Lepr. Rev. (1973), 44, 224-232

Abstracts

1. **Leprosy in Norway: an interplay of research and public health work**, by L. M. IRGENS. *Int. J. Epidem.* 1973, 2, 81-89.

This historically important and interesting investigation should be required reading of all who would write on "modern" methods of leprosy control by domiciliary treatment of patients. Long before any effective bacteriostatic drug was thought of or even imagined, the Norwegian physicians of last century advocated the adoption of methods that reduced the considerable leprosy endemic to vanishing point. The fascinating story is revealed, step by step, in this paper. The measures eventually adopted were based upon scanty but accurate epidemiological data, a co-operative population, and a general awareness of the importance of taking seriously the increasing incidence of leprosy in parts of Norway. During this period, more knowledge about leprosy and its transmission was becoming available, and the authorities showed a commendable willingness to take advantage of the new knowledge and to apply it in the field.

After a brief backward look into the history of leprosy in Norway, the author shows how leprosy became the focal point of measures of general public health concern. A National Leprosy Register was established, and a Research Hospital was founded. The names of C. W. Boeck (1805-1875) and D. C. Danielssen (1815-1894) are, of course, outstanding in this regard, and the seminal publication *On leprosy* (1847) in which they collaborated, separated leprosy as a distinct clinical entity from all other diseases. It was in this Research Centre in Bergen that Armauer Hansen carried out the work that led to the discovery of the leprosy bacillus.

It is, however, the control programme that is the main theme of this paper, but the programme would have been futile had it not been based on accurate knowledge of the dimensions of the leprosy problem and a distinct assumption that the disease was transmissible and not hereditary. In 1869, the anthrax bacillus had been discovered, and chains of cocci on heart valves had been suspected to be pathogenic organisms.

The rôle of Hansen in applying to the control of leprosy the results of his laboratory research is described in fascinating detail by Irgens—the prohibition of the "boarding-out" of poor leprosy sufferers, and the nocturnal isolation of the majority of those found to be infected. Such isolation was not strictly or penally enforced, but it was effective. Concurrently, the rising standards of housing and hygiene may also have played a contributory rôle in the control of the leprosy endemic and the reduction in the number of victims from about 3000 in mid-century (of whom about 930 were in hospital) to only 3 today.

S. G. Browne

2. **Familial associations in Sarcoidosis**, by the BRITISH THORACIC AND TUBERCULOSIS ASSOCIATION. *Tubercle, Lond.* 1973, 54, 87-98.

This report to the Research Committee of the British Thoracic and Tuberculosis Association by a team led by Professor J. G. Scadding may be read with interest by those whose main concern is leprosy. The findings are not definitive, but suggestive, and indicate the desirability of further enquiries.

The survey produced a further 62 instances of familial associations of sarcoidosis, including 5 examples of concordance in twins, 4 of which were monozygotic. Other features were the large proportion of like-sex pairs, and the greater frequency of mother-child than of father-child associations. This observation may imply either a genetic susceptibility or an unidentified

infective agent; the former suggestion seems to be supported by the preponderance of monozygotic over dizygotic twins.

In leprosy, parent-child associations are evenly distributed between mothers and fathers, and depend predominantly upon the infectiousness of the index case.

S. G. Browne

3. **Researches on *Myco. leprae* and other mycobacteria,** by Yvette PARES, *Annales de la Faculté des Sciences, Université de Dakar, Numéro spécial (1972), Tome* **25**, 5-78.

This monograph (in French) summarizes the author's extensive studies on the cultivation of *Myco. leprae*. Starting from the demonstration of aberrant forms among diverse mycobacteria (by Delville, Alexander-Jackson, Chatterjee, Jadin, Kato and others), she proceeds to report her own investigations. She has found a wide variety of abnormal forms of mycobacteria, of diverse morphology and staining properties, in old cultures, especially when grown in an atmosphere enriched by CO_2. The existence of a complex biological life-cycle is deduced from the behaviour of these mycobacteria in culture media.

The technique of Nakamura (half-immersed microscope slides) not only permitted the study of *Myco. leprae* in different nutritive media, but also revealed the transformation of the acid-fast bacilli into elements designated by the term "Form 2". A further step was taken when, with the same techniques, the author used a (sterile) extract of earth as the culture medium. After 2 months, an abundant growth of "Form 2" mycobacteria was obtained. She favours staining with Ziehl-Gram.

Confirming the observation that *Myco. leprae* may often be found in the circulating blood, the author also demonstrated the presence of "Form 2" in the blood of patients with lepromatous leprosy "in reaction". Previously called streptothrix, coccoid forms, diphtheroids, actinomycoides, etc., she suggests that these aberrant forms may be a stage in the complicated life-cycle of *Myco. leprae*.

When *Myco. leprae* is sown in various nutritive media, and left for months or years at 30 to 32°C, about 19% of the inoculated tubes show "Form 2" elements. By changing the environmental conditions, the author found diverse morphological elements in media inoculated from lepromata–rods, spores, non-segmented and segmented filaments, mycelial elements typical of the actinomyces, etc. When filtrate from autoclaved *Aspergillus fumigatus* cultures was added to nutritive media, multiplication of *Myco. leprae* occurred, ranging from 10- to 40-fold. "Form 2" elements were found to be sensitive to various anti-leprosy and anti-tuberculosis drugs. By the use of various complex culture media, enriched with extracts of earth or potato, and in an atmosphere of CO_2, she was able to isolate "Form 2" mycobacteria from tuberculoid lesions.

This study is far from complete, and many loose ends remain to be tidied up and tied up, such as reversion of aberrant to classical forms, the viability of "Form 2" bacilli, and electron microscopical appearances. When dealing with a disease like leprosy in which minimal cell-mediated potential may be nullified by the infection, all precautions must be taken to exclude (by disinfection) organisms that are not mycobacteria and to demonstrate specific lesions in the mouse footpad.

S. G. Browne

4. **The prevalence of leprosy at the coast of Kenya,** by A. HARTMAN, *East Afr. med. J.* 1973, **50**, 181-188.

This paper reports the findings of 21 random-sample surveys conducted in typical villages along the coastal belt of Kenya. Note was taken of tribal and linguistic affiliations, as well as of location and the presence of other morbid conditions besides leprosy.

The author found 62 sufferers from leprosy in a population of 8011 examined, representing

about 1% of the total at risk, which gives a figure of 6700 for the estimated total of leprosy patients. The diagnosis was mainly on clinical grounds, with some help from biopsy examinations. The age at onset showed the widest divergence. The highest prevalence rates were found among the isolated rural areas, and in predominantly Bantu tribes. Although the prevalence rates were distinctly lower than elsewhere in Africa, the proportion of progressive clinical types was higher, and one-third of those registered already had mutilations.

Recommendations are made for the better control of the endemic.

S. G. Browne

5. **Subclinical infection in leprosy**, by T. GODAL and K. NEGASSI. *Brit. med. J.* 1973, **iii**, 557-559.

By the use of the lymphocyte transformation test the authors found evidence of exposure to infection by *Myco. leprae* in over 50% of individuals who had some occupational contact with leprosy for a year or more, and in the same proportion of contacts of patients suffering from tuberculoid leprosy or from lepromatous leprosy under treatment. Nobody who had been in an endemic area for less than 2 months had evidence of exposure to leprosy.

According to the authors, these figures suggest that "subclinical forms" of leprosy infection may exist in a far higher proportion of exposed persons than hitherto suspected. A curious supplementary finding was that a lower proportion (4 out of 18) of subjects exposed to patients with lepromatous leprosy which had been treated for less than 6 months gave evidence of such exposure.

S. G. Browne

6. **BCG vaccination of children against leprosy: seven-year findings of the controlled WHO trial in Burma**, by L. M. BECHELLI *et al. Bull. Wld Hlth Org.* 1973. **48**, 323-334.

The results reported in this paper provide factual data for the continuing debate on the possible efficacy of BCG vaccination in conferring protection against leprosy. The total number of children concerned was 28,220, almost equally divided between the BCG-vaccinated and the non-vaccinated groups.

The groups have now been followed for periods of up to 7 years. Up to June 1971, 285 and 325 new cases of leprosy were detected in the BCG and control groups respectively, representing incidence rates of 5.2 and 6.0 per 1000 patient-years of observation. The report provides useful analytical tables relating to the various aspects of the trial, e.g. leprosy incidence according to household contacts, tuberculin status, and age at intake, and the (late) lepromin reaction in new cases of leprosy.

The results so far obtained in this trial indicate that BCG vaccination confers no protection on household contacts of open cases of leprosy, nor would it have benefited lepromin-negative contacts of cases of leprosy. The relative infectiousness of multi-bacillary and pauci-bacillary index cases—virtually unaffected by BCG vaccination of contacts—was about 3 to 1 in this trial. The incidence of leprosy in BCG-vaccinated children aged 0-4 years at intake was somewhat lower than that of children in the control group.

It is concluded that this slight reduction in incidence in one age-group would not substantially affect the pattern of the disease in an area comparable to that in Burma where the trial is being conducted. In an area where the prevalence rate is low, i.e. of the order of 1 or 2 per 1000 or less, BCG vaccination would probably not affect the incidence of leprosy. It is considered premature to recommend BCG vaccination, even to children 0-4 years of age, for the sole purpose of conferring protection against leprosy. To recommend BCG vaccination on the grounds of its proven value in protecting against tuberculosis, and its possible protective value against leprosy, would be to induce a false sense of security and perhaps lead to neglect of important leprosy control measures.

S. G. Browne

7. **Acta Leprologica**, 1973, Nos. **51-52**, 1-98.

This entire number is devoted to scientific papers emanating from the *Pavillon de Malte* at the Saint-Louis Hospital in Paris, and reflects great credit not only on the work and workers themselves but also on the initiative of *Acta Leprologica* in assembling and publishing these valuable reviews. Professor Merklen inaugurated the symposium with a general review of the history and activities of the Malta annexe, accompanied with plans of the buildings which were erected with funds provided by the Order of Malta.

The well-known research projects that have been the especial concern of the Paris team over the years are prominently summarized. Thus, the use of *Myco. lepraemurium* for immunological research into human leprosy is the subject of an informative paper by Merklen, Cottenot and Potier, with its special application in the sero-diagnosis of human leprosy by means of immuno-fluorescent tests using *Myco. lepraemurium*. Staining techniques (modified Ziehl-Neelsen procedures) are described that demonstrate acid-fast organisms in pauci-bacillary forms of leprosy, and fluorescent microscopy discloses such organisms in up to 45% of cases of tuberculoid leprosy, and in a further 20% only acid-fast granules are seen by this method.

The drug treatment of leprosy, and of reactional episodes in leprosy, progressive relapses despite treatment, and indigenous cases of leprosy in France are all dealt with in well-written and informative articles.

The last chapter describes the curriculum of the course of study provided in accordance with governmental decree, which leads to the "*Certificat de Léprologie*" granted to successful candidates. Facilities are provided for postgraduate students to pursue approved research projects in leprosy. Information on these courses may be obtained from: Professor M. F.-P. Merklen, Pavillon de Malte, Hôpital Saint-Louis, 2 Place Alfred-Fournier, Paris X, France.

S. G. Browne

8. **New and simple test of nerve function in the hand**, by SEAMUS O'RIAIN, *Br. med. J.* 1973, **iii**, 615-616.

When a normally innervated hand is immersed in water at a temperature of about 40° C for 30 minutes, the skin of the fingers shrinks. If the nerve supply is impaired, this shrinking does not occur. The author suggests that this simple objective test is reliable. It might well be that leprosy workers should use it in the investigation of ulnar- and median-nerve damage in their patients.

S. G. Browne

9. **Late lepromin reaction in untreated patients with indeterminate leprosy under 21 years old in Burma**, by L. M. BECHELLI, P. GALLEGO GARBAJOSA, MG MG GYI, J. WALTER and C. TAMONDONG. *Bull. Wld Hlth Org.* 1973, **48**, 113.

This paper records the findings in 209 individuals in Burma who had had indeterminate leprosy for less than 12 months and who were under 21 years of age. Only about 7% of these (untreated) patients had a negative or doubtful lepromin reaction, a result that indicates that in the population studied a very small proportion ran the risk of developing non-tuberculoid forms of leprosy. No less than 61.5% showed positive reactions classed as 2+ or 3+. Thus, most of the patients in the latter groups could be expected to limit or localize the leprosy infection.

S. G. Browne

10. **Site of early skin lesions in children with leprosy**, by L. M. BECHELLI, P. GALLEGO GARBAJOSA, MG MG GYI, V. MATTINEZ DOMINGUEZ and R. QUAGLIATO. *Bull. Wld Hlth Org.* 1973, **48**, 107.

A careful clinical study by a WHO team in an area in Burma where leprosy is highly prevalent was undertaken to determine the site of the initial lesion in 469 children with leprosy, out of a

total child population under surveillance of 28,220. The site most frequently affected was the thighs or the buttocks, followed by the arms, forearms, legs and lumbar region.

These findings are of epidemiological interest as well as clinical importance, since they have a bearing on the vexed questions of the portal of entry of the organism, and the possibility of the implanted bacilli remaining localized to a given skin area, exposed or covered by clothing. It is emphasized that if leprosy is diagnosed early, then in the great majority of patients the lesion will be single. The skin at the sites of the lesions was usually intact, and typically was covered by clothing. The authors conclude that it was most unlikely that the majority of such lesions developed at the point of entry of *Myco. leprae.*

S. G. Browne

11. **Leprotic inflammation of the gums in children,** by RUI PAULO G. MIRANDA. *Publicaçoes do Centro de Estudos Leprológicos,* Univ. Fed. Parana, 1972, **12**, 23.

The author reports the finding of acid-fast organisms in the inter-gum material obtained from 3 children suffering from lepromatous leprosy. Examination of sections from the underlying soft tissue revealed a heavy bacillary infection at all levels of the dermis, from the epithelium itself, the submucosa and down to the deeper layers. It was noted that bacilli were present in the superficial cells of the mucosa, and that there was no sub-epidermal zone exempt from bacilli or infiltrate. The clinical and epidemiological importance of these findings will not be overlooked.

S. G. Browne

12. **Protection conferred by BCG during the 20 years following vaccination,** by C. GERNEZ-RIEUX and M. GERVOIS. *Bull. Wld Hlth Org.* 1973, **48**, 139.

This important review (in French) of a follow-up study of an extensive BCG trial in France of the persistent protection afforded against tuberculosis in an exposed community will be of interest also to leprosy workers.

The protection conferred against tuberculosis was 73.2% over the 20 years of post-vaccinal observation, the figures being 54.5% against tuberculosis of the lungs and 83.6% against other forms of tuberculosis. The overall percentage of protection showed a progressive decline from 89.1% to 51.4% in the course of the enquiry. Children who were under 10 years of age when vaccinated had a higher degree of protection than those vaccinated later in childhood. It was found that the degree of post-vaccinal tuberculin sensitivity was not significantly correlated with the protection rate.

S. G. Browne

13. **Percutaneous BCG immunization trial using the WHO bifurcated needle,** by J. P. VAUGHAN, J. P. MENU, K. J. LINDQVIST and A. VENNEMA, *J. trop. Med. Hyg.* 1973, **76**, 143.

The bifurcated needle recommended by the World Health Organization for smallpox vaccination has now been used, in a controlled trial in Dar-es-Salaam, for BCG vaccination of children between the ages of 7 and 10 years. A somewhat lower tuberculin sensitivity conversion rate was obtained with the bifurcated-needle technique than with the standard intradermal method, but the simplicity, low cost, and easy sterilization of the needle combine to make this method attractive to field workers who may become involved in mass BCG vaccination campaigns. Further research is needed into possible ways of increasing the effectiveness of this technique, for example by increasing the number of vertical punctures,

augmenting the strength of the standard concentration of BCG used for intradermal inoculation, or using a more virulent strain of BCG.

S. G. Browne

14. **Primeiros resultados do tratamento da lepra com kanamicina (Treatment of leprosy with kanamycin: preliminary results),** by D. V. A. OPROMOLLA and S. C. DE ALMEIDA. *Rev. Brasil Leprol.* 1970, **87**, 17-39.

Ten patients were treated with one gram of kanamycin daily for 90 days. The results were similar to those obtained with rifampicin or other antibiotics, but improvement was observed as early as 30 days. In 3 cases bacteriological negativity was obtained, and evidence of the bactericidal effect of kanamycin was noted both in smears and histologic sections. *Erythema nodosum* was not a problem, but the authors encountered some deafness, and recommend careful audiometric control with this drug. While not suitable for mass treatment of leprosy, especially on an out-patient basis, kanamycin was thought to have significant value in the treatment of cases refractory to further improvement with other medications. Further work is suggested, to establish minimal effective doses, or those free of ototoxicity.

G. L. Fite

15. **Does entrapment neuropathy contribute to nerve damage in leprosy?** by H. SRINIVASAN and P. R. NAMASIVAYAM. *Indian J. Med. Res.* 1971, **59**, 1385-1391.

One hundred and ninety-two adult male patients with established lepromatous leprosy were examined to find out whether increased or diminished possibility of entrapment of the ulnar nerve influenced the occurrence of damage to the nerve. This was done in order to get an estimate of the contribution of entrapment neuropathy to nerve trunk damage in leprosy. The condition of recurrent dislocation of the ulnar nerve was equated with diminished possibility of entrapment of the nerve. Nerve damage was seen to the same extent in the dislocating and normal (not dislocating) nerves. The olecranon-medial epicondyle interval was used as the second parameter. Significant increase in the occurrence of nerve damage was seen when this interval was small (25 mm or less) when the elbow was straight and when this interval increased by 50% or more after elbow flexion, suggesting that increased possibilities of entrapment led to increased occurrence of nerve damage. It is pointed out that routine extraneural decompression of the ulnar nerve as a prophylactic measure to significantly lower the frequency of nerve damage is not likely to be successful in view of the finding that limbs at high risk formed only a small minority of the total.

Authors' Summary

16. **Epidemiology of *Mycobacterium ulcerans* infection (Buruli ulcer) at Kinyara, Uganda,** by THE UGANDA BURULI GROUP. *Trans Roy. Soc. Trop. Med. Hyg.* 1971, **65**, 763-775.

The epidemiology of lesions due to *Mycobacterium ulcerans* was studied in an almost closed community of 2500 Rwandan refugees living near the Nile in central Uganda over a period of years during which 220 of them showed the disease. The incidence was greatest in children aged 5-14 years, in those living nearer the Nile, and during the months of September to November. In adults it was greater in women than in men. The geographical gradient in incidence was more apparent among women, whereas temporal variation mainly affected the men. Direct contact with the Nile was not necessary for transmission. The disease gave no evidence of spread from person to person and the incidence fell to zero when the people moved to a new locality. The incubation period was usually under 3 months. Lesions were usually single; they occurred on

any part of the body in children, but were largely confined to the limbs in adults. In men, lesions were almost restricted to the lower leg, whereas in women the arms were also often affected. Hypotheses of transmission are discussed in relation to these observations.

Authors' Summary

17. **The changes of Bacillary and Granularity Indices of *Mycobacterium leprae* under DDS therapy**, by C. K. SHU, S. L. CHUNG and S. I. LEE. *Kor. J. Derm.* 1971, **9**, 3-8.

The authors investigated serial changes of Bacillary and Granularity Indices from 49 previously non-treated lepromatous leprosy patients under DDS therapy during a 24-month period, and the following results were obtained.

(1) The pre-treatment Bacillary Index was highest on the eyebrows, chin, ear lobes, arms, legs, and backs, in decreasing order. The proportion of fall of B.I. during therapy showed similar tendencies in each site of smears; the average decrease being 1.2 in the first year and 0.8 in the second year.

(2) The average Granularity Index before therapy was 2.5, the rise of G.I. was rapid during the first 12 months, slower during the next 6 months, and no significant changes were seen during the last 6 months.

(3) The changes in the G.I. were faster and more sensitive to therapy than that of B.I. Therefore, it seems more valuable for assessing the response of therapy, drug resistance, prognosis, etc.

(4) Three hundred milligrams of DDS per week appear to be sufficient for maintaining the therapeutic dosage.

Adapted from Kor. Med. Abstr.

The following abstracts are reprinted, with permission, from *Trop. Dis. Bull.* 1973, **70**.

18. **Symposium on leprosy**. *Trop. Doctor*, 1973, **3** (1), 3-27.

This group of six papers covers nearly all the clinical aspects of leprosy, and would be very useful as a booklet. *Recognition of leprosy* by S. G. Browne (p. 3) mentions that "the usual presenting signs are in the skin", and then describes later signs, acute exacerbation, and differential diagnosis.

The scraped-incision smear, and biopsy of skin and nerve are detailed by D. J. Harman in *The microscope and leprosy* (p. 11).

In *Management of leprosy in the community* (p. 5), S. G. Browne gives authoritative advice on such questions as when and where to treat patients with leprosy, the few precautions required among contacts of patients, whether contacts should be treated, advice to the patient, and leprosy control. He emphasizes simple drug regimens, "with regular inspection of the patients for early or threatened nerve damage", and full training of auxiliaries.

The treatment of leprosy and its acute complications by W. H. Jopling (p. 8) includes details of anti-leprosy drugs, but the dose regime of dapsone is vague; "100-200 mg/week is advocated . . . starting with 25 mg/week and slowly increasing". (That some patients cannot tolerate more than 10-25 mg per day, and so should be given daily doses of dapsone, is not mentioned.) The length of treatment advised for dapsone is slightly arbitrary; patients with a "weakly positive" lepromin reaction and "few bacilli" in skin smears he recommends should be treated for 10 years. For nerve pain, he recommends an intraneural injection of lignocaine and hyaluronidase, but whether this benefits or impairs nerve function is not mentioned, neither is the treatment of "early or threatened nerve damage" referred to in an earlier paper.

19. **A simple method for the differentiation of *Mycobacterium leprae* from other mycobacteria through staining technics**, by J. CONVIT and M. E. PINARDI. *Int. J. Lepr.* 1972, **40** (2), 130-132.

It would be a boon to bacteriologists, histologists and other interested workers to have available a staining technique which will specifically stain *Mycobacterium leprae.*

In this paper the authors record their observations that, after a 2-h fixation period and pre-treatment with pyrimidine, *Myco. leprae* loses its characteristic properties of staining by carbol-fuchsin, fluorescent and phospholipid methods (adapted Baker's stain–see *Trop. Dis. Bull.* 1969, **66** (v), abstr. 1038). The control mycobacteria (BCG, *Myco. smegmatis, Myco. lepraemurium,* and two other cultivable mycobacteria isolated from patients with leprosy) stain normally. (See also Fischer and Barksdale, *J. Bact.* 1971, **106** (v), 707.)

The authors offer the hypotheses that the components in *Myco. leprae* which combine with the usual staining methods are either sited more superficially or their chemical bonding is weaker than those of other mycobacteria.

E. E. Vella

20. **Manifestations articulaires, musculaires et cutanées des états réactionnels au niveau de la main du lépreux. (The articular, muscular and cutaneous manifestations of reactional states in the hands of patients with leprosy)**, by A. CARAYON and J. BIOT. *Méd. Trop.* 1973, **33** (1), 25-41. English summary.

The authors review summarily the broad pathology of damage to the soft tissues and bones of the hand resulting both from the acute inflammation of the reactional state and from peripheral nerve damage. Their main emphasis is on the structural damage sustained by the skin and subcutaneous tissues and the small joints during "reaction". These clinically observed complications are illustrated by helpful radiographs, which show osteoarthritic changes, periarticular decalcification, progressive destruction of articular surfaces, spontaneous arthrodesis in various positions, and the "intrinsic-plus" (swan-neck) deformity of the fingers. Consequential paralysis and fibrotic contractures of the intrinsic musculature of the hand lead to bony absorption and dislocation of the interphalangeal joints. The skin over the dorsum of the hand, becoming fibrosed, retracts and binds skin and tendon to bone.

The authors provide detailed operative directions for the correction of established deformity, and some useful, but all-too-brief, hints on the prevention of the disabling and stigmatizing conditions they describe so well.

Orthopaedic surgeons interested in leprosy and its surgical pathology will find this paper of stimulating interest.

S. G. Browne

21. **Renal manifestations of leprosy: impaired acidification and concentration of urine in patients with leprosy**, by R. A. GUTMAN, W. H. LU and D. J. DRUTZ. *Am. J. Trop. Med. Hyg.* 1973, **22** (2), 223-228.

A careful study was made of renal tubular functions in 47 patients with leprosy. Impairment of urinary concentration in 9 cases and acidification following ammonium chloride administration in 7 cases indicated a defective function of the distal renal tubules that was not related to the type of leprosy, to serum globulin levels, to *erythema nodosum leprosum,* to the presence of rheumatoid factor or to dapsone treatment. There was no evidence of urinary infection. The results of renal biopsy studies in 6 patients were normal. It was concluded that this tubular dysfunction might be a non-specific phenomenon.

D. S. Ridley

22. **Amyloidosis in leprosy**, by B. V. SATYANARAYANA, P. S. RAJU, K. R. KUMARI and C. R. R. M. REDDY. *Int. J. Lepr.* 1972, **40** (3), 278-280.

"In a study of the incidence of amyloidosis in 79 cases of lepromatous leprosy it was found that in only 6 cases amyloidosis was present. This confirms previous findings of a low incidence of amyloidosis in leprosy patients in South India."

23. **Autoantibodies in leprosy among Thai patients**, by B. PETCHCLAI, R. CHUTHANONDH, S. RUNGRUONG and T. RAMASOOTA. *Lancet* 1973, June 30, 1481-1482.

"Rheumatoid factor, antithyroglobulin antibody, and antinuclear antibody were studied in Thai leprosy patients. The prevalence of autoantibodies among these patients was higher than that found in the control population, and most positive results were found in lepromatous leprosy; but the percentage of positive results and the titres were lower than those recorded elsewhere. This is suspected to be due to a difference in immune response among Thais."

24. **Prevalence of deformities and disabilities among leprosy patients in an endemic area. Part II. Nerve involvement in the limbs**, by S. KARAT, P. S. S. RAO and A. B. A. KARAT. *Int. J. Lepr.* 1972, **40** (3), 265-270.

In the region of south India 1721 patients suffering from various types of leprosy were assessed for evidence of nerve involvement. Such evidence was found in 622 (36%), and in 614 of these patients the limbs alone were affected. There was a significantly higher incidence of disability among those patients with bacillated types of leprosy, and upper limbs were much more commonly involved than lower limbs. Of 129 patients with all four limbs affected, 69 (53%) had lepromatous leprosy. There was no instance in which motor paralysis occurred alone without anaesthesia, and of all motor nerves showing signs of damage the ulnar nerves were by far the most commonly affected.

The authors stress the importance of regular and routine examination for early neurological changes.

(For Part I of this paper see *Int. J. Lepr.* 1970, **38** (v), 1.

W. H. Jopling