ABSTRACTS

Multiple Puncture Vaccination with Freeze-Dried BCG Vaccine in School Children. M. I. GRIFFITHS, T. W. BRINDLE, E. H. GORDON, T. HOLME and B. JONES. Brit. Med. J., Feb. 25, 1961, pp. 536-539.

The authors used British freeze-dried BCG to vaccinate 2,535 school children in Cheshire between February 1959 and June 1960. They found that multipuncture vaccination with freeze-dried BCG was less effective than intradermal vaccination with a less concentrated freeze-dried vaccination. They also found that heat had a deleterious effect on the vaccine, and that after heat sterilization adequate time for cooling is necessary.

Scope of Plastic Surgery in Leprosy. H. N. ANTIA, Trans. of the Internat. Soc. of Plastic Surgeons, 1960, pp. 547-555.

Dr. Antia, who is Honorary Plastic Surgeon to the J.J. Group of Hospitals, Bombay, and also to Kondhwa Leprosy Hospital, Poona, describes some of the remarkable advances in the scope and technique of plastic surgery. *Nose:* the most evident deformity in leprosy is sunken or *saddle nose*, which nevertheless has the fortunate peculiarity that the skin of the nose is intact in its entirety. For reconstruction there is the very satisfactory operation of postnasal epithelial inlay of GILLIES. Minor nasal depression can be corrected by a bone graft without an epithelial inlay.

Lagophthalmos is due to a selective paralysis of the orbicularis oculi branch of the facial nerve. The result is paralytic ectropion of the lower lid and incomplete closure of the eye. Again, GILLIES' operation of using a temporalis musculo-fascial sling, using an innervated slip of the temporalis, gives a very satisfactory and permanent result (unlike lateral tarsorrhaphy in former use).

Loss of eyebrows is a common stigma of leprosy and can be corrected by an island scalp flap with the anterior branch of the temporal artery as a subcutaneous pedicle, or a transposition flap can be used. A face lift operation can be used for *premature facial wrinkling*, and the elongated *nodules of the ears* trimmed to a normal shape. In the *hand* ulnar and median nerve paralysis is typical but in this the long flexors and extensors are usually spared. This makes possible the operation of sublimis transfer on the many-tailed extensor graft replacement operation of BRAND, which gives consistently successful results with the help of good physiotherapy. In a fully developed claw hand there is loss of the web space, which must be re-established before an opponens transfer can be done for the thumb. A transposition flap from the dorsum gives adequate elongation of the web. Flexion contractures of the fingers due to

burns require Wolff grafting, cross-finger flap, or amputation of a finger, and using its skin to correct the deformities of adjacent fingers. Loss of thumb will require elongation by a "cocked hat" type of operation, and if all fingers and thumb are lost, deepening of the web by excision of the index metacarpal will allow thepatient enough pinch to make him independent for feeding and toilet. The chronic plantar *ulcers of the feet* can be healed by local flaps or by a cross-leg flap if more extensive. Anaesthesia for all the above operations has been local, or brachial plexus block, or spinal block. There is often anaesthesia there already, and Pethidine injections suffice. There are many other reconstructive and plastic operations called for in leprosy patients, but facilities so far are very limited and there are very few surgeons who are available. Dr. Antia illustrates his paper with numerous illustrations which alone make his case for more facilities and more colleagues in this enormous and highly successful field of surgery, of which he is one of the pioneers.

The Feldsher in the USSR. WHO Chronicle 15, 3, March 1961, pp. 86-88. This account is based on an article by E. D. ASHURKOV, A. ZHUK and Y. LISITSIN, in Aspects of Public Health Nursing, p. 152.

The feldsher is in the USSR an important type of auxiliary medical worker, and belongs there to the "medium-grade class, which also includes nurses, midwives, laboratory assistants, dental technicians, etc. There have been feldshers in Russia since the 18th century but they became more numerous and important when the rural (zemstvo) public health services developed, wherein they assisted and even replaced doctors. In some rural areas they worked alone, in others they were supervised by the zemstvo doctor. The feldsher system was retained after 1917, so that in 1958 there were in Russia 343,000 feldshers, including feldsher-midwives and feldsher-sanitarians. They are integrated into the centres of 74,000 medical districts. The modern feldshers are well trained and still act as assistants to doctors but it seems mainly as independent doctors. Their training seems as comprehensive as that given to a medical student, but over a less period of time (2½ to 4 years). (It is probably this class of officer who in Russia provides the primary casefinding and care of tuberculosis and leprosy patients.)

Estado Actual de la Lepra en el Salvador C.A. (*Present State of Leprosy in El Salvador, Central America*). A. C. ANAYA, Boletin de la Sociedad de Derm. y Sifil. **17,** 2 & 3, June-September 1960, 00. 84-91.

After five journeys of investigation in 1960 the author reported 50 new cases and gives the names of 11 out of 14 departments of the

country where leprosy is now endemic. The department most heavily attacked is Chalatenango with a leprosy rate of 461 per thousand, where the leprosy belongs mainly to three families and their relatives and contacts. Also La Unión and San Miguel are heavily attacked, with 196 and 152 per thousand, respectively. The disease mostly presents in the second and third decades of life, but there are two children under 6 years of age and several old people. The male incidence predominates—129 male to 49 female cases. Most of the leprosy is found in the poor, in ill-nourished labourers who live in huts in deplorable hygienic conditions. The lepromatous type predominates (in 95 of the 178 diagnosed cases). In most cases which have been studied since 1953 the author found abolition of the reflexes at the base of the tongue, and in the pharynx and larynx and the vomit reflex—this has not been seen reported by any other author. The author got BCG vaccination given in the endemic zones of the country. He thinks it is necessary that all doctors and medical students should familiarize themselves with the chief symptoms and signs of leprosy, so as to be able to make a sure early diagnosis and begin suitable treatment as early as possible. Because of these 178 leprosy cases diagnosed and treated, and a probable extra 400 undiagnosed cases, he thinks it right that a committee of two or three doctors should be set up in order to launch a full antileprosy campaign. Drug treatment is more or less satisfactory and many patients can receive supervised domiciliary or ambulatory treatment. Such a campaign would be practicable in El Salvador and not heavily expensive.

Sarcoidosis and Leprosy. D. GERAINT JAMES and W. H. JOPLING. J. of Trop. Med. & Hyg. London **63**, 22; February 1961, pp. 42-46.

The authors point out that in tropical practice leprosy is recognised but sarcoidosis missed, even though sarcoidosis has a higher incidence in the coloured races. There are certain similarities between the two diseases which might cause confusion in diagnosis. *Sarcoidosis* is a systemic granulomatous disease of undetermined aetiology and pathogenesis. The parts most often involved are the mediastinal and peripheral lymph nodes, lungs, liver spleen, skin, eyes, bones of the phalanges, and the parotid glands. Sarcoid tissue is made up of follicles of epithelioid cells, occasional giant cells and little or no central necrosis. When stained the epithelioid cells have pale-staining vesicular nuclei, cytoplasm which stains pink, and cell boundaries are clearly demarcated. Giant cells are either of foreign body type or Langhans type and they may have various inclusions. If there is a focus of necrosis it is central and of the fibrinoid type, and is inconspicuous. The sarcoid follicles are usually spherical and often bounded by a scanty rim of lymphocytes. The persistence of

fine fibrils passing through the centre of the follicle is often revealed by reticulin stains. Helpful in distinguishing sarcoid tissue from tuberculous is the absence of acid-fast bacilli, caseation or calcification. It is well known that sarcoid tissue may develop as a reaction to neoplasms, reticuloses, infections, chemicals and trauma, but in that case the reaction is not distinctive and the onus of diagnosis rests on the clinician, not the pathologist. He has to distinguish a non-specific local sarcoid tissue reaction from the generalized reticulo-endothelial disorder which is sarcoidosis. Whenever sarcoid-like tissue has been obtained from any site, search of other systems must be carried on such as skin, eyes, lymph nodes, and spleen, with chest or bone X-rays as well. The Kveim test and serum globulin and urinary calcium levels may be helpful.

Leprosy is a contagious granulomatous disease in which the causal agent is accepted to be *M. leprae*. It primarily involves peripheral nerves but the skin and other organs and tissues may also be affected. In tuberculoid and borderline leprosy the changes are either confined to nerves or may involve skin as well. In tuberculoid and near-tuberculoid cases the histology is similar to that of sarcoidosis, and absence of acid-fast bacilli heightens the similarity. Usually bacilli are present in borderline leprosy and tend to increase as the case approaches the lepromatous end of the spectrum. Lepromatous leprosy veers away from any confusion with sarcoidosis, for it is a systemic disease affecting nerves, skin, reticulo-endothelial system, oral and upper respiratory mucosa, the eyes, bones and testes. The affected tissues show a distinctive histology of vacuolated cells in different stages of development from mononuclear cells (histiocytes) to typical Virchow foam cells (macrophages) with numerous acid-fast bacilli some lying singly and others packed in greatly swollen macrophages to form globi, or in smaller bundles and groups.

Differential diagnosis. In the skin, lesions of the two diseases are often very similar. The first step in distinguishing them is to *test the skin lesions for anaesthesia* to pain, light touch, and sensation to heat and cold, because such sensory impairment favours the diagnosis of tuberculoid or borderline leprosy. Lepromatous lesions are not anaesthetic, but a skin smear from one of the lesions stained by Z.N., will always show acid-fast bacilli, and additional evidence is the *finding of one or more thickened peripheral nerves.* By silver impregnation staining techniques it may be possible to demonstrate axonal degeneration in or near the granuloma, which is typical of leprosy. Conversely, the presence of normal cutaneous nerves in or near the granuloma is evidence against leprosy. The differentiation from borderline leprosy is less difficult, as cutaneous nerves are readily seen, and cellular infiltration within the nerves is not so intense, and the nerves are more likely to be swollen than destroyed. It is possible to

demonstrate acid-fast bacilli lying singly within the nerves and in the dermis.

Skin plaques may undergo transient erysipeloid swelling and redness in both sarcoidosis and leprosy of any type, but only in leprosy is this reaction liable to progress to ulceration.

Mucosae. The nasal mucosa may sustain lepromatous or sarcoid nodulation; the former ulcerates and gives off a bloody nasal discharge, whereas the sarcoid does not. The same applies to the buccal and other upper mucosa.

Hair. Loss of scalp and body hair does not occur in sarcoidosis but in tuberculoid leprosy a plaque in a hairy site loses local hair and borderline also has lesser degrees of hair loss in plaques. Lepromatous has no local skin loss over a lesion of the skin but in advanced cases there is deficient hair in eyebrows, even in eyelashes, and in Japan even alopecia is reported.

Eyes. In both diseases there may be involvement of cornea, iris, and ciliary body, and lead to eventual blindness; also common to both are superficial punctate keratitis, and iridocyclitis, also chronic adhesive iridocyclitis with episodes of the acute form, leading to secondary glaucoma. Retinal deposits may be seen in both diseases. A useful point is that the cornea in sarcoidosis is dry and irritating whereas in leprosy the cornea is likely to be anaesthetic. Facial nerve damage is much more common in leprosy, so the seventh nerve should be tested. A combination of facial weakness and corneal anaesthesia is diagnostic of leprosy.

Reticulo-endothelial system. In leprosy, unlike sarcoidosis, lymph node enlargement occurs only in one type, the lepromatous, and liver and spleen are not enlarged detectably, while lymph gland enlargement is typical only of inguinal, femoral and epitrochlear glands.

Nerves. Thickened peripheral nerves are typical of leprosy of any type, palpable where the nerves lie superficial in their course. There may be caseation in nerves in tuberculoid leprosy. Neural sarcoidosis is uncommon, and peripheral neuritis is rare and does not lead to deformities such as in leprosy.

Bones. In leprosy there is aseptic necrosis which usually starts in the terminal phalanges of the fingers so that they thin and gradually disappear. The absorption goes from the distal one upwards. The metacarpal and carpal bones are spared. In the feet there is a common concentric absorption of the heads of one or more metatarsals, and Charcot joints may later appear. Later true septic necrosis, and deep trophic ulceration of anaesthetic hands and feet may commonly occur, atrophy of anterior nasal spine and generalised osteoporosis, claw hand, etc. are common late changes, whereas in sarcoidosis bony changes consist only of innocent punched-out phalangeal cysts, occasionally with swelling of the digits, but usually revealed by

routine radiography. In sarcoidosis bone absorption with consequent deformity is rare; likewise there is an absence of anaesthesia of hands and feet.

Lungs. Lung changes are common in sarcoidosis, e.g. early bilateral hilar adenopathy which either clears up or goes on to diffuse mottling. Lung changes in leprosy probably do not occur but full studies should be done to make sure of this.

Kidneys. In the later stages of lepromatous leprosy there may be chronic glomerulo-nephritis or secondary amyloidosis, but in sarcoidosis the common change is nephrocalcinosis, with raised levels of serum and urinary calcium.

Testes. These are not involved in sarcoidosis but in lepromatous leprosy the testes contain large numbers of bacilli and in late cases become shrunken, with sterility but not impotence. The urine contains a raised level of FSH from the anterior pituitary, but the urinary 17-ketosteroids are within normal limits. Later the testicular interstitial cells are damaged, causing impaired secretion of testosterone with resulting impotence, gynaecomastia, osteoporosis, and and diminished output of urinary ketosteroids. During a reactional state there may be additional acute epididymo-orchitis in one or both testes.

Reactional States occur in both diseases, of a type of erythema nodosum. This in leprosy is confined to the lepromatous and has features of erythema nodosum, fever, swollen joihts, bone pains, swelling and tenderness of one or more lymph glands, epistaxis, epididymo-orchitis, and acute irido-cyclitis. The nodes of erythema on the face, arm and thighs may fade in a few days or become necrotic and ulcerate. The reaction is most likely to occur during the course of antileprosy therapy, or be triggered off by some intercurrent infection, stress, or smallpox or tuberculin vaccination. It never occurs early in the disease, but later when most of the infecting bacilli are granular and fragmented. There is anaemia, raised serum globulin and BSR and a polymorph leucocytosis. But in sarcoidosis an acute reaction always presents early in the course. The lesions do not present in crops, they persist for one to six weeks and are confined to the legs and less commonly the arms. There may be an antigen-antibody reaction in both diseases from chemical breakdown products, in leprosy from the disintegrating bacilli, in sarcoidosis from mycolic acid, or even pine pollen.

Skin Tests. The percentage of positive reactors to the tuberculin test in leprosy patients has been found to tally with or be lower than that in the healthy population, and tuberculoid and lepromatous cases react much the same. In sarcoidosis two-thirds of sarcoid patients are insensitive to 100 units of ID tuberculin. With depot tuberculin of 5 unites in oil three-quarters of those negative to the ordinary tuberculin test have tuberculin hypersensitivity. BCG

vaccination of Mantoux-negative sarcoid patients does not convert to tuberculin hypersensitivity. Leprosy patients convert normally as in healthy subjects. The *Kveim Test* and the *Lepromin Test* have striking similarities in that antigen injected I.D. leads to a very delayed reaction. Biopsy of the resulting nodule at the end of about one month reveals a granulomatous reaction. A positive Kveim test provides strong evidence of sarcoidosis but the lepromin reaction is often positive in healthy subjects, and has no place in diagnosis, only in prognosis and classification of leprosy cases. It is negative in lepromatous leprosy and in most borderline, but always positive in the tuberculoid and near-tuberculoid borderline. The authors tried the Kveim Test in a small number of leprosy patients of different types and found it negative, but KOOIJ has reported positive results in tuberculoid leprosy but negative in lepromatous.

Treatment. Corticosteroids are useful in both diseases and the only agents known to act in sarcoidosis: they have little or no effect in the later stages of sarcoidosis. In leprosy they are very useful in the ENL type of reaction, and there is a separate basic therapy for the disease. For clinical lesions where there is no corroborative evidence a therapeutic trial with corticosteroid is justifiable.

Reaction in Leprosy. G. RAMU. The Licentiate, Ambala **10,** 11, February 1961, pp. 369-378.

The author made a study of 79 cases of various types of leprosy reactions during the course of the disease or during treatment. These reactions were found during regular observation of 418 leprosy patients. The subjects at risk had a diet very deficient in proteins, and the Vitamins A and C, but no corelation was observed in their reaction cases with diet. Concomitant infections had some slight influence in causing reactions, and sulphone therapy. He found that reactions are more common in the first 18 months of sulphone therapy. In treatment he recommends simple palliative measures, and caution in using ACTH and cortisone, and anti-malarial drugs (camoquin and chloroquin) are better than many others previously used.

Angiography in Leprosy. S. P. BASU et al. Indian J. of Radiology, **14,** 4; November 1960, pp. 180–189.

Basu and colleagues did arteriography of 20 non-lepromatous leprosy cases, and had 9 control cases. There was a definite circulatory stasis in the digits, which did not depend on duration of the disease. In cases with associated bone absorption, the vessels appeared thinner, and there was delay in emptying due to venous stasis. In control cases in which there was poor filling of the digital vessels it was noticed that a shunt took place.

A Review of 79 Leprosy Patients Seen in London. C. J. STEVENSON. Brit. Med. J. of 1st April, 1961, pp. 925–928.

Dr. Stevenson is senior registrar of St. John's Hospital for Diseases of the Skin in London and describes and discusses the 79 cases that he has seen. He found that two-thirds of the cases were immigrants to U.K. during the past 10 years. The countries of origin were 42 from India (of which 27 were Anglo-Indian, 10 Indian, and 5 European stock), 8 originated in Britain (but had worked overseas in endemic zones); 6 from Cyprus, 4 each from West Africa and Malaya, 3 each from Pakistan, Ceylon, and West Indies; 2 from Malta; and 1 each from Austria (who had worked overseas in an endemic area) and 1 each from Aden, Hong Kong, and Malaya. In 22 cases symptoms were present before arrival in Great Britain. The author states that at some time while these patients were under observation in this country, acid-fast bacilli were found in the skin in at least one-third of them. These would be potentially infective. Although some cases are self-healing, others progress to more serious and permanent complications.

Preliminary Trial with Etisul in Northern Nigeria. D. G. JAMISON, E. PALMER and R. L. VOLLUM. Trans. Roy. Soc. of Trop. Med. & Hyg. **55, 2**; March 1961, pp. 142–148.

The authors tried Etisul by inunction on 4 patients at Katsina. In all 4 patients there was marked improvement in the general health of the patient, although the clinical signs of leprosy still persisted to some extent. The bacteriological index in the smears showed a progressive reduction, most marked during the first six weeks of treatment and associated with an alteration in the appearance of the bacilli, which became granular. There was a consistent pattern of changes in the appearance of the cellular infiltrate in the skin biopsies, taken from the same region, as treatment proceeded. This consisted of (1) a reduction in the number of bacilli present in the infiltrate; (2) a reduction in the number of foamy cells; (3) a replacement of the lepromatous infiltrate by fibroblasts and lymphocytes. The authors think that intensive inunction with Etisul over the body for 3 to 4 months in conjunction with DDS may prove to be the best treatment for leprosy. With large doses of Etisul they saw reactions in children and temporary discontinuance in such cases may be called for.

The Influence of Hypnotherapy on the Excretion of 17-Ketosteroids in Patients Affected with Diffuse Neurodermatitis. M. M. ZHELTAKOV, G. Y. SHARAPOVA and Y. K. SKRIPKIN: Vestnikh Dermatologii i Venerologii, Moscow, 1961, No. 1, p. 13–17.

The authors think that therapy by hypnosis is one of the best for patients with diffuse neurodermatitis. As the skin process resolved

they noted a more marked and more intense excretion of 17-ketosteroids as compared to treatment with more routine desensitizing agents. They think that hypnosis therapy has a favourable effect on the central nervous system and a stimulating action on the adrenal cortex.

Problems of Rehabilitation of the Leprosy Patient in a High Prevalence Area of Africa. M. F. LECHAT, F. PUISSANT, Journal of Chronic Diseases, St. Louis, **13**, 3, March 1961, pp. 221–227.

The authors formerly worked in Yonda Leprosarium, Coquilhatville, Congo Republic. They point out that more than three million leprosy patients are in Africa and about 300,000 in the Congo Republic. There are 72 leprosaria in the Congo, with about 16,600 in-patients and 270,000 were treated at out-patient centres. At Yonda leprosarium there are about 850 patients and now treatment is reported to be continuing by nurses. Out-patient treatment in rural areas is probably disorganised. After current political difficulties are settled it may be assumed that treatment of leprosy will go on. The authors comment that the sulphones were the basis of former treatment and are effective but very slow in their action. Etisul was tried at Yonda and gave promise of being more rapidly effective. The authors point out the very considerable physical disabilities and deformities which occur in even the medically cured cases of leprosy, osteitis, nerve damage, ulcers, and contractures and suggest that Yonda could be revived with international aid and become a main centre of rehabilitation of such cases, using special equipment and personnel trained in physiotherapy and reconstructive and plastic surgery, and giving job training for rehabilitation of the patients. The repair and rehabilitation of the foot is for the agricultural worker as important as the hand. Physiotherapists and surgeons who volunteer for this work perhaps may be sent for training under the auspices of WHO. (At the moment the centre of such training might be India, where such work under BRAND is well understood in theory and practice.—*Editor.*)

Treatment of Initial Forms of Leprosy by 7522 *RP* (*Sultirene*)*: First Results.* A. BASSET, R. CAMAIN, Mme BASSET and A. M. SOW. Bull. de la Soc. Méd. d'Afrique Noire de langue française, **5**, 4. 4th quarter 1960, pp. 461–465.

The authors tried this drug 7522 RP (Sultirene) which is sulphmethopyraxine. SCHNEIDER in 1958 reported on it after trial in Bamako on different forms of leprosy that its action seemed comparable to that of the sulphones in lepromatous cases, but seemed superior in tuberculoid cases. The authors therefore tried it in 35 patients with tuberculoid or indeterminate leprosy. Of these cases 20 were retained, as some were lost when they gave up treatment on

the appearance of early clinical improvement. The new drug was always well tolerated and there was no change in the blood picture. The dosage was oral, 3 tablets of 250 mg. daily, every second day. In most cases reactions were unimportant. In many cases clinical improvement showed itself in the first weeks and clinical cure could be spoken of in six months. Sultirene is valuable in having (unlike DDS) an early favourable result in these forms of leprosy. However, histological sections showed that the early improvement was not parallel in the skin and long treatment is still necessary.