

LEPROSY REVIEW

The Quarterly Publication of
THE BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION.

VOL. XIII. No. 1.

JANUARY—MARCH, 1942.

Principal Contents:

Masked Lepromatous
Leprosy

Potassium Iodide as a
Provocation Test in Leprosy

Progress at Uzuakoli,
Nigeria

Reviews

Reports

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LEPROSY

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Published by the Indian Council of the British Empire Leprosy Association. (see Review in Oct. 1938 issue of "Leprosy Review")

This book has been re-written and now contains 192 pages and 86 illustrations. The book is issued primarily for the use of doctors in India who wish to be put in touch with practical means of dealing with leprosy from both the therapeutic and public health points of view. It is hoped that it will also prove useful in the British Colonies and in other countries where leprosy is endemic. Much of the teaching found in standard text books has been omitted in order to make it possible to condense within a few pages knowledge that is absolutely essential for understanding the nature of the disease, and the lines along which it may be dealt with successfully.

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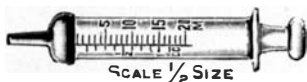
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EDITORIAL

We republished in a former number of this journal* two articles by Collier and McKean of Chiangmai, Thailand, one describing inoculation of monkeys with human leprosy material, and the other the treatment of leprosy with diphtheria antitoxine and toxoid.

The inoculation experiments were made with a view to testing whether the previous administration of colocasia, a food substance used widely throughout the tropical world, lowered the resistance of animals sufficiently to permit inoculation of *M. leprae* to produce progressive leprosy similar to the disease found in man. The results claimed by the authors have not been confirmed by others. Skin specimens sent by one of the authors for examination in London did not show any presence of acid-fast bacilli or other signs indicative of leprosy.

The subject of the other paper is of more importance as very extraordinary claims have been put forward in other publications by Dr. Collier. These claims are as follows:—

(a) Using diphtheria antitoxine, injections in about 50 patients who were suffering from lepra reaction, good results followed in all instances.

(b) Using diphtheria toxoid, as early as one month after the first injection, more than half the cases had shown improvement with respect to nerve enlargement and anaesthesia; after six weeks many cases showed marked improvement in the skin lesions; in every case with nodules and plaques there was reduction of these lesions and in many instances they had become flat; without exception in more than fifty cases examined the bacilli wherever examined had become fragmented. It is claimed that 21 out of 37 L-1 cases had become negative.

To the article mentioned above as reprinted in this Journal we added an editorial note quoting a later personal communication describing control cases treated with chaulmoogra alone which had given results even better than those obtained with toxoid: 31 per cent became negative with chaulmoogra in six months as compared with 20 per cent with toxoid in the same time.

Since then this form of treatment has been tried out in different parts of India, in Malaya, China, Southern Rhodesia, South Africa, the Philippines and England. In none of these

* *Leprosy Review*, XI, 3, July, 1940, pp. 134 and 140.

have results at all encouraging been obtained except by Ryrie in Malaya, and he appears to consider after further trial that the treatment is of little value.

It is unfortunate that such high claims were put forward before this form of treatment was adequately tried out by those more used to the ordinary phenomena of leprosy. Apparently the usual mistakes made so often in the past have been repeated: tuberculoid lesions which often heal up spontaneously have been mistaken for those of the lepromatous type; the cessation of lepra reaction which also occurs spontaneously has been mistaken for permanent improvement.

It is still more unfortunate that the popular press has turned its magnifying lens on these supposed successes. Newspaper reports gave the idea that a great advance had been made in treatment. The mention by Dr. Collier that "we may have a possible means of protection of the immediate intimate associates of lepers" is exaggerated into: "It is reasonably hoped to immunize the children and associates of lepers and so to eradicate the disease."

As we have pointed out on previous occasions, great care should be exercised in publishing any premature claims of new methods of leprosy treatment. Leprosy makes good "copy" and anything out of the usual is particularly apt to find its way, considerably magnified, into popular journals. Many of those suffering from leprosy are voracious readers, and nothing of concern to themselves is likely to escape their notice. Their hopes are raised to fever pitch by these accounts, only to be dashed to the ground when the claims put forward are found to be abortive or greatly exaggerated.

E.M.

MASKED LEPROMATOUS LEPROSY

A CLINICAL NOTE

T. F. DAVEY

Although the grosser forms of lepromatous leprosy may be readily diagnosed by the clinician even without recourse to the microscope, a variety of forms are seen in Nigeria in which the

typical thickening of the ears and skin of the face and body is almost imperceptible, and such cases may prove a pitfall to the unwary unless their existence is borne in mind and a bacteriological examination undertaken. The following case illustrates some features common in this type of patient.

CASE REPORT

The patient, a male of approximately 30 years, appeared at the Uzuakoli Settlement on 28th August 1941 demanding a medical examination because someone had accused him of being a leper. He stated that there were no symptoms of which he complained.

Previous Medical History.

The patient suffered from smallpox several years ago. In December, 1940, he suffered from a sudden attack of fever and headache, accompanied by general pains and "Swelling of the entire body." This lasted for three weeks and then subsided.

Examination.

The patient, a well nourished male of about 30 years of age, presented at first glance no visible signs of lepromatous leprosy. His ears were normal, and his face, though pitted with smallpox scars, showed no abnormal thickening. Hair was normal in amount and distribution. The patient was a pale skinned individual, but this in itself would excite no undue notice as the Ibo people of Nigeria exhibit all shades of colouring between pale olive and the black colour usually associated with the negro. An extensive growth of *Tinea Flava* was distributed over the neck, chest and upper part of the back of the patient. The skin of his body was slightly thicker than normal, though this was more obvious on palpation than on mere observation. Furthermore, to the palpating finger the skin was not of uniform texture but had an almost lumpy feel. The mere fact of a thick skin is by no means pathognomonic of leprosy, for considerable variation in skin texture is seen among relatively healthy people in Nigeria, where filariasis, crawcraw and helminth infections are exceedingly common. The skin of the patient in question was by no means thicker than that often seen in healthy people.

On completely stripping the patient, it was noticed that over the groins and genitals the skin was several shades darker in colour than elsewhere, and this triangular area which extended across the abdomen between the Anterior Superior Iliac spines, and included the upper few inches of the thighs, stood out distinctly from the pallor of the rest of his body. Near the lower edge of this

darker area there were many obvious but ill-defined pale macules, approximately $\frac{1}{2}$ inch in diameter, which were coalescing with one another and fusing with the continuously pale area which extended from the feet to the upper part of the thighs. Some of the macules were still quite discrete. Within the triangle of darker skin, the texture of the skin was quite normal, and this area was in fact a solitary island of normal skin in a body literally covered with lepromatous macules of the pale variety which had already fused with one another everywhere except in the triangle in question. The universal coalescence of these macules gave his body the appearance of that of a pale skinned person, and but for the tell-tale island of normal skin he would have been indeed considered as one of the paler skinned members of his tribe.

The hands of the patient were normal, there were no signs of nerve enlargement, but there was well marked anaesthesia to light touch over the feet and lower part of the calves, but nowhere else. The bacteriological examination of skin, nose, and ears for acid-fast bacilli proved strongly positive.

COMMENTS

It is a curious fact that an area of normal skin, identical in situation with that seen in the case described, is a common finding in people whose bodies are elsewhere literally covered with lepromatous macules.

The importance of this type of case from the standpoint of public health is considerable. A person such as that described could readily pass undetected among a population in which there is diversity of skin colouring and texture, and with his skin teeming with lepra bacilli he could vitiate any attempt at leprosy control. In a leprosy survey, the detection of such cases is a matter of great importance, but should be a simple matter provided three elementary maxims are obeyed. (1) Never omit the bacteriological examination. (2) Always insist on patients being completely stripped for examination, and (3) Never omit, even in lepromatous cases, routine tests for nerve involvement. No matter how we classify lepromatous as distinct from neural leprosy, the fact remains that in Nigeria at any rate, the vast majority of lepromatous cases also exhibit clear signs of nerve involvement.

POTASSIUM IODIDE AS A PROVOCATION TEST IN LEPROSY

EXPERIENCE OF 244 CASES AT NGOMAHURU LEPROSY
HOSPITAL, SOUTHERN RHODESIA

B MOISER

This test has been carried out over a period of 2 years. 209 males and 35 females, total 244, were subjected to the test. All were patients who had undergone treatment here for several months, and all were in robust health. Most of them were negative to the microscope, but a few who were still slightly positive were included, for comparison. Treatment with Moogrol had already been stopped.

The drug was given once a week, in the following doses:—5, 10, 20, 40, 80, 160, 240, 320, and 320 grains in a pint or more of water, i.e. the test lasted for 9 weeks in each case.

The patients were not kept in the ward, but were examined daily, and temperatures taken.

It may be noted at once that the patients did not like the test, but only one man refused to go on with it to the end. They complained of abdominal pain, frontal headache, sore throat and a feeling of nausea, and a nasty taste in the mouth after the larger doses, but coryza was markedly absent.

In 196 cases, there was no ill effect whatever. In 25 cases skin reactions only occurred, 1 after 5 grains, 3 after 10, 6 after 20, 2 after 40, 3 after 80, 4 after 160, 5 after 240, and 1 after 320 grains.

In 4 cases, there was a rise of temperature only, whilst in 19 cases, there were both skin reactions and pyrexia. 3 occurred after 40 grains, 6 after 80, 5 after 160, 3 after 240, 1 after first 320, and 1 after second dose of 320 grains.

One female patient died suddenly in the afternoon, after receiving 40 grains at mid-day. The cause of death is unknown since post-mortem examinations are strongly objected to. There was no reason to suppose that death was due to K-I.

In case of failure to pass the test, it was repeated at an interval varying from one to three months.

Thus:—

- 23 failed at the first test.
- 6 failed at the first and second test.
- 2 failed at the first, second and third test.
- 18 passed at the second test.
- 1 passed at the third test.

The results are as follows:—

135 have been discharged, after being kept under observation for 6 to 12 months following the termination of the test.

Of these, one has been re-admitted for further treatment, a lepromatous case. 85 are still under observation, but not under treatment. 14 remain under treatment with Moogrol, still show active signs, neural cases, negative to microscope. 4 died from intercurrent diseases. 3 remain for economic reasons, disease arrested. 3 are still undergoing test.

Now, we have to consider 34 cases, who were still positive (ear or nose or both) though showing no active signs of the disease.

Of these 34 cases, 25 passed the test, and 9 failed, 15 of them remain under observation, apparently “arrested” cases, whilst 7 have required further treatment, active signs having supervened, and 12 have been discharged provisionally. These cases are of special interest.

The question is raised, is Pot. Iodide a test at all? 25 cases out of 34, who were still positive, and who were not considered as fit for discharge, passed the test. In these cases, the test was far from reliable. Had these cases been discharged, I feel quite sure that a large proportion of them would have returned for further treatment sooner or later. The 12 cases who were discharged were carefully chosen as being the least likely to recur, and it will be interesting to follow up their future history.

The test should be applied only to these cases who are in good physical condition, and who clinically appear fit for discharge. Caution must be exercised before discharging symptom-free cases who are still slightly positive, even though they have passed the test. Each case must be considered on its merits, but I do not think it is necessary to continue treatment in all positive cases until they become negative, and remain so for some months. A risk must be taken occasionally.

The test is not infallible, but it is distinctively useful, and has become routine practice at this hospital.

REPORTS

Report of B.E.L.R.A. Madras Provincial Council Investigation Officers' Progress Report for the year ending 31.3.1941.

This is a voluminous typed account of Leprosy work in Madras by eight medical officers, which in addition to much information of local interest brings out the following points of more general application. Surveys were carried out in five rural and three urban areas, the latter including a part of Madras City. Stress is laid on the importance, in estimating the prevalence of leprosy, of the relation of the total cases to the number of child and open cases. A fairly high gross incidence associated with high child and open cases indicates that the disease is a growing menace to the health of the people in such areas, for a high child rate is consistently found in relation to a high open (bacteriologically positive) case rate. The highest incidence of no less than 28.67 per cent was found in the Wandiwash area of Madras City, where a treatment and control unit is being located to deal with the problem. The importance of obtaining the isolation of the infective open cases, in addition to treatment of all types, is pointed out, and the different reports record variable degrees of success in getting villagers to agree to infective cases being made to sleep in isolation houses. Intensive treatment will lead to clinical improvement in the majority of cases and may thus prevent the onset of complications and infectivity. Moreover, in the Saidapet clinic report it is recorded that 38 out of 88 infective lepromatous cases in children have become negative under treatment, only 8 of whom are known to have relapsed and 6 are untraced. Further, the relapses only took place among those who had discontinued treatment. In the lepromatous type room contact with a previous case was traced in no less than 64.5 per cent of cases. The local segregation at night of lepromatous cases in villages should therefore reduce greatly future infections. It is through such intensive surveys and propaganda in villages, and the personal influence of the doctors undertaking it, that a gradual reduction of the incidence of leprosy is likely to be brought about. The good work being done in Madras is worthy of imitation in other infected provinces of India and elsewhere.

Annual Report of the Public Health Commissioner with the Government of India for 1940.

Of the 35 pages of Section II of this report that deals with the

history of the 10 chief diseases, no less than 5 are devoted to leprosy. This is a sure sign of the increased interest taken in this disease; for two or three decades ago it was rarely mentioned in these reports except in connection with very erroneous returns of the decennial censuses. Repeated mention is made of the good work of the B.E.L.R.A. Provincial Committees, and reference is also made to the Leper Homes maintained by the Mission to Lepers for 8,213 in-patients, with the help of Government capitation grants of Rs. 3-8-0 (5s. 3d.) per head per month, together with the treatment of 6,095 out-patients and accommodation for over 800 healthy children separated from affected relatives.

Stress is laid on the importance of improved surveys of infected areas to include the types of the disease and the proportion of infected children as a better guide to the seriousness of its incidence over the mere enumeration of the total cases. Thus, the data of four such detailed surveys show variations in the percentage of contagious lepromatous cases from 4% in a Bengal area to 25% in two Madras areas, and the percentage below 15 years of age from 17% in the Bengal to 36 and 49% in the Madras ones. The most important preventive measures are found to be the isolation of infectious cases and the protection of children from exposure to infection. The former is being increasingly by the provision of farm colonies, with land for cultivation, and cottage industries, such as have been opened during the year under review in Orissa and in Bengal. Clinics and treatment centres are also steadily being multiplied.

Data regarding the different Provinces bear out the now well recognized increase of leprosy rates with increased rainfall and humidity. Thus in the dry Punjab during 1940 the survey of 949,035 persons revealed only 60 cases of leprosy; in hot humid Madras City one surveyed area showed 26.6 per cent of infected. The training of doctors to enable them to carry out the propaganda-survey-treatment programme in various parts of India is another valuable contribution towards the eventual solution of the leprosy problem in India. The enthusiastic work of these men provides the best augury for the eventual success of their efforts.

Final Report of a Leprosy Survey of the Kimberley Division of Western Australia. Appendix III of 1941 Report of the National Health Medical Research Council, Commonwealth of Australia.

This is a report by Dr. L. A. Musso on a survey carried out from May 1939 to March 1941. The author travelled 15,000 miles of very sparsely populated country mainly by car in the course of

this survey. The natives live under very primitive conditions and have a deficient diet. 3,600 persons were examined out of a total population of about 4,600. The Derby Leprosarium contains 49 cases. The first case was found in 1908, 43 were admitted between 1921 and 1932 and 284 more between 1933 and 1940, when the incidence was 22.5 per mille among full-blood and 11.6 per mille in less than full-blood natives. Nerve cases made up 37.9%, lepromatous 46.6% and mixed ones 16.5%. A few family histories are given illustrating

relationship was found in 44% of the Derby patients. Two tuberculoid cases are described. Frequent examinations of all natives and contacts, especially children, is advised. Hiding of cases is not uncommon. Difficulties occur owing to half-castes and quadroons being outside the Act relating to leprosy prevention so they cannot be examined without their consent.

Cyprus Annual Medical and Sanitary Report, 1939.

A brief paragraph in this report records an appreciation of Dr. Muir's visit in September of that year. The data show an increase of the inmates of the Leper Farm from 113 to 122 during the year, when 6 patients were paroled and 6 died. The admissions numbered 21.

The Second Annual Report of the British Empire Leprosy Relief Association, Burma Council, for the year 1940.

This branch of the Association was only constituted on the 28th February 1939; the present report records valuable activities. Three courses of instruction on leprosy have been held for sub-assistant surgeons by the Special Leprosy Officer. He has also toured extensively and established a number of leper colonies, clinics, etc., together with a travelling leprosy clinic to open up new areas of activity. Pamphlets have been widely distributed and intensive surveys made in four areas. The investments of the branch already amount to Rs. 1,36,500 (£10,237), yielding an annual income of Rs. 5,567 (£417 10s. od.). Details regarding the 17 various leprosy institutions of the province are given which includes a Leper Jail for 80 infected prisoners transferred from other jails. The total inmates appears to be 3,104. The types of cases are not recorded, but it is presumed that they are mostly infective lepromatous ones, for the isolation of uninfected crippled nerve cases does nothing towards reducing infections. Clinics for out-patient treatment are attached to most of the colonies and asylums

(hospitals or sanatoria are better terms now treatment is an important part of their functions), and also at certain hospitals. A table shows 40 such clinics with an annual attendance of about 5,400 patients. Most of the cases attending the clinics are classified in a table as N₁, N₂, N₃, L₁, L₂ and L₃, but the data are not summarised. The reviewer makes the totals to be 1,845 Nerve and 2,490 Lepromatous ones, or 43% and 57% respectively. A table of cases treated by the travelling leprosy clinic is very similar. The unusually high proportion of the less amenable and more infective lepromatous type confirms the seriousness of the leprosy problem in Burma as pointed out by Dr. Lowe. A good start in dealing with the situation has been made by the Burma Branch.

Leprosy Clinics in Bengal.

An article in the Calcutta "Statesman," based on a Bengal Press note, records an important circular, sent by the Bengal Public Health Department to all district officers, advocating the formation of Leprosy Clinics at the headquarter and sub-divisional hospitals, with help towards the cost in the form of Government grants and in providing the cost of equipment, subject to the local authorities providing the balance of the capital and recurring expenditure. A start is to be made in the districts most affected by leprosy and the medical and health officers in charge of the work will receive a special course of training at the Calcutta School of Tropical Medicine. The clinics will be held twice a week, and they should be of great value.

REVIEWS

The International Journal of Leprosy. Vol. 9, No. 2, April-June, 1941. *A Field Study of Leprosy in Talisay, Cebu, Philippines*, by R. S. Guinto and J. N. Rodriguez.

This is a further survey of an area mainly engaged in agriculture. The number of persons examined was 10,598, or 99.3% of the whole population, among whom 143 living cases were known. The new cases found numbered 65 bringing up the rate per mille to 19.5, but only 11 of the new cases were bacteriologically positive. Of 31 paroled cases in the area 5 were found to have relapsed. The sea coast areas had much lower rates than the mountain and lowland groups. In age and sex distribution, the proportion of cases with a history of household exposure to infection the Talisay data showed no notable difference from those of Cordova.

Leprosy in the State of Maranhão, Brazil. By T. Pompeu Rossas.

An incomplete census for two-thirds of the population of this state revealed 1,000 cases of leprosy in its principal foci of the disease, and the total cases are estimated at 1,300, to which a further 50 per cent should be added, which brings the estimated rate per mille to 1.6. For their control the writer advises the enlargement of the Bomfim colony to provide for 900 cases, of which 780 will be open and 120 closed ones, many of whom require care on account of being crippled. The leprosy clinic at St. Louis should be prepared to treat the closed cases. Three trained physicians should be appointed to make domiciliary visits at least once a year to re-examine the domiciled cases under treatment and their contacts, and to verify new cases reported by private clinicians. Treatment posts with male nurses should be established in the principal foci. This economical plan should enable leprosy to be controlled in a relatively short period.

The Effects of Diphtheria Toxoid on Painful Enlarged Nerves in Leprosy. By D. R. Collier.

This note reports the relief of pain due to enlarged nerves in four patients, operations on whom had afforded only temporary relief on account of the formation of scar tissue. Many other cases are said to have benefited in the same way. The injections may be followed by temporary hot and itching sensation and increased pains in the hands and feet.

Histological Study of an Early Case of Leprosy in a Young Child of Leprous Parents. By J. O. Nolasco and C. B. Lara.

The child died of pneumococcal pneumonia at 17 months of age, and histological examination was made of the site of a lesion on the right knee which two months earlier had shown numerous lepra bacilli. A very young bacteriologically positive leproma was found with bacilli in the corresponding lymph node. It is believed to be the primary lesion.

The Vascular Lesions of Leprosy. By G. T. Fite.

This paper is based on a study of 77 cases and 10 autopsies, from which the following conclusions are reached. Some involvement of the blood vessels of cutaneous lesions was found in 32 out of 77 cases of all types. The bacilli were usually found in the lining endothelial cells, most commonly in the terminal loop of the extensive affection of the larger vessels results in a continuous intravenous auto-inoculation of lepra bacilli; thickening projecting into the lumen of both an artery and of a vein have been observed. Infection is believed to spread in the larger vessels through the vasa vasorum. Leprosy foci appear to originate in the perivascular lymph spaces around the arteries, but were not demonstrated in the lymphatic vessels.

Contributions a L'etude de la Lèpre. 11. Inoculation du Bacille de Hansen au Singe. By R. Chaussinand.

The writer is in agreement with previous workers in finding that the injection of lepra bacilli from human lesions produces only temporary lesions, with spontaneous resolution, in the case of monkeys. With repeated such injections, after resolution of the first produced lesions, the local lesions reform and disappear again more rapidly than before, and they do not reappear after a fourth inoculation. This suggests a gradual development of immunity.

Pathogenicity of Acid-Fast Bacilli Isolated from Human Leprosy by Migone. By H. C. de Souza-Araujo.

Cultures of two strains of acid-fast bacilli isolated in Paraguay from leprosy patients have produced on inoculation into rats and mice typical granulomata similar to those of human leprosy; these differed from those of rat leprosy by being in the form of skin-muscle tumours. They were very rich in 'clusters or 'globies' forms of the Hansen bacillus very seldom obtained in experiments with cultures.'

The International Journal of Leprosy. Vol. 9, No. 3, July-September, 1941. *Behaviour of Leprosy Bacilli in Complex Liquid Media with Highly Available Sources of Nutrient and Accessory Substances.* By John H. Hanks.

This is a laborious and highly technical attempt to cultivate the bacillus of human leprosy. As the results were once more negative it will suffice here to record that the most likely culture media were supplemented by a variety of substances, including products derived from acid-fast bacilli, and so likely to favour their growth. Moreover, liquid media were used which allowed of quantitative microscopical studies; these demonstrated that the leprosy bacilli did not multiply in any of the 109 nutritional combinations tested.

Limitations of the Diphtheria Toxoid Treatment of Leprosy. By J. Hugh McKean.

The writer records that in his earlier recorded work with Collier on this method of treatment its limitations were evident from the very beginning, for very wide variations were noted in response to treatment, especially in lepromatous cases. The best results were obtained in the more amenable bacillus free tuberculoid and early neural cases, but positive major tuberculoids and active minor tuberculoid cases failed to respond, and 3 of 21 early lepromatous ones have relapsed. Moreover, there is a tendency to relapse with failure of further treatment, and the gradual subsidence of active lesions after the toxoid injections is commonly accompanied by new activity in other parts of the body. Eighteen months' experience therefore has brought out the inequalities and limitations of the diphtheria toxoid method of treatment.

A Leprosy Survey of a Control Area—Santander, Cebu, Philippines. By R. S. Guinto and J. N. Rodriguez.

This survey was undertaken in an area in which only two cases of leprosy had been reported in thirty-two years, in contrast to the heavily infected municipalities of Cordova and Talisay. The examination of 98.6 per cent of 6,581 persons in this area revealed only two additional cases, both bacteriologically negative. The two earlier ones had been segregated at Culion. The area is sparsely populated and the disease had only spread in the originally infected household, and is now considered to have died out. Although Santander is much more isolated than Cordova and Talisay it is difficult to find other differences likely materially to have affected the incidence of leprosy, except less overcrowding of the house-

holds and less of the joint-family system leading to close association of groups of families affording greater opportunities for infection.

Traitement de la Lèpre Humaine par le "Krabao" (Hydnocarpus Anthelmintica). By R. Chaussinand and J. Guillermin.

This is a report on the treatment of 375 cases of leprosy by various methods of administering preparations from *H. anthelmintica*, known in Indo-China as Krabao. Out-patients were treated at dispensaries by the oral-administration of 6 tablets thrice daily of 25 cgm. of the sodium soap made from the oil, which was well tolerated, and can be continued for years with occasional intervals of a few weeks (as formerly used by Rogers in Calcutta). In early cases it proved both effective and popular. In more advanced cases it is advisable to give injections by various routes of undistilled and unneutralized ethyl esters prepared by cold extraction of the oil. Remarkable results have thus been obtained in out-patients at little cost. The segregation laws of Cochin-China are not rigidly enforced, and have not produced appreciable reduction of the disease on account of hiding of the cases, with harmful effects on dispensary treatment and prophylaxis. The authors therefore advise the extension of dispensary treatment, combined with compulsory segregation of infective patients who refuse regular treatment. (This is essentially the plan the reviewer recommended over two decades ago.)

Leprosy in India. Vol. XIII, No 3, July 1941.

The first three articles in this issue record further work at the Lepromin test at the Calcutta School of Tropical Medicine, which can be considered together. They are entitled: Preparation and standardisation of Lepromin (Dharmendra); The early reaction to lepromin, its nature and its relation to the classical Mitsuda reaction (J. Lowe and Dharmendra), and The active principle of lepromin is a protein antigen of the bacillus (Dharmendra).

1. This short note describes the separation of the lepra bacilli from the autoclaved tissues of human leprosy nodules by repeatedly centrifuging the supernatant fluid after settlement following earlier centrifuging. The bacilli are then counted in a small portion and a dilution made to contain 15 million bacilli per c.c.; 0.1 c.c. of this constitutes the dose for injection.

2. This paper deals with the relation between early and late reactions to injected lepromin. They confirmed Fernandez in his

finding that cases giving typical late reactions also give slighter early ones, for in 300 tests in only 6.7 per cent did the two differ. On breaking down the lepra bacilli the early reaction was accelerated from 48 to 24 hours, and the late one considerably reduced in its extent. They therefore consider that only one antigen is concerned in both reactions—not two as Fernandez suggested—and it is set free by breaking up the bacilli.

3. This paper deals with the fractionation of dried leprosy bacilli separated as described above from leprous tissues. The author comes to the conclusion that only the protein element, and not the lipoid one, gives early reactions, and no fraction gives late ones. Early reactions with the ground up bacilliary material in 90 cases gave agreement in 88.8 per cent with the late reactions obtained with ordinary lepromin. With purified antigen the early reactions are easy to interpret without the long wait for late reactions, often with undesirable effects, such as temporary ulceration.

Investigations on the Biochemistry of Leprosy. (C. S. Venkatasubramania)

The author reports that both calcium and phosphorus of the blood are within normal limits in leprosy patients, but phosphatase shows a slight increase, probably due to the bone changes. The Editor points out that the phosphatase increase is greatest on the average in the nerve cases, so may be due to the malnutrition more commonly seen in that type.

PROGRESS AT UZUAKOLI, NIGERIA.

The following extract from a letter to the British Empire Leprosy Relief Association from Dr. T. F. Davey, Medical Superintendent of the Uzuakoli Leper Settlement, will be of interest to our readers.

“ This year has witnessed an extraordinary advance here. With two doctors together for the first time, and a Toc H. man specially working outside the Colony, things have moved by leaps and bounds. At the same time there has been a remarkable awakening among the people who are clamouring for leprosy control. We now have 29 clinics and before the year ends there will be 33. It is not however clinics alone that are demanded, for in many places surveys are requested and good land for segregation purposes is freely offered. It all means that a golden opportunity is before us for striking right to the heart of the leprosy problem in this, one of the largest and most densely populated Provinces in Nigeria. Patients are pouring in to the clinics, we now have between 6,000 and 7,000, and could in point of fact go on increasing the work indefinitely.

“ I am now having to say however ‘ No more ’ when new requests arrive, for even with the best will in the world my present staff is incapable of grasping the opportunity which awaits us, and I shall simply have to refuse any more requests. All the clinics are visited fortnightly, and in some cases monthly, and by dint of care they can be well maintained on that basis. On top of this there is the Uzuakoli Colony, with 70 nurses in training, and all the specialised medical work resulting from the policy of bringing all bad medical cases possible from clinics to the hospital. The clan in which Uzuakoli is situated has caught the infection from other clans and also wants leprosy control, and I am proposing to achieve this by bringing all their lepers (about 500) into the Colony. This will increase the numbers in the Colony by almost 50 per cent, and it will now be necessary to supervise the building of accommodation for this crowd. Strangely enough their coming will scarcely affect our finances, as all building materials both initial and for maintenance are being given free, and the clan undertakes to maintain all lepers concerned, so you see how much they want the work done.

“ Now I want to pay tribute to the work of the men you have given me. Great demands are being made upon them but they are

throwing all their energy into the work, though with only two here at present it is almost as much as they can do simply to maintain the work at Uzuakoli alone. This letter is in the nature of an S.O.S. asking you to let me have the largest possible staff. Even if the present staff cannot be increased, can you arrange matters at other colonies so that I do not have to lose any men for relief purposes?

" Given the staff, we can simply wipe out leprosy over a large area. At present we are concentrating on about one-fifth of the area of the Province and are trying to introduce full leprosy control everywhere within that area. This means leprosy surveys and the building of model leper villages everywhere in addition to clinics; the people are ready but all depends on there being the staff available to supervise everything.

" For the duration of the war we shall continue to concentrate on the area already selected, which is about 900 square miles in size, and it is worthy of note that even though we have clinics scattered through the area, every survey we do indicates that about one-third *only* of the total number of lepers actually attend clinics of their own free will, the rest only starting to attend when the threatened publicity of a survey seems imminent. It is now quite obvious that all suggested figures for leprosy incidence in Nigeria are wide of the mark. I am sure that there are almost 100,000 lepers in our Province alone.

" We can and are tackling this at its root, but until there is a larger staff available, progress will be slow. After the war I am applying to the Government for greatly increased grants solely for supplying more European staff, as I feel that a far greater contribution in this direction is needed from Government. They cannot expect B.E.L.R.A. or anyone else to bear the brunt of the cost."

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