

century will see every reasonable hope of medical optimism abundantly realized.

4571 Lake Avenue.

[The series of papers on Pneumonia will be completed next week, when discussion will follow.]

THE BLOOD IN PNEUMONIA.*

BY ALFRED STENGEL, M.D.

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In discussing this aspect of the question before the Section I shall address myself only to the clinical examinations of the blood possible to the general practitioner. The bacteriologist has been able to isolate the pneumococcus from the blood of pneumonic cases, especially such as are complicated by secondary infectious foci; but this can only be accomplished by skilled investigators and in clinical laboratories. Similarly, the determination of the amount of fibrin in the blood is a matter that must be left to proficient chemists. The French have taught that the quantity of fibrin may be determined by a study of the reticulum formed under a cover-glass. This teaching is certainly very far from accurate. Even if the method were reliable, the quantity of fibrin in the blood is of little practical importance. The recent studies of Pfeiffer and others have shown that there is a notably increased amount of fibrin in the blood in leucocytosis, but there are many causes of leucocytosis and there is nothing peculiar to that of pneumonia, as far as its influence on fibrin is concerned. We are limited then in our study of the blood of pneumonia to the ordinary clinical examinations.

The points of importance that have been recognized by writers and investigators are these: In croupous pneumonia and in bronchopneumonia there is usually leucocytosis. This varies in degree and in duration. When the disease subsides, the leucocytes return to the normal number more or less quickly. There is rarely a critical decline in the leucocyte count comparable to that in temperature, further it is known that the leucocytosis is of the active polymorphous variety of Ehrlich, that is the actively ameboid corpuscles are increased more than the other forms—in other words, the leucocytosis is a chemotactic one. The eosinophilous cells are usually greatly reduced in numbers and some have claimed that they are absent. Finally, there is an undoubted relationship between the leucocyte count and prognosis, cases in which the number of white cells is normal or subnormal usually terminating fatally.

These facts have all been established, and in the main my observations tend to confirm each one of them. Going back somewhat to the consideration of the nature of leucocytosis, I may state with positiveness that this condition, at least when of the forms described in pneumonia, is the result of chemotactic influences. The toxic substances elaborated by the pneumococcus are positively chemotactic and attract to the circulation the ameboid polymorphous corpuscles. This, however, does not express all of the conditions, else there would probably be leucocytosis in every case. The additional element is the reaction of the tissues themselves to the irritant influence of toxic agents. I can not now go into the matter of the pathogenesis of leucocytosis at length, but suffice it to say that experimenters have been able to demonstrate that varying systemic conditions and varying doses of toxins, such as that of the bacillus pyocyaneus, occasion different grades of leucocytosis.

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As a matter of practical experience, it has been found that when the systemic condition is bad, and the dose of intoxications over-powering, leucocytosis does not occur. This is an all but uniform relation; but that it is not universal appears from such cases as one under my observation in which a man of 24 years of age, with pneumonia of the left base, made a speedy recovery, with crisis on the eighth day, though his leucocyte count was only 6000. It is possible, of course, that in such instances, the absence of leucocytosis was due to mildness of the systemic intoxication, rather than to the general condition. It must not be forgotten, however, that the leucocytosis may be directly advantageous.

The opinion of bacteriologists, even in Germany, is moving in the direction of Metchnikoff's theory, and it is not improbable that the leucocytosis of pneumonia is a conservative process. Some color is lent to this view by the results obtained by the induction of artificial abscesses and leucocytosis in the treatment of pneumonia. This treatment, suggested by Fochier and first practiced by Lepine, consists in producing local suppuration by injection of turpentin. There results a leucocytosis that may have some connection with the favorable results of the treatment. In one case in which I employed it on account of delayed resolution, the good result was apparently due directly to this treatment. This result, however, might be due to the local relief afforded by abstraction of large numbers of leucocytes from the lungs rather than to phagocytic influence.

I must, however, return to the practical clinical observations in pneumonia. It has been found, as I have stated, that leucocytosis is usually an indication of an unfavorable outcome. The reverse, however, can not be asserted. I have repeatedly seen death occur in pneumonia, particularly in children, when there was enormous leucocytosis. One case in an adult in whom there were 30,000 leucocytes per c.mm. and 98.5 per cent. of polymorphous leucocytes, and another in a child in whom I found 80,000 white cells, may be cited.

As to the differential count, little can be said in addition to what has been said. The leucocytosis is simply of the ordinary inflammatory type. In some cases, I have found a considerable proportion of eosinophilous cells, but in the great majority these forms are reduced in number.

I have not spoken of the attempts to produce an anti-pneumococcic serum, because this subject is after all largely in the experimental stage, and no practically useful results have as yet been obtained.

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PNEUMONIA OF THE AGED.*

BY ROBERT H. BABCOCK, M.D.

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This paper is presented with no expectation of its offering anything new, but because the importance of the subject should lend it interest. This importance arises from the fact that pneumonia is far more prevalent among old people than is generally supposed, while the mortality for which it is responsible is so great that in the language of William Osler, "pneumonia may be said to be the natural end of old people in this country." Moreover, the phraseology of the title "pneumonia of the aged" rather than "in the aged" was

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