Papulate. (Discrete populations, usually marginal in a flat, often quiescent or residual base.)
  - (a) Paucipapulate. (Populations typically marginal, except in case of "lichenoid" subgroup. Active retrogressive.)
  - (b) Multipapulate. (Divisible into (1) diffuse, populations scattered throughout, (2) marginal, populations scattered over a broad marginal zone, and (3) circinate, populations peripheral, often in hazy spots, isolated or agglomerated.)
- (2) Diffuse. (Tuberculoid thickening diffuse in affected parts, whether lesions soiled, annular or otherwise. Surface typically irregular or pebbled not actually papulate, but sometimes quite smooth.)
- (E) Major tuberculoid leprides. (Maximum degree of the leprides, often resembling lepromatous lesions.)
- (F) Cases with non-leprotic lesions ("controls").

Apart from giving this tabulated grouping it is impossible to do justice in a review to this very thorough and painstaking paper, which must be read in the original in the light of the excellent photographic illustrations. The summary and conclusions end as follows:—

"The findings as a whole indicate strongly the constancy of tuberculoid changes in all typical active leprides of whatever clinical variety. They emphasize the great variations in the degree, and to some extent in the histological details, of that condition, but also the lack of any clear pathological distinction of any one variety of these lesions from others. The common belief that the simpler leprides are not tuberculoid may be due to failure in the past to recognise the lesser degrees of the tuberculoid picture."

B. E. Eddy describes extensive efforts at *Attempted Cultivation of M. leprae*. Sixty-eight different media were used under: (a) aerobic conditions, (b) partial tension conditions as used by Wherry, (c) increased carbon dioxide and oxygen as used by Soule and McKinley, and (d) anaerobic conditions. The results are summarised as follows:—

"The mycobacteria of the inoculum persisted on many media for long periods of time, depending on their number in the inoculum, the reaction of the media, and the conditions of moisture. Mycobacteria were found in smears from cultures on several different media kept moist at 37 C for twenty to thirty weeks, in five cultures kept for over one year, and in five others kept for over two years. On slightly acid media the organisms became coccoid and fragmented after a few weeks, and finally disappeared. Fewer were seen in smears from partially dried cultures than from moist cultures.

"Mycobacteria were found on transplants made from the primary cultures, but there was a diminution instead of an increase in their numbers. As many as six transplants made on several media continued to show organisms.

"An organism resembling *M. tuberculosis avium* was isolated from the asicitic fluid of one leprosy patient. Cultures made from the skin of the same patient were negative.

"Of the non-acid microorganisms that appeared in some of the cultures, there were some (molds, spore-bearing bacilli, and staphylococci) that were considered as ordinary contaminants and were discarded.

"Two other groups of microorganisms were also obtained, actinomycetes and small non-acid-fast bacilli. It was not determined whether any of them had any relation to leprosy. One similar actinomyces was obtained on medium exposed to the air in the laboratory. The small non-acid-fast bacillus grew on several media inoculated with material from a number of cases of leprosy."

R. Cliento writes on *Leprosy in Australia and its Dependencies*. Writing of conditions as in 1931 :—

"The incidence of leprosy in Australia and its dependencies was considered at that time to be marked amongst both white and coloured persons in Queensland; marked amongst coloured persons in the Northern Territory; slight and of focal distribution in Western Australia; minimal in New South Wales; and non-existent in Victoria, South Australia and Tasmania. With regard to the Territory of Papua, information is meagre. The disease is known to exist, but there has been no adequate determination as to its extent. In the Mandated Territory of New Guinea a small leper asylum was established off Madang, north-eastern New Guinea, about the year 1925, for some forty lepers from a few neighbouring foci around the mouth of the Sepik River. Leprosy was also recorded from several other localities, of which the most definitely suspected was the island of New Hanover, north of Kavieng. At Linding, on that island, many lepers were subsequently observed, and the numbers recorded and bacteriologically confirmed in the Mandated Territory are now considerable (approximately 500). It appears likely that, when the problem is adequately surveyed, it will be found to represent as serious a condition as that found in Fiji. First at Limellon, and now at Anelaua, there has grown up an establishment that will become the central leper establishment of North Melanesia, as Makogai in Fiji is for South Melanesia. Leprosy is also recorded in the British Solomon Islands Protectorate, where it is regarded as 'increasing', this being probably an expression of the fact that the more intensive the search the greater the number of cases detected. In New Caledonia and the Loyalty Islands the problem is recognised to be the greatest one of public health among both white and coloured persons."

Difficulty was found in providing for re-examination of contacts with cases found in making a survey, because of the migratory habits of the population.

"Where a case of leprosy has been recorded, relatives and contacts often leave the neighbourhood and become untraceable. Furthermore, when the relatives do not migrate they often refuse subsequent examination, even when approached with the greatest tact. No provision is made in existing regulation for their examination, except on a magistrate's order or when there is a suspicion of leprosy, which would need to be substantiated; and so far as it has been tested by me,

ministerial and legislative opinion is against the provision of any such facilities. It is, therefore, difficult to the point of impossibility for a member of a commonwealth department, unprovided with definite authority, to examine such contacts every six months for five years. When the question of the aboriginal was investigated, the problem was seen to be infinitely complicated. The native habit of changing his name repeatedly further disguises relationships already masked by the haphazard use of the terms 'brother', 'father', 'cousin' 'uncle', etc. His complete dread of the white man's medicines, surgery and hospitals renders it utterly impossible to contemplate any system other than segregation for him. It is frequently suggested that if the benefits of cure are presented adequately to him, the native will appreciate them and will respond to requests for his attendance for treatment. This, in so far as the Australian aboriginal is concerned, is utterly untrue. His whole outlook and conduct are determined by a blind and unreasoning fear of anything in the way of medicine outside his experience, and as a consequence he will never appear for treatment, or be surrendered by his relatives, unless he is unaware that he is sick or is *in extremis*. On the other hand, in every large aboriginal settlement where lepers have been looked for intensively, at least one case has been found at the outset; since then other cases have been found with what appears to be undue frequency, considering previous figures, and there are presumably other lepers now at liberty for whom treatment is impossible. This is the fact in North Queensland, at any rate, and the same is known to be the case in the Northern Territory and in the north-west part of Western Australia."

The methods of control recommended at the session of the Federal Health Council of Australia are embodied in Resolution No. 5, Leprosy:—

"Each State Health Department will undertake to furnish as complete records as possible of each case which comes under official notice. The Commonwealth Department of Health will assemble and analyse all the information as received. That the Commonwealth Department of Health arrange for the publication of a series of articles in the daily press and the Medical Journal of Australia, in order to inform the public on the question of leprosy. This Council recommends strongly that in each State in which there is any considerable number of aborigines, a medical officer should be appointed by the State Government, whose duty shall be the medical supervision of the welfare of all aborigines with special reference to leprosy.

"In addition to these officers, this Council considers that the immediate urgency and increasing gravity of the leprosy situation demands the appointment by the Commonwealth of a medical officer specially devoted to the study of leprosy and other diseases specially affecting aborigines. This officer should be available to travel through the northern portion of the Commonwealth to consult with the State Medical Officers for Aborigines, to collect information and study the epidemiology of leprosy, to conduct research and to distribute information concerning the most recent knowledge concerning, and all recent progress in, the treatment and diagnosis of leprosy.

"It is important that each State which has not the necessary powers should provide full legal powers for the periodical examination and any necessary detention of persons: (a) suspected of being

infected with leprosy; (b) who have been in contact with known cases of leprosy. It is imperative that any leper discovered in Australia should be placed under conditions permitting of full modern medical treatment and continuous and immediate laboratory facilities, and under the continuous supervision of a medical man with special knowledge of leprosy. There is not sufficient reason for requiring leprosy stations to be on an island; the disadvantages of such a location are greater than the advantages.

"Modern knowledge in respect of leprosy indicates that it is very necessary that, as well as the specific medical treatment of leprosy, lepers should be placed under the best conditions of social life including a healthy environment, sufficient food of good quality and controlled exercise, and such purposive employment in their own interest as is possible."

In a *Study of One Hundred and Fifty Autopsies on Cases of Leprosy* by K. Mitsuda and M. Ogawa, the conclusions are as follows:—

"In this group of cases the most common cause of death was tuberculosis, which is in agreement with experiences in the Philippines and other foreign countries. Leprotic lesions of the viscera, aside from those of the testis, are found only in cases of the cutaneous type, and not in neural cases. They are found in 'secondary neural' cases, but these cases are to be classified as primarily cutaneous. Lepromatous involvement of the lymph glands is also limited to the cutaneous type, and it is found in such cases even when they are of slight degree of advancement. Tuberculosis-like changes in the viscera have no relation to the tuberculoid changes found in the tuberculoid macules of the skin; such visceral changes are only a manifestation of generalised tuberculosis."

A paper by R. G. Cochrane and others on *Preliminary Observations on Childhood Leprosy in Ceylon* describes work which has already been reviewed on page 17 of the January issue of the Leprosy Review.

R. C. Germond writes on *The Classification of Leprosy* and suggests a modification of the chart originally suggested by Wade and le Roux.

An editorial describes shortly the first three International Leprosy Conferences and the Leonard Wood Memorial Conference, and discusses the nature of the International Conference which it is proposed to hold in Cairo, Egypt, from the 21st of March, 1938. Members of the International Leprosy Association and others are invited to send suggestions as to the manner in which this conference should be conducted, and the topics that should be discussed.