

of the bronchi were found in the inferior lobe of the lung, which was otherwise healthy; and at these points the pulmonary tubes were filled with mucus and surrounded by condensed tissue, which extended as far as the pleura."

Virchow concludes from this and another case of which he gives an analysis, that "we must admit the existence of syphilitic ulceration and stricture of the bronchi similar to the same lesions of the larynx, and must also concede that syphilitic bronchitis may give rise to chronic pneumonia, in the same manner as laryngeal ulcerations cause extensive induration of the cellular tissue of the neck. I have often seen in constitutional syphilis, limited star-shaped cicatrices of the pleura and the sequelæ of pleurisy, in consequence of the above-mentioned changes."¹

The prognosis in syphilitic ulceration of the air-passages is exceedingly unfavorable. The iodide of potassium, mercurials, nourishing diet, and tonics may, in some cases, afford relief, while in others they prove inefficacious, or, in a few instances, as already remarked, may hasten a fatal termination by inducing cicatrization of the ulcer and consequent contraction and stricture. Carmichael believed that the ulcerative process was maintained by the transit of the air, and that the best method of cure was the early performance of tracheotomy. These views have not, however, been confirmed by recent surgeons, who resort to this operation only in cases of impending suffocation, and even then, since the stricture may be seated below the artificial opening, if for no other reason, the prospect of affording relief is very dubious.

THE LUNGS.

Lancereux describes an interstitial pneumonia due to syphilis, and also gummy tumors of the lungs.

Interstitial Pneumonia.—"The seat of this change is variable; sometimes it occupies the superior or middle lobe; at other times it is limited to the inferior lobe; whence we may conclude that it may invade almost indiscriminately the different portions of the lungs, without, however, acquiring a very considerable extent. The affected portion of the parenchyma is firm, hard, elastic, resistant to pressure, friable, impermeable to air, and, therefore, non-crepitant." Numerous yellowish points have been observed in the condensed mass, which under the microscope were found to be composed of granular nuclei and numerous molecular granules, contained in a fibrous network. This form of pneumonia may generally be distinguished by the small extent of the tissues affected, since it rarely involves an entire lobe, or at times it is disseminated at various points.

Gummy Tumors.—"Their number is variable, sometimes single, but generally multiple, rarely exceeding six or eight. They appear as tumors of a grayish or yellowish-white color, somewhat rounded, of the size of a pea, almond, or large nut, at first of a firm, slightly

¹ Op. cit., p. 154.

elastic consistency, and afterwards rather soft and cheesy at the centre. Deposited in the midst of the parenchymatous network, these tumors are generally surrounded by an indurated, fibrous, and grayish tissue, which forms a kind of cyst, and is of importance in the diagnosis. Upon the surface of a section of one of these tumors, this cyst or zone is perfectly distinct from the central nodule; the former is resistant under the finger, evidently traversed by vessels, and is made up of perfectly developed fibrous tissue; the latter is friable, little or not at all vascular, formed of nuclear elements or imperfect cells, which are more or less granular, and which belong to the group of elements of connective tissue." Secondary degeneration of the deposit subsequently commences at the centre and extends to the periphery, and the granulo-fatty débris may be absorbed or are evacuated through the bronchi, leaving a cavity which is lined by the fibrous zone. Such cavities are capable of cicatrization, resulting in depressions and scars upon the surface of the lungs, which have often been mistaken for those of tubercle.

Both this form and the one before described are often attended with dry pleurisy, followed by membranous adhesions to the costal walls.

The most important recent investigations of the pulmonary lesions of syphilis are those of Drs. Greenfield, Goodhart, Green, Gowers, Pye-Smith, and Mahomed, published in the *Transactions of the London Pathological Society* for the year 1877. The main conclusion of these observers is that syphilis produces fibroid changes in the lung, especially at the base and in the middle and lower lobes, with the formation of nodules of a new small cell-growth; in other words, granulation tissue. These fibroid deposits may consist of large, firm bands, or of masses of greater or less size. The gummy nodules are prone to gangrene, and their vascularity in their early stage explains the hæmoptysis observed in syphilitic subjects. All observers admit that the minute appearances are not always clearly defined, since both tubercular and syphilitic phthisis are accompanied by chronic inflammatory changes essentially similar. There is, however, a radical difference between the two diseases, which is rendered more prominent by their clinical features; in the former we find, coexisting with the fibroid masses, tubercles, which have a tendency to cheesy degeneration, while in syphilitic phthisis there coexist small cell-infiltrations, which have a tendency to necrosis. The microscopic appearances of the syphilitic lesion are given by Dr. Goodhart as follows: There is thickening of the bronchial septa and of the coats of the vessels, and dilatation of the bronchi. The fibrous septa are in places crowded with small cells and nuclei, which project into the lung tissue between the alveolar walls which they distend. The alveoli, in consequence, become contracted, and are ultimately obliterated, leaving a fibro-nucleated tissue containing vessels of moderate size. Degenerative changes appear to be going on in the central parts. "In one patch of more rapid cell-growth the central cells were softening down into cavities without any previous formation of fibrous tissue." The

thickening observed in the outer coats of the arteries, and perhaps also in their inner coats, was not out of proportion to the general thickening which had taken place in the bronchial septa and around all of the tissues contained in them. Dr. Goodhart states that, in some cases of old lung disease, tubercular grains were found in various parts. He says: "But, while I do not wish to detract from such an occurrence any of the weight which it may be thought to have against the disease which was found along with it being essentially syphilitic, yet, on the other hand, it must in justice be remarked that the presence of such grains in the lungs is no positive evidence of their tubercular (as we understand that term) nature. And even if they were tubercles, they may quite possibly have arisen in the chronic inflammatory changes which resulted from the syphilis; and, though tubercles were found in the lungs in six cases, yet none of these were prominently tubercular, but, on the other hand, fibrous." He therefore concludes that, "with the large proportion of cases of fibroid disease, of all the cases of chronic lung disease which occurred in syphilis, there can, I think, be very little doubt that syphilis and fibrous change go together in the lung as elsewhere." As to the nature of the fibroid lung disease, whether it is at all specific or only a form of inflammation, tubercular or otherwise, modified by the syphilitic virus, he says: "On this point I think there can be very little hesitation in arriving at a decision. I can see no difference in any of the specimens that I exhibit between those I suppose due to syphilis and the more chronic forms of tubercular phthisis, chronic pneumonia, and miners' phthisis; all of these are histologically concerned with a nuclear growth in the interstices of the lungs. They are, indeed, but varying forms of inflammation; but, unless we think to find a specific corpuscle in syphilis, the close similarity of the growths which occur in it to those of other diseases was but to be expected, since the range of variation in the arrangement of cells and tissue and in the form of cells is, so far as we know, most limited." Although he believes that the changes are characteristic of syphilis, he can determine no histological distinction. "Fibroid degeneration of the lungs due to syphilis differs from chronic pneumonia and that state of solidity which arises after contraction of the lung from old pleurisy, in that it is generally less evenly spread over the lobe than they; it is nodular rather than diffuse, and is symmetrical and not unilateral; it differs from miners' phthisis in wanting the extreme amount of dilatation of the tubes, and possessing more solidity from greater cell-growth." Many of the patches of disease look, it is true, not unlike red or gray hepatization, but they are more tough, generally less granular, and often somewhat translucent.

The clinical features of syphilitic affections of the lungs have been carefully studied by Fournier, Rollet, and Frey. Fournier¹ thinks that syphilis affects the lungs in two ways: first, by the development

¹ Fournier, Gaz. hebd. de méd., Paris, Nos. 48, 49, 51, 1875.

of its specific lesions—gummata, etc.; second, by producing changes such as occur in any cachexia. The lesions, which seldom occur before the tertiary period, are divided by Fournier into two classes: 1, simple hyperplasia; 2, gummous infiltration. Syphilitic hyperplasia of the lung is similar to that of the liver. The septa of the lung are thickened, and the alveoli consequently narrowed. The epithelial lining is secondarily involved. Fournier regards the process as really an interstitial pneumonia, which results in the formation of nodular masses. In recent cases the pleura over the nodules is white and glistening; in old cases stellar depressions of the membrane are found.

Gummata of the lungs resemble those of other organs. There may be a single tumor, and the lesions rarely exceed six or eight in number, in this respect differing from tubercles, which are very numerous. They are usually superficial, and occupy the lower lobes. They degenerate from the centre, leaving a cavity with white, hard, and fibrous walls. Fournier enumerates five anatomical points of distinction between gumma and tubercle of the lungs: 1. Situation—tubercle involves the upper lobe of each lung; gumma, one lung to a limited degree. 2. Number—gummata are few and solitary; tubercles become confluent. 3. Gummata are larger, and are never miliary. 4. Color—gummata are white or yellow, never transparent like miliary tubercle. 5. Consistency—the structure of the gumma is more uniform, and, if it breaks down, its capsule prevents the degeneration from being complete.

Syphilitic lesions of the lungs may attain quite a large size, with very obscure symptoms. There may be some disturbance of respiration and slight cough with scanty expectoration. Physical signs are absent, unless the lesion be very superficial and circumscribed. The dyspnea gradually increases, but is never very intense, the cough becomes more severe and spasmodic, the expectoration is free and muco-purulent, and hæmoptysis may occur. The symptoms are in fact similar to those of ordinary phthisis.

Fournier recognizes three varieties of syphilitic affections of the lungs: the latent, in which the lesions are circumscribed, cause no symptoms, and are not detected until after death; in the second variety there is merely slight disturbance of respiration without any disorder of the general condition, the symptoms being those of limited induration or of a cavity; the third is a severe form presenting all the features of phthisis. The prognosis depends upon the extent of the lesions and their amenability to treatment. That cure may be effected has been proved by the post-mortem discovery of the traces of gummous deposits which have been reabsorbed. The gradual disappearance of the physical signs of induration, with improvement in the general condition, as a result of treatment, is often observed. The remarkable degree to which subjects of these lesions sometimes retain their flesh and strength should always excite suspicion of syphilis. It is the opinion of Fournier that, however grave

and extensive the lesions may be, the disease will yield to specific treatment.

The views of Rollet¹ are of interest chiefly by reason of their contrast with those of Fournier. Rollet thinks that syphilis of the lungs is indicated by pronounced dyspnoea or even orthopnoea, besides a sense of oppression or pain on deep inspiration. The cough is at first dry or accompanied by bloody sputa. Percussions show a sharply defined region of dulness over the middle lobes, particularly on the anterior and lateral portions. Auscultation gives at first diminished respiratory sounds, and finally the usual signs of phthisis. He alludes to the statement of Grandidier, that in twenty-seven cases the affection involved the middle lobe of the right lung, and adds that conclusions should not be drawn without confirmation of the fact. He admits the diagnostic value of the fact that the upper lobes generally escape. The history of the case is of the greatest importance, and the coexistence of syphilitic lesions, the absence of a phthisical tendency, and improvement under specific treatment are points in the diagnosis.

¹ Rollet, Ueber Lungensyphilis, Wien. med. presse, No. 47, 1875.

CHAPTER XVIII.

AFFECTIONS OF THE ORGANS OF CIRCULATION.

THE HEART.

THE heart may be attacked by syphilis in two forms, either as a diffuse myocarditis, or as a gummatous deposit. Changes in the muscular fibres of the heart, analogous to amyloid degeneration of the liver, but not necessarily characteristic of syphilis, may also occur.

DIFFUSE MYOCARDITIS.—Diffuse or interstitial myocarditis is described by Lancereaux as follows: "At first, the appearance of rounded nuclei in the thickness of the sarcolemma or in the connective tissue; the formation of cells and fibres of connective tissue; vascularity; then at some points fatty metamorphosis of the nuclear and cellular elements, whence arises the yellowish coloration; at the same time and secondarily to the formation of connective material, granulo-fatty degeneration of the muscular fibres, the contents of which may be completely absorbed." This form generally coexists with gummy tumors in the heart.

GUMMATA.—Gummy tumors of the heart vary greatly in size and number. One has been observed as large as an egg, but they seldom exceed the size of a cherry. They may appear in any portion of the muscular tissue of the heart, but are most commonly found in the wall of the left ventricle. Jullien has collected nineteen cases of gummatous myocarditis, four of which occurred in women. The time after infection at which the disease appeared varied from the first to the eighteenth year. In the majority of cases the affection is coincident with the late lesions of syphilis. An interesting case of the precocious development of cardiac syphilis, in which the autopsy was made by Prof. Loomis, was reported to the N. Y. Pathological society in February, 1876. The patient died with double pleurisy and pericarditis. The muscular tissue of the heart, which was enlarged and dilated, was almost entirely replaced by interstitial cellular deposit. The external evidences of syphilitic infection did not appear until several weeks after the manifestations of cardiac and pulmonary symptoms. Renal and hepatic lesions were also present.

In structure gummata of the heart resemble similar lesions elsewhere. They differ from sarcomata, with whose cellular structure