## EMPYEMA.—PATHOLOGICAL ASPECT.\*

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I N opening a discussion of the subject of empyema from the standpoint of the pathologist, one is at once struck with the difficulty at the outset of separating the inflammations of the pleura from one another so that one's contribution shall bear more especially upon the purulent type.

No doubt it will be acknowledged at once that no hard and fast line exists; that the inflammation which has become purulent has been in its earliest stages fibrinous or sero-fibrinous and that the same organisms are the causal factors in all forms of pleural inflammations, even when we admit that some of them are more apt to produce purulent fluids than others.

The physical conditions of the pleural sac are such that, more than in the other serous cavities, fluid exudates are favored, and consequently we find that the exudate in empyemata always contains a large amount of fluid, the amount which may be present varying considerably according to the intensity of the reaction and the stage of the diseas. It is probable that certain bacteria are more actively chemiotactic and, as a result, stimulate the formation of a more cellular exudate, whereas on the other hand, under favorable conditions, by partial absorption the fluid part of the exudate may diminish more rapidly in proportion to the cellular elements.

The fluid in empyemata practically always has a specific gravity of over 1.018. It is usually much higher than this, often running up to 1.030 or over. It is distinctly higher than in sero-fibrinous exudates and owes this not only to an initial higher sp. gr., but also because it becomes loaded with the products of the autolytic digestion of the cellular elements. Chemically the fluid exudate shows either an acid or a neutral reaction, or sometimes, where litmus is used, it is slightly alkaline. An amphoteric reaction to litmus is supposed to be due to acid phosphates, but one must remember that these fluid exudates contain quantities of CO2, which will account for the acidity. This acid reaction, as we shall see later, is of importance in influencing the autolysis which occurs.

In regard to the chemical constituents, one finds, in addition to many of the normal constituents of serum, evidences of the products of the disintegration of the fibrin and the cells in the form of peptones and albumoses, and often fatty acids, droplets of neutral fats, rarely choleste. re the results of the active autolysis.

The cellular elements in empyema fluid have not the practical diagnostic significance which they have in the serous and sero-fibrinous effusions. Whereas in the latter we may obtain valuable information

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