

its continuation should the disease fail to be thus early arrested. Carbonate of ammonium as a vascular stimulus and promoter of mucous secretion, veratrum to shield the heart and vessels from excessive fatigue and fatal prostration, and quinia to sustain the nervous forces, constitute an armamentarium with which the practitioner might well feel himself tolerably equipped to meet a case of pure pharyngeal diphtheria. Nor must it be forgotten in this connection that all the preparations of cinchona have a peculiar potency in checking fermentation, while in sulphate of quinine we again have the sulphur element entering the problem.

Under the title of "Diphtheria in its Epidemiological, Nosological, and Therapeutic Relations," Dr. Max Jaffe, of Hamburg, presents, in *Schmidt's Jahrbucher* for July, 1873, a complete résumé of the periodical literature of this subject during the past four years. The first portion of the paper, that which discusses the epidemiological side of the question, is mainly taken up with the mode of communication and pathological histology of the disease, and the histories of recent epidemics. Numerous interesting experiments in the way of inoculation of the lower animals with diphtheritic poison, on the part of Dr. Oertel of Munich, Letzerich of Braunfels, and others, are rehearsed, especially with the view of determining whether "in diphtheria we have to do with a merely local affection, or with a general infectious disease,"—a question, as he well remarks, of the deepest import, as well for scientific inquirers as for the practising physician. The results are almost invariably in favor of the latter view, that which makes diphtheria a systemic disease with a local manifestation, not a local affection with a resulting disturbance of the general system. A constant microscopic element in the diphtheritic exudation has been found to be fungous growths of extreme minuteness and of immense numbers. These growths are classed as micrococcus or mykothrix. They are found not only in the diphtheritic membrane and in the mucous secretions, but also in great profusion in the blood, distributed through all the organs of the body, and even in the lymphatic vessels and glands. In some instances the lymphatics appeared to be entirely blocked up by them. Collections of these minute organisms were also noticed in the interspaces of the areolar tissue, and between the fat-cells. The kidneys appeared to be the organs to which they were more especially attracted, and in these their presence often coincided with a high degree of inflammation and microscopic extravasations of blood. The second division of the subject is devoted to the consideration of the "Pathology and Anatomical Pathology" of the disease, and it is to this portion that I especially desire to call attention.

Dr. Ludwig Letzerich, in an article "On Exudation and Suppuration" (croup and diphtheria), contributed to *Virchow's Archiv* (liii. 4, p. 493, 1871), after defining croup as a purely inflammatory process, and diphtheria as, on the contrary, caused by the deposit of a foreign fungous growth, which, piercing the epithelium, makes its way into the substance of the mucous membrane, and thus at the same time

excites the diphtheritic exudation and provides for its escape,—while, I say, drawing this distinction carefully, he immediately after makes the following important admissions. First, that the diphtheritic membrane varies greatly in appearance, both under the microscope and to the naked eye, in accordance with the portion of the mucous membrane upon which it is found. On those mucous surfaces which are lined with smooth tessellated epithelium (as those of the mouth, nose, fauces, and vagina) it is usually strong and thick, and microscopically exhibits an abundant dissemination of epithelium-cells, either broken down or well preserved, and a greater or less quantity of pus-cells. On surfaces covered by ciliated or cylindrical epithelium (as the larynx, the upper part of the trachea, and the intestinal canal) it is softer and more creamy; the epithelium is completely eroded, and portions of the exudation appear, under the microscope, as mere masses of detritus, thickly strewn with fungous growths.

Second, that croup and diphtheria are developed together with extreme frequency, passing immediately into each other. Croup, he tells us, is very rarely developed with diphtheria of the mouth, nose, or fauces, but often,—indeed, almost invariably,—with diphtheria of the under surface of the epiglottis, of that portion of the larynx which lies above the vocal cords, in the lower part of the latter, and in the trachea. This striking fact of the co-existence of the two diseases he has had frequent opportunities of verifying by post-mortem examination. In one case the mucous membrane of the entrance to the larynx was completely destroyed by fungi, while that which lay below the vocal cords was scarcely robbed of its epithelium, simply overlaid with a very thin, creamy layer of diphtheritic exudation. The tracheal mucous membrane, on the other hand, from its commencement down to the bifurcation, was covered with a homogeneous croupal exudation, which was with tolerable ease removed as a complete tube. No fungous forms whatever were found in this cast, but a more or less regular stratification of the mass with puss-cells. The mucous membrane of the trachea retained its epithelium, freely strewn with puruloid cells, and its basal layer deprived of its cilia, as in pure uncomplicated croup. Death ensued in this child from collapse, induced by the entrance of fermentative fragments into the circulation and the collection and reproduction of the fungi in the internal organs, especially the kidneys and spleen.

An essay delivered before the Medical Society of Berlin by Dr. Conrad Kester (reported in the *Berlin. Klin. Wochenschr.*, ix. 18, 19, 1872), on the Nature of *Diphtheria*, provoked a very animated discussion. He boldly took the ground that from the stand-point of the practising physician it was impossible intelligently to maintain the line of demarcation between these intimately-allied forms of diseased action. Diphtheritic and croupous angina, membranous, gangrenous, and false croup, he considered it impossible to hold as distinct diseases appearing together and running the same course of symptoms, simply and only because (and this per-