

oblong bacilli. Culture taken on third day showed cocci only.

CASE 7.—Cocci in groups.

CASE 8.—Streptococci and large oval cocci.

In none of the eight cases mentioned above was loss of knee-jerk or any symptom of paralysis observed.

#### RUBEOLA.

Cultivations were taken from the throats of 14 cases of rubeola. Colonies of short, stout bacilli, sometimes in chains, which liquefied serum in forty-eight hours were found in 3 cases. Two of these had exudation upon the fauces. Similiar bacilli, together with cocci in chains and groups, were found in 4, streptococci alone in 1, and streptococci and staphylococci in 3 cases. Cultivations from the three remaining cases showed colonies of cocci, together with the "short variety of diphtheria bacillus."

CASE 1.—Forty hours culture showed large, white, raised colonies of cocci and short diphtheria bacilli. Cultivation taken three days after admission gave the same result. On the thirteenth day after admission cocci only were found. There was a patch of whitish exudation on the palate that persisted for nine days. Slight trace of albumin in urine. A pure cultivation was not virulent to guinea-pigs.

CASE 2.—Forty hours culture showed circular white colonies of cocci and short diphtheria bacilli, which were present until the thirteenth day after admission. The fauces were slightly coated with whitish exudation. Faint trace of albumin in urine.

CASE 3.—Forty hours culture showed white raised and transparent raised colonies of short diphtheria bacilli and of streptococci. The bacilli were present in a culture taken on the ninth day. There was no exudation on the fauces.

There was no evidence of diphtheria in the further history of any of these cases.

*Remarks.*—The necessity for a bacteriological examination in all supposed cases of diphtheria is sufficiently obvious. It is worthy of notice that in none of the eighteen cases admitted certified as suffering from diphtheria was "the short variety of diphtheria bacillus" found. Of the nine scarlet fever and three German measles cases in which this bacillus was detected only one (Case 3. scarlet fever) presented clinically the features of diphtheria. Dr. Washbourn tested pure cultures of the "short variety of diphtheria bacillus," obtained from some of the above-mentioned cases, but none were virulent to guinea-pigs.

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## PNEUMONIA AFTER INFLUENZA.

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IN the outbreak of influenza which developed so suddenly over this country in February last, and which happily has now subsided, pneumonia was the complication most to be dreaded and was the immediate cause of death in a large proportion of cases. In previous epidemics pneumonia has always been a common sequela, but in the present instance the examples which have come under my observation have presented certain characteristics strikingly different from the ordinary type of the disease. This year's epidemic first broke out in this neighbourhood in an institution which comprises a resident population of close upon 150, and the cases to which the present notes refer, though not essentially different from others met with in outside practice, were brought under notice with special prominence because of the concurrence under one roof and at one time of several bearing the same characteristics and exhibiting the same departures from the ordinary standard. Very few of the 150 escaped the attentions of the disease: many were so slightly ill as to require little care; others experienced an ordinary attack of the malady, which incapacitated them for three or four days, but which left them at the end of that time practically well; while a few had to contend with it in a more pronounced form, and of this latter number five suffered from pneumonia. The hygienic arrangements of the institution are well devised, carefully looked after, and the average health of the inmates leaves nothing to be desired. Of the whole number attacked by influenza, only seventeen were acutely ill, and, except the cases now under consideration, they

all recovered completely and within a comparatively short time. The matron, who was the first victim of pneumonia, died from cardiac failure on the eighth day of her illness. Her case proved fortunately to be the only fatal one, and while the leading features of her attack were the same as in all the others her chances of recovery were lessened by the previous existence of a complicated form of heart mischief. Of the other four cases one was mild and abated on the fourth day, another resolved by lysis, and the remaining two by crisis, each on the eighth day of the illness. It should perhaps be noted that the case which resolved by lysis was the son of parents who were first cousins and in whose family history there was a pronounced phthisical taint. The symptoms of all five cases were strikingly similar, and a short description of one will best serve to call attention to the unusual features of the whole series.

A lad aged fifteen, with a fair physique but with a neurotic diathesis, was seized with influenza in a sharp but ordinary form. From this he emerged like his neighbours, but on the third day from the date of recovery from his influenzal attack he complained of not feeling so well. His temperature in the morning was 100° F., but there was then nothing to suggest the advent of inflammatory mischief anywhere. In the afternoon the temperature rose rapidly to 105·4°, the pulse was 120, and the respiration 44. There had been no rigor, he had no cough, no pain, and he complained of nothing but shortness of breath and thirst. Next morning the temperature was 100·4°, the pulse 100, and the respiration 40. He still had no pain and the cough was trifling, but he had constant nausea and occasional attacks of active sickness. Later in the day his temperature gradually rose to 103·4°, and in the evening it reached 105·2°. Under the influence of quinine and cold-packs it receded, but at 10 o'clock the following morning it again reached 104·6°, the pulse being 100 and the respiration 38. There was no cough, but that morning he had twice expectorated some frothy mucus of a bright red colour; the nausea continued. He complained of wandering pains over his right side, which he mostly referred to the axillary region above the level of normal liver dulness, but physical examination failed to reveal any explanation. For the next three days his temperature did not exceed 104·4° and was readily brought down to between 100° and 102° by cold sponging. At 2 P.M. on the eighth day it registered 103·6°, and at 10 P.M. it had fallen to 99·2° from which there was no subsequent rise. During those three days his pulse varied from 80 to 100, but did not exceed 104; his respiration had never been less than 50, and frequently had numbered 65. The amount of cough was so small as hardly to deserve mention, and there was no return of the red sputum; indeed, there was no expectoration of any kind. The physical signs remained indefinite, but some comparative dulness developed over the right lower lobe, and there was bronchial breathing with slight increase of vocal fremitus in this region. After the crisis was over, on the eighth day, the physical signs rapidly vanished, without expectoration or cough or pain, and with no decided crepitation redux, till on the eleventh or twelfth day the patient was perfectly sound and only required time and care to restore his tone and re-establish his usual vigour.

In none of those five cases did a herpes develop, except in that of the lady matron, who died, and this is significant because from time immemorial the occurrence of herpes in an ordinary case of pneumonia has been looked upon as a favourable indication. The unusual features of this short history are the absence of cough, the exceeding scantiness of expectoration, the frequency of respiration, the comparative slowness of pulse, even under the pressure of high temperatures, the entire absence in the early stages of physical signs, their very imperfect development later, and their speedy disappearance without notable crepitation redux after the arrival of the crisis. None the less, the duration of the illness, its mode of termination, the pulse-respiratory ratio, the sudden initial high temperature, &c. are strongly characteristic of the common, everyday pneumonia. But, whatever the modifying effect of the influenza poison may have been, we are driven to ask ourselves whether it is probable, or even possible, that the local condition could be the sole cause of the grave constitutional disturbance, or whether the hyperæmia and slight hepatitis of the lung would not better fit into the theory of its being a consequential rather than an etiological incident in the history of the disease; whether, in short, such cases are not a strong argument in favour of the specificity of pneumonia. In the last edition of "Quain's Dictionary of Medicine"

Dr. T. Henry Green tersely states: "The old view that pneumonia is a simple local inflammation accompanied by a symptomatic pyrexia would appear to be no longer tenable; and although a complete pathology of the disease must await further investigations the present position of our knowledge makes it in the highest degree probable that it is a *general infective disease* closely allied to the acute specific fevers, of which the lung inflammation is the characteristic local lesion. What is known of the etiology of the disease, the absence of any constant relation between the local inflammation and the intensity of the fever, the "typical" course of the fever, the fact that the disease is incapable of being produced by mechanical or chemical injuries of the lung; and, lastly, the discovery of peculiar micro-organisms all tend to support this view of its pathology."

Influenza is widely recognised as one of the specific diseases which, in all probability, owes its existence in great measure to microbial action. The toxins secreted by its microbes are known to possess a special affinity for the nervous system. This is evidenced by the prostration, inertia, neurasthenia, hypochondriasis, and sometimes even melancholia which abide in greater or less degree as a legacy of the most ordinary attack. Pneumonia behaves in many respects like the other acute specific fevers and has been demonstrated to possess micro-organisms which are capable, when inoculated into certain animals under favourable circumstances, of setting up, if not the true disease, at least a septicæmia of which a consolidated lung is the striking characteristic. Many of the prominent features of the everyday inflamed lung depend upon interference, from whatever cause, with the normal stability of the lung nerve-supply.

In the pneumonias, such as those above related, met with as complications of influenza we have to deal with either: (1) the ordinary disease, more or less modified by the previous systemic disturbance of the influenzal attack and occurring as an accidental sequela; or (2) an entirely different disease, bearing close analogies to the classical disorder, but owing a different cause and entirely dependent for its manifestations on the pre-existence of influenza. If the former hypothesis be the true one, and it seems the more likely, then true pneumonia is capable of modifications in its symptomatology, and, assuming that the pneumococcus is a constant concomitant of the disease, whether causative or otherwise, an explanation of these anomalies may be suggested by the possible want of perfect concurrence of action of one class of microbe with another, either in the respiratory tract, where the micro-organisms of both diseases are abundantly found, or in the blood itself; or else by the counteracting influence of the one set of resulting toxins with the other, producing, both directly and reflexly, results different from those to be expected from the unfettered action of either. If, on the other hand, the latter alternative be the right description of the condition, the new pneumonia which finds its parentage in influenza bears such a close resemblance to its better-known prototype that in all probability the pathological mechanism which causes the one is very closely allied to that which is responsible for the other. Further, if the predilection of both toxæmic secretions is to the nerve centres, their disturbing effect in the neighbourhood of the fourth ventricle would go far to account for all the symptoms; not only such as are recognised as normal in an ordinary pneumonia, but also those which, however different from the common type, unmistakably proclaim that the usual course of an attack of influenza has become complicated by the occurrence of an inflamed lung.

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## APPENDICITIS AND RHEUMATISM.

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IN the numerous papers and monographs on the subject of appendicitis which have appeared within recent years one point does not seem to have attracted much notice—namely, the association of appendicitis with constitutional disease. By this I do not mean the occurrence of such lesions as ulceration of the appendix in typhoid fever or tuberculosis, but the question whether the tissues of the appendix can be so acted upon by a poison circulating in the blood as to become acutely or chronically inflamed. In this paper I shall refer to some points in the anatomy, physiology, and

pathology of the appendix which seem to render such a view probable, and then discuss more particularly the association which I have found clinically to be most frequent—namely, that of appendicitis and rheumatism.

Special attention has been paid recently to the large amount of lymphoid or adenoid tissue which is present in the substance of the vermiform appendix. This has been noted by Mr. Bland Sutton, Dr. Kelynack, Dr. Hingston Fox, Mr. Mayo Robson, and Dr. R. J. A. Berry. Mr. Bland Sutton<sup>1</sup> speaks of the appendix as an abdominal tonsil, since lymphoid tissue is the chief structure in both appendix and tonsil, and there are marked similarities in the inflammatory and suppurative attacks to which these organs are subject. Dr. Berry<sup>2</sup> has made a careful investigation into the comparative histology of the appendix and cæcum, and has found that at the apex of the cæcum a mass of lymphoid tissue is usually present. He says: "In some classes the cæcum is composed almost entirely of lymphoid tissue, and in others these lymphoid elements are contained in an offshoot of the cæcum—the vermiform appendix. This differentiation of the lymphoid tissue into a special organ becomes more marked with the ascent in the vertebrate scale." As the liability of lymphoid tissue to inflammation is well known, these anatomical facts may throw some light on the pathology of appendicitis, and their bearing on this subject will be referred to later.

The vermiform appendix is usually regarded as a functionless organ (Treves, Talamon, Bland Sutton, &c.), but its richness in lymphoid tissue suggests at least one possible use—namely, the production of leucocytes or lymphocytes. In other parts of the alimentary canal the importance of adenoid tissue has now been fully recognised, and the action of the lymphocytes produced in it has been explained. Dr. Sims Woodhead says: "It has now been very generally accepted that passing to and from the patches of lymphoid tissue in the walls of the alimentary canal, into and out of the canal itself, are numerous leucocytes, amoeboid cells, or lymphoid corpuscles, as they are sometimes called. Further, it has been demonstrated that these small cells have the power of taking up foreign particles and of digesting them, or of so transforming them that unless they consist of particles of pigment they disappear; amongst these foreign bodies may be numbered bacteria of various kinds."<sup>3</sup> It would naturally be expected, then, that these functions ascribed by Dr. Woodhead to the diffused lymphoid patches of the alimentary canal would characterise also the large amount of this tissue present in the appendix, and such a view is strongly supported by the results of a recent experimental research made by Dr. R. J. A. Berry.<sup>4</sup> He describes the function of the appendix as twofold: (1) leucocyte-producing, and (2) secretory; and as regards the leucocytes he considers that they are of use both in the destruction of micro-organisms and in the absorption of proteids. Dr. Armand Ruffer, in describing the action of the lymphocytes (or "microphages") of the lymphoid tissue in the alimentary canal in absorbing micro-organisms and foreign matter, states that "the patch near the rabbit's ileo-cæcal valve and the vermiform appendix are the structures in which these processes are most marked."<sup>5</sup> From the situation of the appendix at the first part of the large intestine it is manifest that these functions will be of great service. The cæcum is apt to become loaded with faecal matter in which bacteria of all kinds flourish, and were there not some such protective power in the form of lymphocytes as described above decomposition would go on unchecked, and symptoms of auto-intoxication would probably be extremely common.

The pathology of appendicitis cannot be said to be clearly understood. By most writers the disease is regarded as a purely local one dependent on local causes. The presence of catarrh, or a concretion, or cystic dilatation, or a kink or twist of the appendix is held to be a sufficient explanation of the morbid phenomena. The list of those local causes is already a large one and is still being added to, and yet numerous cases remain in which no cause has been ascertained. Further, it is a question whether many of these so-called causes are not really the results of inflammation in the appendix and the surrounding structures. Talamon admits that in simple inflammatory attacks the essential

<sup>1</sup> THE LANCET, March 7th, 1891.

<sup>2</sup> Gunning Prize Thesis, Edinburgh, 1894, and Journal of Pathology and Bacteriology, vol. iii., No. 2, 1895.

<sup>3</sup> THE LANCET, Oct. 27th, 1894.

<sup>4</sup> Gunning Prize Thesis, Edinburgh, 1894.

<sup>5</sup> On the Phagocytes of the Alimentary Canal. Quarterly Journal of Microscopical Science, vol. xxx., 1889-90.