

tion should I falsely have made had I inserted a catheter on the morning of the 6th? Could I have failed to arrive at the conclusion "*propter*" not "*post*"?

Chloroform is not often called for by Somersetshire women. They have not been educated up to it. And if it is not needed in naturally terminated labours, neither is it required in ordinary forceps-cases. It was given in a very small proportion of my operations, whether turning, forceps, or craniotomy.

My trials of chloral in painful and tedious dilatation of the cervix have not enabled me to subscribe to Dr W. S. Playfair's panegyric. Where most required, it is most surely rejected by the stomach, and by its pungency adds to the miseries of the patient. And in the few cases in which I have seen it retained, it has exercised no appreciable influence for good or ill. I do not remember to have seen in the journals any expression of opinion on this point; and surely we should hear of it, if chloral can do nearly all that Dr Playfair claims on its behalf.

I have not referred to rupture of the perineum. In fact I have little to say about it or its treatment. My strong impression is that I have saved many a perineum in primiparæ by the use of the forceps. I have had one bad tear in a forceps-case, and six or eight in unassisted cases. By a bad tear I understand one as far through the skin as the sphincter ani, but not through that muscle. I have an impression that stitches are seldom called for, and that the superficial stitches commonly used serve no good purpose. We want a good practical paper upon this subject, distinguishing the various degrees of rupture and the immediate treatment of each degree; and the writer should know what nature as well as art can do. I share in an ignorant prejudice against lateral incision, and carry it so far as to lose my patience over such a paper as that of Cr  d  , even abridged and translated.

V.—ON THE ETIOLOGY AND PATHOLOGICAL ANATOMY OF ACUTE INFLAMMATIONS OF THE LUNG.

By Professor Dr A. WEICHELBAUM of Vienna. Freely Translated from the *Wiener medicinische Wochenschrift*, Nos. 39, 40, and 41, 1886, by JAMES NIVEN, M.A., M.B., Cantab., Medical Officer of Health for Oldham.

ATTENTION was first directed to the probability of pneumonia being an infectious disease from the clinical side, J  rgensen being the earliest decidedly to take this view, although Skoda and his scholars had previously shown an inclination to refer the disease to miasmatic influences. This is all the more remarkable, since the general organic changes found in cases which had died of pneu-

monia should have directed attention to the likelihood that it is no mere local process. Not long after Jürgensen's expression of opinion, Klebs and Eberth mentioned the occurrence of cocci in pneumonia, while Koch, in the first volume of the *Mittheilungen aus dem kaiserlichen Gesundheitsamte*, pictures chain-formed cocci, which he found in the pulmonary alveoli and kidneys of a case of pneumonia. The question first took practical shape, however, with Friedländer's paper appearing on Nov. 15, 1883—1st, because it was there maintained that the cocci found by him were distinguished from other organisms by possessing a characteristic envelope or capsule; and 2nd, because he gave an account of culture and inoculation experiments carried out with this species of coccus. He described the organisms found by him as round or elliptical micrococci, and stated that the cultures assumed in gelatine a peculiar nail shape. In his experiments on animals, rabbits showed themselves quite refractory; mice, on the contrary, on cultures being injected into their pleural cavities, proved very susceptible, and died within one to two days of double pleurisy, with pneumonic foci in the lungs, and large spleen. In the exudations and blood of the animals the same organisms were found as in the cultures, but provided with a fine capsule, which in the cultures is absent. Of guinea pigs, one-half proved refractory, the other took ill like the mice. Of five dogs, also, one suffered from pleuropneumonia. Shortly after the appearance of Friedländer's work Weichselbaum began his experiments, so that the present paper, which is only a preliminary communication, contains the results of 2½ years' work.

Soon after the appearance of Friedländer's work the author began his researches on pneumonia. In the earlier cases there was no difficulty in demonstrating capsul-cocci in the pneumonic exudation; it was therefore the more disappointing when he did not attain the expected result in his culture experiments. The material used was gelatine, and the method followed was that indicated by Friedländer. As, however, even in cases in which very numerous and exquisite capsul-cocci were present in the pulmonary juice, and which were only of four or five days' duration, failure occurred, the result could only be put down to a difference in the behaviour of the coccus found by him from that described by Friedländer, and it was surmised that these cocci did not, as a rule, thrive on gelatine at the temperature of the room. Consequently, in subsequent examinations, in addition to gelatine, agar-agar was employed, and the tests put in the cultivator. The examinations were thenceforward successful. It was thus evident that at least one species of coccus different from Friedländer's occurred in pneumonia, but as subsequent examinations showed other kinds of bacteria to be present, Weichselbaum determined to make a thorough investigation of the subject. Hence the long period over which his work has extended.

Shortly after Friedländer's paper appeared, Talamon gave an account of the examination of 25 cases of pneumonia. He found most frequently lancet-shaped cocci, which, however, he only once succeeded in cultivating from the bodies of patients who had died of pneumonia. He then tried matter taken with a Pravaz syringe from the lungs of people suffering from pneumonia, but in this way also he only once succeeded in getting pure cultivations. With these he made experiments on guinea pigs, dogs, and rabbits. Only the last reacted, and showed on section pleurisy and pericarditis, with or without pneumonia.

Talamon further mentions that in two cases of pneumonia complicated with pleurisy, endocarditis, and pericarditis, he could cultivate another coccus from the exudate obtained by puncture, which distinguished itself from the former by its chain-formed arrangement. Nevertheless, injections of these into the lungs of rabbits produced the same changes. Talamon left it undecided whether this was a different organism or a modification of the coccus lanceolatus.

A communication from Emmerich caused considerable stir. It will be remembered that he obtained from the floor-fillings of a room in the prison at Amberg, along with other fungi, nail-shaped cultures, which quite coincided with Friedländer's: numerous cases of pneumonia had occurred in the prison since 1857.

[It may be useful here to contrast the characters of the micro-organisms found by Friedländer and Fränkel in the lungs of persons who have died from pneumonia.

Friedländer's micro-organism is a coccus of round or elliptical shape, often taking the form of a rod, especially in cultures. It possesses a characteristic capsule, which stains more faintly than the enclosed coccus. This capsule is absent in cultures. The micro-organism grows readily on gelatine at the ordinary temperature of the room, and, when inoculated into gelatine-tubes with a needle, the culture takes the form of a nail, with its head rising above the surface of the gelatine.

When suspensions of the cultures in water are injected into rabbits, these animals are not affected. The injections were fatal to mice in from one to two days. The lungs of the dead mice presented pneumonic changes, and the micro-organisms were found abundantly, in their pleuritic exudations and in their blood, encapsuled.

Fränkel's diplococcus never assumes a rod shape, and is described as lancet-shaped. It possesses a capsule with the same characters as that of Friedländer's micro-organism, being, also, absent in cultures. It does not grow at the temperature of the room (20° C.), but thrives best on solidified blood serum at a temperature of 30°-35° C., and on this it forms a very delicate stratum, resembling a drop of dew. Injected into mice, it does not injure them, but it

readily kills rabbits, which undergo pneumonic changes. Their blood swarms with encapsuled diplococci.—*Trans.*]

The last author whom we must mention is Fränkel. A paper was read on croupous pneumonia by Jürgensen and Fränkel at the third Congress für innere Medicin in the spring of 1884. Fränkel announced that in May 1883 he obtained from the lungs of a person who had died of pneumonia a culture on solidified blood serum, which consisted exclusively of spindle-shaped cocci, and injections of which, quite the opposite of Friedländer's, proved very active in rabbits. In a second and third case of pneumonia Fränkel obtained cultures, which in their appearance were quite indistinguishable from those of the first case. Cultures from the second case proved, however, inert on rabbits; those from the third produced only transient fever, but not death. Cultures from the third case also showed a nail-shaped growth in gelatine in the first generation, which disappeared in the later generations. Fränkel concluded that the pneumono-coccus under certain circumstances multiplies in rabbits, and that the so-called nail-form growth is not constant.

From these propositions it is difficult to determine whether Fränkel regarded his micro-organism as distinct from that of Friedländer, or only as a modification of it. He would seem, however, to have then held the latter view.

In his most recent work, which appeared this year about the time of the conclusion of the author's investigations, Fränkel maintains that he had found in all his cases of pneumonia one constant form of micro-organism, appearing as a lancet- or spindle-shaped coccus. He had obtained pure cultivations only in four cases, of which only the fourth case was new. The culture from the fourth case agreed entirely with that from the first case. Both formed on the solidified blood serum of cattle a mucous, gray-white, almost transparent pellicle, and grew on gelatine only when the temperature rose to 27° C. After injection of this, rabbits died regularly within 24–48 hours; and on section he found either, besides large spleen and numerous diplococci in the blood, no further changes, or, especially if the injections into the lungs were successful, fibrinous exudations into the pleura and pericardium, with or without pneumonic foci in the lungs. Mice reacted similarly, guinea pigs fairly often, whilst dogs, pigeons, and rabbits showed themselves immune.

In this work Fränkel also occupies himself with the subject of sputum septicæmia, a condition which Pasteur and Sternberg obtained by inoculation of the sputum of healthy individuals, and which Griffini and Cambria, as well as Klein, produced in rabbits by inoculation of pneumonic sputum, with the constant appearance in the blood of encapsuled diplococci. Fränkel at first found his own sputum well adapted to the production of sputum-septicæmia, but later on inert; the rusty sputum of pneumonia he found very

active. He computes that the pneumonic sputum is three times as active as normal sputum.

He does not express a positive opinion, but inclines to the belief that the organism concerned in sputum-septicæmia is also that which produces croupous pneumonia.

In an addition to this paper he gives three other cases, and comes to the conclusion that the organism he describes is the usual exciter of croupous pneumonia; while with regard to Friedländer's coccus he doubts whether it stands in any etiological relation to pneumonia—at anyrate, until it has been cultivated from hepatized lungs in the form of numerous isolated colonies with complete absence of his own coccus.

With regard to Friedländer's cultures, it may be briefly stated that other observers, like Afanassiew, Dreschfeld, Foà and Rattone, R. Paltauf, and others, have obtained them from croupous pneumonia.

We have then amongst the bacteriologists two parties—one which with Fränkel regards the lancet-shaped coccus as the usual exciter of pneumonia, while the other, with Friedländer, regards the coccus cultivated by him as the usual cause of pneumonia—of course with the addition that there are probably other exciters of pneumonia.

Amongst clinicians one party not only regards pneumonia as infectious, but in general maintains the unity of the virus; the other party denies the unity of the pneumonic virus, looking on pneumonia as due to two causes—cold and infection.

The author then passes on to give an account of his own researches. In all 129 cases were examined microscopically for the presence of organisms, and culture experiments were made in 83 cases. Among these 27 were secondary, 102 primary inflammations; of the latter 94 belonged to the lobar croupous form, 2 were lobular pneumonias, 2 peripneumonias, and the rest in part pneumonia in patches, in part splenisation (hypostatic pneumonia). Amongst the 27 secondary pneumonias all the anatomical forms were represented—lobar, lobular, patchy, and hypostatic pneumonia.

In all these, without exception, definite micro-organisms were found in the pneumonic exudate. The occurrence of organisms which might have arisen post-mortem are excluded, the examination of the exudate and the inoculation of cultures being made frequently a few hours after death, occasionally only one to two hours after.

Moreover, the author was enabled to examine, both microscopically and by culture, material removed by means of a Pravaz syringe from the lungs in cases of pneumonia, and from pleuritic exudations, in the Rudolf Hospital.

Microscopically, four kinds of organisms may be discriminated as occurring in pulmonary inflammations. 1. An organism which he calls diplococcus pneumoniae, consisting of oval, lancet-shaped,

and also round cocci, usually in twos, sometimes in chains of four to eight, the number reaching sometimes up to twenty; the chains are straight or but slightly curved. A further peculiarity is the presence of a capsule of varying breadth, meaning thereby a sharply contoured, distinctly staining, envelope. If the staining has been successful, *e.g.*, with fuchsin, the coccus is coloured a dark red, the capsule a pale red, and the ground substance scarce at all. The capsule is, however, peculiar only to a certain developmental stage of the cocci, probably occurring only in the younger and more active forms.

In many cases of pneumonia, or at certain parts of the infiltrate, the capsule is not to be found round the cocci, or the latter themselves take staining badly, and are to be regarded as perishing individuals. The diplococcus corresponds fairly well with Fränkel's pneumococcus and Talamon's coccus lanceolatus; the only point of difference is that these observers described only lancet- or spindle-shaped cocci, at most in short chains, whilst the coccus now described occurs also in a round form, and occasionally in tolerably long chains.

The second species, occurring much less frequently, consists also of cocci, which are for the most part round, and more frequently form chains than the first species; they are also more bent or interlacing. They may be called streptococcus pneumoniae. It is evident that the microscopic characters are not sufficient to distinguish these without culture tests.

A third species the author has found almost exclusively in secondary inflammations of the lung; they agree with the ordinary traubencoccus, and in culture experiments take also the form of a staphylococcus.

The fourth kind of organism must be reckoned amongst the bacilli, consisting of rods of varying lengths. The shortest and youngest forms appear, of course, like round or oval cocci. But along with these you find constantly forms whose length exceeds their breadth several times, so that no doubt can exist as to their rod-shape. Frequently, indeed, they attain a very considerable length, and then appear somewhat curved. In these longer rods, at times stained and unstained places alternated, the latter by their shape suggesting spores.

These have in common with the diplococcus pneumoniae a capsule, though they occur not rarely without a capsule, or staining badly, and are then evidently perishing individuals. This form corresponds to the pneumococcus of Friedländer. The author considers that this kind has been mixed up with the diplococcus pneumoniae, although on culture a sharp distinction can be made out.

The four kinds can be distinguished by cultures.

The first kind, the diplococcus pneumoniae, is distinguished by the fact that it does not grow at the temperature of the room, *i.e.*,

under 20° C. It grows relatively best at hatching temperature (about 35° C.), and thrives on agar, blood serum, and meat solution. Yet on these nutrient substances its growth compared with other organisms is rather weak.

[Fränkel, in the *Zeitschrift für klinische Medicin*, xi. 5 and 6, regards this as an important characteristic of his micro-organism. The loss of pathogenic power appears to be even more rapid than that of growing power. This loss of pathogenicity is specially marked in cultivations on agar-agar and in milk. None of the bacteria hitherto studied possess this property in anything like the same degree.—*Trans.*]

Generally the first generation grows best, while in succeeding generations, unless special care is taken, the growth becomes ever weaker, and finally dies out. A further noteworthy characteristic is this, that its inoculability (from one test to another) dies out in a few days, and the cultures themselves are exceedingly sensitive to the slightest change of soil, whether in consistence, in concentration, or in reaction. In puncture cultures (agar tests) the diplococcus pneumoniae grows as well on the surface as in the puncture-canal—on the first, however, merely in the form of a scarcely visible, transparent, small border round the puncture, whilst in the canal a somewhat more distinct band-shaped vegetation forms, which appears finely reticulated, and grows somewhat thicker towards its border, which is frequently wavy or notched, and where, especially in the better cultures, a few minute granules are often visible.

In scratch cultures (on agar and blood-serum) the vegetation has the appearance just described, only finer; here also at the borders minute nuclei are visible, transparent, and colourless. On pouring the agar cultures out on plates, quite small, scarce visible colonies spring up, of which those surrounded with a small border are most characteristic, appearing with a magnifying power of 250 to consist of a compact, finely granulated centre, and a very pale, almost transparent border (Hof), at the periphery of which in part diplococci, in part short or moderately long chains, may be distinguished. On potatoes no visible growth takes place.

The culture described is probably identical with that made by Fränkel from his six cases, though, as Fränkel has given no complete representation of these on different soils, it is impossible to pronounce absolutely on their identity.

The cultures of the streptococcus pneumoniae are distinguished from the first kind chiefly by greater energy of growth, thriving at the temperature of the room, and therefore below 20° C. They grow best, indeed, at hatching temperature, at which the puncture and scratch cultures on agar and blood-serum show a great resemblance to the cultures of the diplococcus pneumoniae; only they have a more thriving appearance, and the peculiarities of growth of the first species are here reproduced in a much

clearer and better form. When they are poured out on agar plates quite small colonies spring up, but those surrounded with a border (Hof) show with a magnifying power of 250 not only a coarser granulation, but at the rim of the border beautifully developed loops and rays. Although the streptococcus pneumoniae is identical in its growth relations with the streptococcus pyogenes or erysipelatis, Weichselbaum considers it best provisionally to regard it as a distinct species.

The cultures of the third kind need not be more nearly described, as we are here dealing with the well-known staphylococcus aureus and albus.

As regards, finally, the bacillus pneumoniae, it can be easily discriminated from the other bacteria of pneumonia. It grows very luxuriantly, not only at hatching temperature, but also at the temperature of the room, and thrives on all nutrient substances. Specially characteristic is its growth on gelatine, where it takes the known nail form, and that the more distinctly the firmer the gelatine is.

Poured out on agar plates, the bacillus pneumoniae forms grayish-white, gelatinous looking colonies, which may grow much larger than those of the diplococcus and streptococcus pneumoniae. With weak or moderate magnifying power, they show a round form, smooth borders, and a much coarser granulation than the others. Confusion, therefore, is not possible.

As regards frequency of occurrence of the four kinds of bacteria, the diplococcus pneumoniae was most frequently demonstrated—microscopically 91 times, and by culture experiments 54 times. These preparations were mostly from genuine lobar pneumonia, although the organism was met with in other forms, especially in lobular and patchy pneumonia, in splenisation, and in some secondary pneumonias.

The streptococcus pneumoniae was found in 21 cases, and cultivations were made from 19 of these; 5 cases require to be excluded, as the streptococcus pyogenes or erysipelatis was found in the primary affection. In the other cases a genuine lobar or lobular pneumonia were present, and no other affection conditioned by streptococcus. As to the question whether the streptococcus found in these cases is identical with streptococcus pyogenes or erysipelatis and the pneumonia is therefore secondary, the author reserves his opinion, but inclines to the view that there is no such identity.

The staphylococcus aureus or albus was found in five cases only. In three the pneumonia was secondary, the primary process being conditioned by the staphylococcus; in a fourth case one had to deal with a lobular pneumonia in cerebro-spinal meningitis, and the diplococcus pneumoniae was also present. The fifth case was one of primary pneumonia in patches.

The bacillus pneumoniae was found microscopically in 9 cases—

in 6 cases on cultivation, being mixed once with the diplococcus pneumoniae, and a second time with the streptococcus pneumoniae. In the remaining 4 cases it occurred alone, as was shown by agar plate cultivation. Once it was found as early as the second day, as well in the sputum as in the juice extracted from the lung, and here also it was alone.

If, now, we ask at what stage of pneumonia, and in what places, the pneumonic bacteria are most abundant, we find that the more recent the process the more numerous and active are the bacteria present. We find, also, that where the process is advanced, where brown or gray hepatization has set in, there the bacilli have considerably fallen off in number, have no capsule, and stain badly; but that in the cedematous portion bordering the hepatized part, especially if the process is caught extending, the number of bacilli is astounding. These usually also stain well, and have a distinct capsule.

This relation, which reminds us of erysipelas, explains to us how it is that many observers have failed to find bacteria,—they have examined the hepatized portion.

The author takes this opportunity of calling attention to some anatomico-pathological changes which occur in consequence of croupous pneumonia, but have hitherto been overlooked. If one examines more closely the loose connective tissue in the regions bordering the lungs, especially in the mediastinum, at the root of the neck, in the pit of the clavicle, between the œsophagus and cervical spine, and between the trachea and œsophagus, you find this tissue as well as the submucous tissue of the palatal arch, in the neighbourhood of the tonsils, at the root of the tongue, in the soft palate, the pharynx, and even in the conjunctiva of the bulb, not seldom in a condition of acute œdema, *i.e.*, infiltrated with a thin yellow serum, while in some instances the exudation in places has even assumed a distinct fibrinous character.

The same occurs in the accessory cavities of the nose. Now that the œdema is in direct relation to the pneumonia is shown by the fact that in the cedematous fluid or exudation of these parts the same micro-organisms occur as in the inflamed lungs, and in the case of the diplococcus pneumoniae the capsule is quite distinct, so that there can be no doubt as to identity.

These changes also throw light on the origin of meningitis in pneumonia. In two cases the tract taken by the infective material could be distinctly made out; the pharynx was cedematous, the nasal cavities swollen and inflamed, so that it was probable the inflammation had passed up into the brain through the perforations of the ethmoid bone; this probability was much increased by the fact that numerous fine capsuled cocci could be found in the pharynx, nose, and in the exudation of the meninges and ventricles of the brain.

Some 200 animals were used to test these conclusions and determine the etiological value of the bacteria. The animals used were mice, guinea pigs, rabbits, and dogs, and the experiments consisted in injections of culture solutions direct into the pleural cavities, in subcutaneous injections, in cutaneous inoculations on the ear, and, finally, in inhalation experiments.

The experiments with the diplococcus pneumoniae are first described. In these, cultures from different pneumonias and from different generations of culture were used. In general mice and rabbits showed themselves most susceptible, guinea pigs and dogs least.

As regards the injections of cultures into the thoracic cavity of rabbits, the effect was not always alike. In most cases the rabbits perished after one to two days, and showed on section a double pleuritic exudation, very often pneumonia in one or both lungs—either a whole lung or one lobe or small scattered patches being affected, while sometimes there was pericarditis, and pretty often enlargement of the spleen. The general character of the pneumonia in rabbits was splenisation, though fibrin was present in a certain number of the alveoli. Cocci were found in the exudate of the lungs, of the pleura and pericardium, and where the spleen was large, in the spleen and blood. They always exhibited the form and arrangement of diplococci, gave also the corresponding cultures, but had not always a capsule. The number of the cocci also was variable; but where they were few and stained badly, they were probably perishing. The effect described did not always occur, rabbits sometimes dying later, sometimes recovering.

In the first case either a pleuritic exudation very rich in fibrin was found, along with compression of the lungs, or the pleuro-pneumonia was undergoing retrogression.

In the second case, the injected cultures may have produced a pathogenic effect; at all events the animals, when killed later on, several times showed remains of a previous pleuro-pneumonia.

As regards the difference in the infective action of different cultures, it was probably dependent on two factors, the stage of the disease at which the culture was first taken, and the generation of the culture. Four dogs were injected; three died as soon as the rabbits and with the same post-mortem appearances, the fourth lived.

After subcutaneous injection of cultures rabbits died on the first to the third day. At the site of injection a fibrinous exudation was present, and at some distance serous infiltration of the subcutaneous connective tissue; the spleen was enlarged, and once there was peritonitis. In the exudations, in the blood, and in the spleen were found numerous capsuled cocci.

Inhalation experiments were made in four cases—three times on white mice, once on a rabbit. In the first experiment the mouse

died after nine days. A viscid exudation was found in the right pleural cavity, in the pericardial sac, and in the mediastinal tissue, consisting almost exclusively of capsul-cocci. The lung was unchanged, the spleen was swelled, and contained numerous capsul-cocci.

In the second experiment, in which two mice and a somewhat larger quantity of inhalation fluid was used, the animals died after thirty-six hours. The lungs and serous cavities were found intact, only the spleen was swelled; on the other hand, on the thorax, abdomen, and on the back there was considerable œdema, the subcutaneous tissue being soaked with an œdema like that which we have seen to occur in human pneumonia. In the œdematous fluid, as well as in the spleen and blood, were an extraordinary quantity of capsul-cocci.

The experiments with the streptococcus pneumoniæ were similarly carried out, and gave, on the whole, similar results. It may be mentioned, however, that cutaneous inoculations on the ears of rabbits led in some cases to an erysipelatoid process extending over the entire ear.

With regard to the experiments on animals with the bacillus pneumoniæ, the author's results agree so closely with those of Friedländer, that he does not feel it necessary to describe them, the only noticeable point being that he found rabbits not completely refractory. One animal killed by another accidentally on the ninth day showed a pleuro-pneumonia retrograding, and in a second case, in which a relatively large amount of the culture was injected into the pleural cavity, the animal perished after two days of pleuro-pneumonia, and numerous capsul-bacilli were found in the exudate and in the spleen.

Weichselbaum sums up thus:—

1. The bacteria found in the different forms of pulmonary inflammation are to be regarded as the cause of these, and this conclusion is completely justified on these grounds; definite, well-characterized species of bacteria not only occur constantly in acute pulmonary inflammations, but can be demonstrated in greatest abundance and activity in the earlier stages of the inflammation; they have been isolated, cultivated, and when introduced into certain animals have produced processes which, taking them *in toto*, correspond to inflammation of the lung in man.¹

2. The pneumonic virus is no unity, inasmuch as acute pulmonary inflammations, even croupous pneumonia proper, can be produced by different kinds of bacteria. In this the pneumonias recall acute inflammation of the connective tissue, in which also several species of organisms occur.

3. The separation of pneumonias into lobar and lobular, croupous

¹ The author has convinced himself repeatedly that injection of distilled water or of indifferent organisms into the pleural cavity of rabbits produces no effects.

and non-croupous, has an anatomical but no etiological significance. Moreover, the so-called secondary pneumonias, etiologically considered, are often not secondary.

4. The diplococcus pneumoniæ is to be regarded as the most frequent exciter of inflammation of the lungs. Friedländer's bacillus can only rarely be the cause if we may trust the author's results and generalize upon them. Still that Friedländer's organism does cause croupous pneumonia we must consider, he thinks, definitely proved.

As regards the question of pneumonia being dependent on catching cold (erkältung), Weichselbaum would allow for that cause only a possible predisposing effect.

VI.—DEFORMED FŒTUS AT SEVEN MONTHS. ✓

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(Read before the Edinburgh Obstetrical Society, 12th January 1887.)

I HAVE ventured to send particulars of one or two cases which I have lately met with in practice. The deformed fœtus was a male, just born as I entered the house. Beyond a slight movement of one arm there was no evidence of life, yet the mother said she felt distinct movements only an hour before birth. Receiving the father's consent, I had it conveyed to my office and made a *post-mortem* examination eight hours afterwards. Weight of body, 3 lb. 6 oz; length, 14 $\frac{1}{4}$ inches; fairly nourished; scalp slightly discoloured; left side of head and right side of body fairly developed; right side of head much flattened; evidence of arrest of development in the bony parts of skull on this side. At the back of the head an oval aperture, measuring in its longest diameter 1 $\frac{1}{2}$ inches, in its shortest $\frac{3}{4}$ inch. Through this a probe passed to the extent of 1 $\frac{1}{2}$ inch outwards and forwards, immediately under the mastoid portion of the right temporal bone. A thick membranous appendage was attached to its upper border, which, when stretched out, covered a space twice the size of the aperture. From the lower border of this opening to the sixth dorsal vertebra there was an excessive development of tissue—more than I could grasp in my hand.

Dissection.—Bones of right side of head much smaller in every respect than the left. Left half of brain weighed 2 oz. 7 dwts., right half 1 oz. 14 dwts. Condyles not discernible, with thickened border of foramen magnum, forming a mass of bone nearly half an inch thick. The mass in the cervical and dorsal regions was composed of thick skin and fatty tissue, and between this and