

could alone in any way induce the disease, by this time leprosy would be wide-spread in the counties along the Gulf of St. Lawrence, as fish is the main article of diet winter and summer. There is not the slightest difference in race, the mode of life, or in the surroundings of the inhabitants in the regions adjacent to Caraquet and Tracadie, and yet leprosy has been for nearly a century limited to two or three counties.

The Bacillus Lepræ.—Hansen, of Bergen, first discovered this organism, which has many points of resemblance to the *bacillus tuberculosis*, but can be differentiated from it. It occurs in extraordinary numbers in the tuberculous tissue. It has been cultivated successfully (Babes), but inoculation experiments on animals have been negative.

Morbid Anatomy.—The leprosy tubercles consist of granulomatous tissue made up of cells of various sizes in a connective-tissue matrix. The bacilli in extraordinary numbers lie partly between and partly in the cells. The growth gradually involves the skin, producing tuberous outgrowths with intervening areas of ulceration or cicatrization, which in the face may gradually produce the so-called *facies leontina*. The mucous membranes, particularly the conjunctiva, the cornea, the larynx, may be gradually involved. In many cases deep ulcers form which result in extensive loss of substance or loss of fingers or toes, the so-called *lepra mutilans*. In anæsthetic leprosy there is a peripheral neuritis due to the development of the bacilli in the nerve-fibres. Indeed, this involvement of the nerves plays a primary part in the etiology of many of the important features, particularly the trophic changes in the skin and the disturbances of sensation.

Clinical Forms.—(a) **Tubercular Leprosy.**—Prior to the appearance of the nodules there are areas of cutaneous erythema which may be sharply defined and often hyperæsthetic. This is sometimes known as *macular leprosy*. The affected spots in time become pigmented. In some instances this superficial change continues without the development of nodules, the areas become anæsthetic, the pigment gradually disappears, and the skin gets perfectly white—the *lepra alba*. Among the patients at Tracadie it was particularly interesting to see three or four in this early stage presenting on the face and forearms a patchy erythema with slight swelling of the skin. The diagnosis of the condition is perfectly clear, though it may be a long time before any other than sensory changes develop. The eyelashes and eyebrows and the hairs on the face fall out. The mucous membranes finally become involved, particularly the mouth, throat, and larynx; the voice becomes harsh and finally aphonic. Death results not infrequently from the laryngeal complications and aspiration pneumonia. The conjunctivæ are frequently attacked, and the sight is lost by a leprosy keratitis.

(b) **Anæsthetic Leprosy.**—This remarkable form has, in characteristic cases, no external resemblance whatever to the other variety. It usually begins with pains in the limbs and areas of hyperæsthesia or of numbness.

Very early there may be trophic changes, seen in the formation of small bullæ (Hillis). Maculæ appear upon the trunk and extremities, and after persisting for a variable time gradually disappear, leaving areas of anæsthesia, but the loss of sensation may come on independently of the outbreak of maculæ. The nerve-trunks, where superficial, may be felt to be large and nodular. The trophic disturbances are usually marked. Pemphigus-like bullæ develop in the affected areas, which break and leave ulcers which may be very destructive. The fingers and toes are liable to contractures and to necrosis, so that in chronic cases the phalanges are lost. The course of anæsthetic leprosy is extraordinarily chronic and may persist for years without leading to much deformity. One of the most prominent clergymen on this continent has had anæsthetic leprosy for more than thirty years, which until recently has not seriously interfered with his usefulness, and not in the slightest with his career.

Diagnosis.—Even in the early stage the dusky erythematous maculæ with hyperæsthesia or areas of anæsthesia are very characteristic. In an advanced grade neither the tubercular nor anæsthetic forms could possibly be mistaken for any other affection.

Treatment.—There are no specific remedies in the disease, and general tonics combined with local treatment meet the only available indications. The gurjun and chaulmoogra oils have been recommended, the former in doses of from five to ten minims, the latter in two-drachm doses. The cases should be isolated, although the risk of catching the disease by direct contagion is extremely slight.

XXVIII. GLANDERS (*Farcy*).

Definition.—An infectious disease of the horse, communicated occasionally to man. In the horse it is characterized by the formation of nodules, chiefly in the nares (glanders) and beneath the skin (farcy).

Etiology.—The disease belongs to the infective granulomata. The local manifestations in the nostrils and the skin of the horse are due to one and the same cause. The specific germ was discovered by Loeffler and Schütz. It is a short, non-motile bacillus, not unlike that of tubercle. It grows readily on the ordinary culture media. For the full recognition of glanders in man we are indebted to the labors of Rayer, whose monograph remains one of the best descriptions ever given of the disease. Man becomes infected by contact with diseased animals, and usually by inoculation on an abraded surface of the skin. The contagion may also be received on the mucous membrane. In one of the Montreal cases a gentleman was probably infected by the material expelled from the nostrils of his horse, which was not suspected to have the disease.

Morbid Anatomy.—As in the horse, the disease may be localized in the nose (glanders), or beneath the skin (farcy). The essential lesion

is the granulomatous tumor, characterized by the presence of numerous lymphoid and epithelioid cells, among and in which are seen the glanders bacilli. These nodular masses tend to break down rapidly, and on the mucous membrane form ulcers, while beneath the skin they form abscesses. The glanders nodules may also occur in the internal organs.

Symptoms.—An acute and a chronic form of glanders may be recognized in man, and an acute and a chronic form of farcy.

Acute Glanders.—The period of incubation is rarely more than three or four days. There are signs of general febrile disturbance. At the place of infection there are swelling, redness, and lymphangitis. Within two or three days there is involvement of the mucous membrane of the nose, the nodules break down rapidly to ulcers, and there is a mucopurulent discharge. An eruption of papules, which rapidly become pustules, breaks out over the face and about the joints. It has been mistaken for variola. This was carefully studied by Rayer and is figured in his monograph. In a Montreal case this copious eruption led the attending physician to suspect small-pox, and the patient was isolated. There is great swelling of the nose. The ulceration may go on to necrosis, in which case the discharge is very offensive. The lymph-glands of the neck are usually much enlarged. Subacute pneumonia is very apt to develop. This form runs its course in about eight or ten days, and is invariably fatal.

Chronic glanders is rare and difficult to diagnose, as it is usually mistaken for a chronic coryza. There are ulcers in the nose, and often laryngeal symptoms. It may last for months, or even longer, and recovery sometimes takes place. The diagnosis may be extremely difficult. In such cases cultures should be made and portions of the pure culture inoculated in the guinea-pig. The animal dies within thirty hours, and the testicles are found to be enormously swollen and already in the condition of abscess.

Acute farcy in man results usually from the inoculation of the virus into the skin. There is an intense local reaction with a phlegmonous inflammation. The lymphatics are early affected, and along their course there are nodular subcutaneous enlargements, the so-called farcy buds, which may rapidly go on to suppuration. There are pains and swelling in the joints and abscesses may form in the muscles. The symptoms are those of an acute infection, almost like an acute septicæmia. The nose is not involved and the superficial skin eruption is not common.

The disease is fatal in a large proportion of the cases, usually in from twelve to fifteen days.

Chronic farcy is characterized by the presence of localized tumors, usually in the extremities. These tumors break down into abscesses, and sometimes form deep ulcers, without much inflammatory reaction and without special involvement of the lymphatics. The disease may last for months or even years. Death may result from pyæmia, or occasionally

acute glanders develops. The celebrated French veterinarian, Bouley, had it and recovered.

The disease is transmissible also from man to man. Washer-women have been infected from the clothes of a patient. In the diagnosis of this affection the occupation is very important. Nowadays, in cases of doubt, the inoculation should be made in animals, as in this way the disease can be readily determined.

Treatment.—If seen early the wound should be either cut out or thoroughly destroyed by caustics, and an antiseptic dressing applied. The farcy buds should be early opened. In the acute cases there is very little hope. In the chronic cases recovery is possible, though often tedious.

XXIX. ACTINOMYCOSIS.

Definition.—A chronic inflammatory affection produced by the actinomyces or ray-fungus.

Etiology.—The disease is wide-spread among cattle, and occurs also in the pig. It was first described by Bollinger in the ox, in which it forms the affection known in this country as "big-jaw." Examples of the disease were common in the cattle killed at the abattoir in Montreal. In man the disease was first described by James Israel, and subsequently Ponfick insisted upon the identity of the disease in man and cattle.

In this country and in England the disease is rare, and only a few cases have been described. Although familiar with the affection in cattle since 1878, and constantly on the lookout for the disease, no instance has fallen under my personal observation.

The *parasite* is a fungus belonging to the species *Cladothrix*. In both man and cattle it can be seen in the pus from the affected region as small yellowish granules from one half to two millimetres in diameter. Microscopically these bodies are seen to be made up of threads which radiate from a centre and present bulbous, club-like terminations. Bostrom has recently published an elaborate research on their structure and development.

The parasite has been successfully cultivated and the disease has been inoculated, both with the natural and artificially grown fungus.

The Mode of Infection.—The fungus has not been detected outside the body. It seems highly probable that it is taken in with the food. The site of infection in a majority of cases in man and animals is in the mouth or neighboring passages. In the cow, possibly also in man, ears of barley or rye have been carriers of the fungus.

Morbid Anatomy.—In the earliest stages of its growth the parasite gives rise to a small granulation tumor, not unlike that produced by the *bacillus tuberculosis*, which contains, in addition to small round cells, epithelioid elements and giant cells. After it reaches a certain size there