

haps for accidental reasons) the form of the exudation is different. Pathological anatomy explains the difference in showing that in the one case the exudation is superficial, and may then be thrown off as a membrane, while in the other it penetrates deeper into the tissues, producing necrosis, and thus leading to the formation of sloughs. In both membranous and gangrenous anginas we find alike, at the autopsy, diphtheritic sloughs or strongly adherent, deep-rooted deposits, without exception, in the fauces and pharynx and as far as the edges of the epiglottis, and, as we pass into the larynx down the trachea and into the bronchi, only membranous tube-casts, easily removable. We find there a complete mingling of the two forms, and are led to the inevitable conclusion that the character of the exudation is dependent upon the anatomical constitution of the locality in which it is thrown out.

Dr. H. Senator, while supporting the ordinarily accepted view of the distinct entity of the diseases in question, acknowledged that he had never seen a true croupous inflammation and a corresponding true croupous exudation (a fibrous net-work with concentric layers of fibrin and pus-corpuscles) affecting the mucous membrane of the pharynx, either in diphtheria or any other affection, while, on the other hand, a croupal inflammation, under the influence of a diphtheritic infection in the true air-passages, that is, a diphtheritic croup, was an undoubted fact.

Dr. Lewin, in the *Berlin. Klin. Wochenschr.* and other journals, recognizes two forms of the diphtheritic process,—a protopathic, which attacks those mucous surfaces which are most exposed to the external air, is rarely accompanied by fever, often appears sporadically, and is very amenable to simple remedies; and a deuteropathic, which penetrates to the more protected cavities, is preceded by a prodromal fever, and gives every indication of systemic infection. This is the more purely epidemic form, and is extremely difficult to manage.

In regard to the question of the identity or non-identity of the "diphtheritic and croupous processes," he holds that in their clinical relations they present a precisely similar configuration, have the same aggregate of symptoms, and consist of the same etiological elements, but anatomically are distinguished by the fact of being deep-seated or superficial. The cause of this difference, however, appears to lie only in the pre-existing histological characteristics of the membrane attacked,—diphtheria on pavement-epithelium, croup on ciliated epithelium; and the laryngeal croup, so often recognized as an independent affection, is therefore only to be regarded as a local manifestation of the diphtheritic process. In reviewing the history of medicine, Dr. L. recalls the fact that since the time of Bretonneau, who regarded croup as essentially laryngeal diphtheria, no author had undertaken to establish a distinction between the diphtheritic and the croupous processes until Virchow, and that even he did not desire to extend his pathologico-anatomical distinction to the clinical aspect of the disease.

Further, the results of treatment and the revelations of the autopsy agree in declaring that both processes may run their course simultaneously in one and the same individual. The purely histological distinction is thus set forth. In the larynx we find two sharply defined histological regions, that of the pavement-epithelium, extending from the pharynx, along the lingual surface of the epiglottis, thence along its laryngeal surface upon the false and the true vocal cords, and reaching nearly to the *micula flava*, and that of the ciliated epithelium in the lower regions of the larynx and trachea. Closely corresponding with these tracts, we often find, in autopsies, the diphtheritic and the croupous processes separated from one another by this same boundary-line. More than this, during life the same differentiation can sometimes be made out by the aid of the laryngoscope. Similar observations may be found recorded by Virchow, Rindfleisch, and Wagner.

In support of the theory that laryngeal croup only originates from the extension and descent of the diphtheritic affection from the pharynx, he adduces the following consideration. According to all reliable statistics, croup developed primarily in the larynx must be classed among the greatest of rarities. And even these few exceptional cases are often susceptible of other explanation. Diphtheria not seldom runs its course in the larynx unobserved; in those rare cases in which it has been unquestionably observed first in the larynx, it has in all probability taken its rise in the region of the pavement-epithelium, and finally, in cases where no laryngoscopic examination has been made it is more than probable that a severe catarrhal laryngitis has, in consequence of the severity of its symptoms, been mistaken for laryngeal croup. In point of fact, catarrhal laryngitis may often, by a serous transudation, or a copious infiltration, or even a hemorrhagic extravasation into the areolar tissue of this portion of the larynx, induce a constriction of the glottis and simulate the tone and the dyspnoea of croup, without the presence of any croupal membrane.

In a treatise on "*Croup and Diphtheritis of the Pharyngeal Cavity, Exudation and Pus-Formation*," Dr. Franz Hartmann, of Wiesbaden (*Virchow's Archiv*, liii. 2, p. 240, 1871), concludes that we are entirely unable to decide as to the "identity or non-identity of croup and diphtheria" from their clinical course, and that we must therefore refer to the development of the pathologico-anatomical processes for a solution of the problem. As regards the exudative process, every exudation has its origin in the vascular system, and consists of a coagulable fluid. In the production of the exudation, the capillaries of the lymphatics, which are closely connected by means of the so-called *serous* (juice) *vessels*, are both concerned. The anatomical arrangement of the mucous membranes is such that there is a possibility of the escape of plasma upon their free surfaces, and in diseased conditions this possibility becomes an actuality. In the pharyngeal cavity this escape of exudative material is favored