

with tincture of cardamom and alcohol. It is an old remedy, strongly recommended by Addison, and the reports of Jaccoud, Fraentzel, and many others show that it has a positive value in the disease. Guaiacol may be given as a substitute, either internally or hypodermically. In 101 cases in which it was used at my clinic, by Meredith Reese, the chief action was on the cough and expectoration, which were much lessened, but the remedy had no essential influence on the progress of the disease.

Cod-liver Oil.—In glandular and bone tuberculosis, this remedy is undoubtedly beneficial in improving the nutrition. In pulmonary tuberculosis its action is less certain, and it is scarcely worthy of the unbounded confidence which it enjoyed for so many years. It should be given in small doses, not more than a teaspoonful three times a day after meals. It seems to act better in children than in adults. When it is not well borne, a dessertspoonful of rich cream three times a day is an excellent substitute. The clotted or Devonshire cream is preferable.

The Hypophosphites.—These in various forms are useful tonics, but it is doubtful if they have any other action. They certainly exercise no specific influence upon tubercle. They may be given in the form of the syrup of the hypophosphites of calcium, sodium, and potassium of the U. S. P.

Arsenic.—There is no general tonic more satisfactory in cases of tuberculosis of all kinds than Fowler's solution. It may be given in five-minim doses three times a day and gradually increased; stopping its use whenever unpleasant symptoms arise, and in any case intermitting it every third or fourth week.

One or two special methods of dealing with pulmonary tuberculosis may here be mentioned. The local treatment, by direct injection into the lungs, has been practised since its strong advocacy by Pepper. It has, however, not gained the general support of the profession, and is occasionally followed by serious results. As a rule, it may be practised with impunity, and the injections may be made with a long hypodermic needle into any portion of the lung which is diseased. Iodine, carbolic acid, creasote (three per cent solution in almond oil), and iodoform have been used for the purpose. The remarkable results which surgeons have recently obtained in the treatment of joint tuberculosis by injections of iodoform point to this as a remedy which will probably prove of service when injected directly into the lungs.

Treatment by compressed air is in many cases beneficial, and under its use the appetite improves, there is gain in weight, and reduction of the fever. The air may be saturated with creasote.

IV. Treatment of Special Symptoms in Pulmonary Tuberculosis.—(a)

The Fever.—There is no more difficult problem in practical therapeutics than the treatment of the pyrexia of tuberculosis. The patient should be at rest, and when practicable wheeled into the fresh air for as long a time as possible during the day. Fever does not contra-indicate an out-of-door

life, but it is well for patients with a temperature above 101° or 102° to be at rest. For the continuous pyrexia or the remittent type of the early stages, quinine, small doses of digitalis, and the salicylates may be tried; but they are uncertain and rarely reliable. Under no circumstances is that priceless remedy, quinine, so much abused as in the fever of tuberculosis. In large doses it has a moderate antipyretic action, but it is just in these efficient doses that it is so apt to disturb the stomach.

Antipyrin and antifebrin may be used cautiously; but it is better, when the fever rises above 103°, to rely upon cold sponging or the tepid bath, gradually cooled. When softening has taken place and the fever assumes the characteristic septic type, the problem becomes still more difficult. As shown by Chart XIII (which is not by any means an exceptional one), the pyrexia, at this stage, lasts only for twelve or fifteen hours. As a rule it is not more than from eight to ten hours in which the fever is high enough to demand antipyretic treatment. Sometimes antifebrin, given in two-grain doses every hour for three or four hours before the rise in temperature takes place, either prevents entirely or limits the paroxysm. If the temperature begins to rise between two and three in the afternoon, the antifebrin may be given at eleven, twelve, one, and, if necessary, at two. It answers better in this way than given in the single doses. Careful sponging of the extremities for from half an hour to an hour during the height of the fever is useful. Quinine is of little benefit in this type of fever; the salicylates still less.

(b) *Sweating.*—The atropine, in doses of gr. $\frac{1}{120}$ — $\frac{1}{60}$, and the aromatic sulphuric acid in large doses are the best remedies. When there are cough and nocturnal restlessness, an eighth of a grain of morphia may be given with the atropine. Muscarin (\mathfrak{m} v of a one per cent solution), tincture of nux vomica (\mathfrak{m} xxx), picrotoxin (gr. $\frac{1}{80}$) may be tried. The patient should use light flannel night-dresses, as the cotton night-shirts, when soaked with perspiration, have a very unpleasant cold, clammy feeling.

(c) The *cough* is a troublesome, though necessary, feature in pulmonary tuberculosis. Unless very worrying and disturbing sleep at night, or so severe as to produce vomiting, it is not well to attempt to restrict it. When irritative and bronchial in character, inhalations are useful, particularly the tincture of benzoin or preparations of tar, creasote, or turpentine. The throat should be carefully examined, as some of the most irritable and distressing forms of cough in phthisis result from laryngeal erosions. The distressing nocturnal cough, which begins just as the patient gets into bed and is preparing to fall asleep, requires, as a rule, preparations of opium. Codeia, in quarter or half grain doses, or the syrupus codeiæ (3 j) may be given. An excellent combination for the nocturnal cough of phthisis is morphia (gr. $\frac{1}{8}$ — $\frac{1}{6}$), dilute hydrocyanic acid (\mathfrak{m} ij–iij), and syrup of wild cherry (3 j). The spirits of chloroform, B. P., or the mistura chloroformi, U. S. P., or Hoffman's anodyne, given

in whisky before going to sleep, are efficacious. Mild counter-irritation, or the application of a hot poultice, will sometimes promptly relieve the cough. In the later stages of the disease, when cavities have formed, the accumulated secretion must be expectorated and the paroxysms of coughing are now most exhausting. The sedatives, such as morphia and hydrocyanic acid, should be given cautiously. The aromatic spirits of ammonia in full doses help to allay the paroxysm. When the expectoration is profuse, creasote internally, or inhalations of turpentine and iodine, are useful.

(d) For the *diarrhœa* large doses of bismuth, combined with Dover powder, and small starch enemata, with or without opium, may be given. The acetate of lead and opium pill often acts promptly, and the acid diarrhœa mixture, dilute acetic acid (℥ x-xv), morphia (gr. $\frac{1}{2}$), and acetate of lead (gr. j-ij), may be tried.

(e) The treatment of the hæmoptysis will be considered in the section on hæmorrhage from the lungs. Dyspnœa is rarely a prominent symptom except in the advanced stages, when it may be very troublesome and distressing. Ammonia and morphia, cautiously administered, may be used.

If the pleuritic pains are severe, the side may be strapped or painted with tincture of iodine. The dyspeptic symptoms require careful treatment, as the outlook in individual cases depends much upon the condition of the stomach. Small doses of calomel and soda often allay the distressing nausea of the early stage.

XXVII. LEPROSY.

Definition.—A chronic infectious disease caused by the *bacillus lepræ*, characterized by the presence of tubercular nodules in the skin and mucous membranes (tubercular leprosy) or by changes in the nerves (anæsthetic leprosy). At first these forms may be separate, but ultimately both are combined, and in the characteristic tubercular form there are disturbances of sensation.

Etiology.—The disease is very widely spread, and within the past few years renewed attention has been directed to it, owing to a belief that it is greatly on the increase. It is one of the oldest of known diseases. At present it prevails widely, particularly in hot countries. In India it is estimated that there are over 250,000 lepers. In Europe, where it prevailed in the middle ages, it has become almost unknown except in Norway and in the Orient. On this continent leprosy exists in the Gulf States and extensively in Mexico. At Key West Berger states that there are one hundred cases, and Blanc found forty lepers in New Orleans. A few isolated cases arrive from time to time in the cities of the Atlantic coast. In the Northwestern States a few cases exist among the Norwegian and Icelandic settlers. On the Pacific coast cases are seen not infrequently among the Chinese. An endemic focus is at Tracadie,

New Brunswick. A few cases are also met with in Cape Breton, N. S. At Tracadie, which is on a bay of the Gulf of St. Lawrence, the disease is limited to two or three counties which are settled by French Canadians. The disease was imported from Normandy about the end of the last century. The cases are confined in a lazaretto, to which they are sent so soon as the disease is manifest. I made a visit to the settlement two years ago with the medical officer, A. A. Smith, of Chatham, at which time there were only eighteen patients in the hospital. It is interesting to note that the disease has gradually diminished by segregation; formerly there were over forty under surveillance.

In the Sandwich Islands leprosy has developed to an enormous extent. Morrow states that in 1889 there were 1,100 lepers in the settlement at Molokai.

In the West Indies the disease has been long endemic, and Beavan Rake, of Trinidad, has contributed some of the most interesting of recent clinical and pathological studies.

The disease attacks all classes and persons of all ages. It is probably communicated by contagion. Inoculation was successfully performed by Arning in a Hawaiian convict. Graham, who some years ago carefully investigated the Tracadie settlement, came to the conclusion that the disease was there probably transmitted by contagion; and A. A. Smith, the present medical officer, tells me that he knows of no facts which are opposed to that view. It is, however, only contagious in the same sense as syphilis, and just as accidental contamination with this virus is extremely rare so it is with leprosy. The closest possible contact may take place for years, as between parent and child, without transmission, and not one of the Sisters of Charity who have for more than forty years so faithfully nursed the lepers at Tracadie has contracted the disease. It is difficult to explain the rapid spread of the disease in the Sandwich Islands on any other view than contagion, and yet it is strange that there is no evidence of a primary lesion or external sore comparable to that of syphilis. Morrow states that "in the immense majority of cases the disease is propagated by sexual congress."

The disappearance of the disease in the middle ages no doubt resulted directly from the isolation enforced at that time. The disease has possibly in some instances been transmitted by vaccination. Hereditary transmission cannot be excluded, and there is no good reason why the disease should not be communicated, as is syphilis, from parent to child.

Jonathan Hutchinson believes that the disease is always associated with some special kind of food, particularly fish. Though he does not deny the specific nature of the disease or the possibility of contagion, he would make apparently the fish diet the *tertium quid* which renders the patient susceptible, or, if I gather aright from his recent communication, with which the poison may be taken. The facts which are manifest at the Tracadie settlement are very much opposed to this view. If a fish diet