

trace of an inferior turbinate body left, and in which the atrophied muco-periosteum is stretched tightly over the outer nasal wall, and when one attempts to inject wax into this attenuated fragment of inferior turbinate the needle either passes completely through or, after a few minims have been injected, the mucous membrane gives way and no lodgment of wax is obtained. To say, however, that it is impossible to inject such noses is, I believe, rather overstating the case, for patience and perseverance will eventually enable the surgeon to inject a few minims either into some part of the turbinate itself or under the tissues adjacent, from which the process of lifting the periosteum from the bone, once started, may gradually be continued into the turbinate itself, although the results obtained in these cases are only very moderately satisfactory.

The wax used for this purpose should be white paraffin wax melted at 105° F. This is better than wax melting at a higher temperature mixed with vaseline to reduce the melting point, as has been advocated for similar work, as the vaseline seems to be more easily absorbable by the tissues than the paraffin. Non-absorption is essential if it can be obtained. The syringe required should hold about 30 minims, and the most serviceable length of needle is about two and a half inches. My larger needle is about one-sixteenth of an inch in external diameter and the smaller one of the size of a large hypodermic needle. The needle should screw on to the syringe on account of the great resistance which has to be overcome in forcing the wax down the needle. The syringe and needle should be wrapped round with a spiral of iron wire which is attached to the galvano-cautery snare, by means of which the whole needle and syringe can be kept hot and the wax prevented from solidifying, as was originally suggested by Walker Downie. I keep the wax melting in a water bath and fill the syringe (previously thoroughly warmed over a spirit lamp) and then screw on the needle. The patient's nasal mucous membrane should as far as possible be rendered anæsthetic by cocaine or eucaïne. The needle is inserted so as to allow of its being pushed along under the mucous membrane of the inferior turbinate, or what remains of the structure, according to the degree of atrophy present. As much paraffin is now injected as possible, the wax being kept fluid by heating the wire attached to the galvano-cautery snare. The needle may be withdrawn after waiting for about one minute to allow the wax to set. In very suitable cases I have replaced the turbinate with one injection of about 25 minims of melted wax. In other cases it is necessary to inject several minims every week.

As a result of the restoration of the turbinate in these cases the patients express themselves as being far more comfortable, of feeling the air passing through their noses, and the formation of crusts has not recurred in cases where it had been checked before injecting, and the crust formation has been more rapidly checked in cases where it was still present. Whatever the origin of this most obscure disease really is I firmly believe that in this treatment we have a means of assisting to check its progress if used sufficiently early and of restoring to relative comfort many of those in whom the disease is well established and whose nasal cavities have lost all resemblance to the normal.

Harley-street, W.

THE VARIABILITY IN VIRULENCE OF THE PNEUMOCOCCUS.

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THE late Dr. J. W. Washbourn in the Croonian Lectures on the Natural History and Pathology of Pneumonia¹ referred at length to the variability in the virulence of different strains of pneumococci and quoted numerous illustrative experiments by himself and others. One would expect, however, an organism grown artificially with such difficulty as the pneumococcus to show great variability in laboratory experiments. I therefore thought that a short account of an epidemic which occurred last winter amongst the staff and

patients of Leavesden Asylum would be of interest, as it seems to me to furnish clinical evidence of variability in virulence of the pneumococcus under natural conditions.

The first case which attracted attention was that of a male patient whose illness dated from Nov. 30th, 1901, when a left basal pneumonia commenced. I saw him after he had been ill about three weeks and he then still had signs of consolidation of the left lower lobe. His general condition was bad and a microscopic examination of his sputum, which was frothy and muco-purulent, was made. No tubercle bacilli were found, but there were large numbers of capsulated diplococci present, which in their staining and morphology presented all the characters of the pneumococcus of Talamon-Fränkell. The man remained in an asthenic condition, his cough persisted, and the physical signs at the left base did not improve. Film preparations of his sputum were frequently examined, crowds of pneumococci were always found, and tubercle bacilli were always absent. A month later it was noted that the pneumococci began to assume a streptococcal character in that long spiral chains, containing 20 or more cocci, occurred; the diplococcal nature of the elements of the chain could, however, always be demonstrated.

On Jan. 7th, 1902, sickness appeared amongst the male attendants, the symptoms in the early cases consisting of headache and pains in the back and limbs, accompanied by a slight rise of temperature. The acute symptoms lasted two or three days and much resembled ordinary catarrh. Several cases occurred within a few days and it was then thought that an epidemic of influenza was beginning. These early illnesses were certainly very like the indefinite cases of influenza so common in recent years, but prostration was not very marked and convalescence was rapid and uneventful. There was little or no cough in the earliest cases, but pharyngeal and bronchial catarrh were common in the later cases, with expectoration of scanty and viscid mucus, in which on examination pneumococci were found in large numbers, whilst influenza bacilli were never discovered. Sickness next appeared amongst the female attendants and in the majority of cases the illness was of an influenzal type. Cough was now a more frequent symptom and the expectoration from these cases, scanty and viscid, was likewise found to contain no influenza bacilli but was swarming with pneumococci. Examination of the chest revealed no definite signs in the early cases, but signs of bronchial catarrh were found in most of the later cases; one nurse, however, had a small area of pneumonic consolidation and another—one of the last nurses to be attacked—developed a typical apical pneumonia which ran an ordinary course and from which she convalesced well.

At the end of January the female patients were attacked, six women becoming suddenly ill with rise of temperature, pains all over, and marked prostration. One case began with a rigor, one with vomiting, and another with profuse diarrhoea. Three of the women first attacked developed a cough with frothy sputum, and in these cases resonance was impaired and coarse crepitations were heard over the bases of the lungs. During the next week four fresh cases occurred; in all the onset was sudden; in three of the cases there were physical signs of patchy consolidation of the lung, whilst the fourth was a true lobar pneumonia which was followed by empyema and was fatal. In the next week 20 cases occurred, 15 of which were cases of lobar pneumonia, the remaining five cases consisting of a short pyrexial illness with pains in the back and limbs, slight cough, and signs of bronchial catarrh; even in two of these instances resonance was impaired over the bases and the respirations were quickened. Of the 15 cases of pneumonia 12 were fatal. In the next week 13 women were attacked, nine being cases of lobar pneumonia with four deaths, whilst the other four were ill for a few days only with pains and rise of temperature. During these three weeks several cases of illness, exactly similar in all respects, occurred amongst the male patients, six of whom died from pneumonia.

The epidemic subsided suddenly at the end of February. Frequent microscopic examinations of sputum from many of the cases were made and in every preparation pneumococci were present in large numbers; smear preparations of the lungs from the fatal cases, and also from the pus in the case of empyema, showed the same result. The gradually increasing severity of the cases was very marked, the maximum virulence being reached about the middle of February, when one woman, previously strong and healthy, became unconscious in 24 hours and was dead within 48

¹ THE LANCET, Nov. 15th, 1902, et seq.

hours of the onset of her illness. So densely crowded were the pneumococci in films made from the sputum in this case that it seemed reasonable to assume that quite an appreciable part of her sputum must have consisted of pneumococci.

It was not possible to make microscopic preparations from every patient, but pneumococci were present in large numbers in all the cases examined. The virulence of the pneumococci from the early cases of illness amongst the staff was not tested, but a mouse inoculated with sputum from one of the patients at the end of January died in 18 hours from pneumococcal septicæmia. Although the chain of evidence from a bacteriological point of view is not absolutely complete, yet the sequence of events was so very definite that we felt convinced that we were dealing with a pneumococcal epidemic amongst the staff, at first of low virulence, causing a short indefinite illness much resembling influenza, gradually increasing in severity, and then causing a more protracted illness with occasional bronchial symptoms and culminating in a case of lobar pneumonia in a nurse. By the time the female patients were attacked its virulence was such that pulmonary symptoms were most in evidence and the short vague illnesses were few; even at this time, however, the pulmonary signs were those of patchy consolidation only. When the maximum virulence was reached most of the cases were true lobar pneumonias with a high mortality. Altogether 13 nurses, 17 male attendants, and 43 female patients were attacked; the exact number of male patients attacked was not recorded. A careful investigation failed to reveal evidence of direct contagion amongst the female patients.

To Leavesden Asylum the epidemic is, I think, of great importance, since for the past few years tuberculosis has been rife amongst the patients of that institution. It is easy enough to imagine how well last winter's epidemic will have prepared the soil for the tubercle bacillus, for in the majority of the non-fatal cases tardy convalescence, with delayed and incomplete resolution of the lungs, was noted.

Another point of interest lies in the short vague illnesses which occurred all through the epidemic but which especially characterised its early stages. Everyone is familiar with the short illness which is so glibly called "influenza," and which every medical man knows is not influenza. Is it not possible that the pneumococcus may be the cause of some of these illnesses? We assume that a non-pathogenic organism can acquire virulence under certain conditions with which we are not yet exactly familiar; if that is true, it is not unreasonable to assume that there may be a transition stage of moderate virulence, and it seems to me quite possible that the pneumococcus, in the course of its transition from a harmless resident of the mouth or nose to a virulent pathogenic organism, may exist for a time as an organism of moderate pathogenic powers, and whilst in this state may be capable of causing an illness such as occurred at the commencement of this epidemic.

I have to thank Dr. F. A. Elkins, medical superintendent of Leavesden Asylum, for permission to record these facts, and Dr. J. F. Rimmer for bringing the cases of illness amongst the staff under my notice.

Southall.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Rise of Blood Pressure in Later Life.

A MEETING of this society was held on Jan. 13th, Mr. ALFRED WILLET, the President, being in the chair.

Professor T. CLIFFORD ALLBUTT read a paper on the Rise of Blood Pressure in Later Life. He said it was inevitable that in the growth of medicine a static morbid anatomy should precede the study of morbid processes or clinical dynamics. Nevertheless, occupation with the ruins of the dead body for a time took observers away from origins to consummations and created a certain fatalism in medicine. The revolution in thought which followed the publication of "The Origin of Species" extended its influence into pathology; diseases began to lose fixity of form in the mind of the physician, and the hope of detecting and neutralising morbid processes at their sources relieved the despair of the dead-house. Of certain early deviations from the

true balance of functions it might be said that, if they did not arise primarily in the circulation, yet that in this system the first evidence of them might be perceived. Of such evidence the fluctuations of arterial blood pressure were very important. In the present paper changes of pressure in the direction of increase would be considered and that mode of it which in many elderly persons was apt to be persistent. The rise of pressure in Bright's disease was perhaps the best-known instance of such a rise, but the change was by no means confined to that disease. Some degrees of fibrosis of the kidneys, as of other parts, were to be found in a large majority of necropsies upon elderly persons, but "granular kidney" had peculiar clinical characters and must have its own niche in nosology. It was generally assumed that arterial disease was necessarily attended with a rise of blood pressure, many kinds of arterial disease being comprehended or confused under the title "arterio-sclerosis." Such was far from being the case; it was not true of many of the acuter affections of the arterial tree, and in many of the more chronic, even of the involutionary kind, however extreme, a high blood pressure was conspicuously absent. The more senile forms of arterial disease might then be divided, from the present point of view, into those in which pressure was raised and those in which it was normal or even low. The first kind—those with high pressure—tended to death by apoplexy; the latter tended, often after length of years, rather to obliterative changes in the cerebral arteries with softening. Pressure must depend upon two antecedents, singly or in combination—namely, diminution of the calibre of the arterial system and increased viscosity of the blood; it was not proved, or even probable, that loss of elasticity in the vessels always or generally led to loss of capacity. Encroachment upon capacity in some areas was apt to be compensated by dilatation in others. Professor Allbutt suggested that the tendency to rise of pressure, often seen in elderly persons, especially in such as had led a sedentary life with positive or relative excess of food, depended on increase of viscosity of the blood. Circumstances had hitherto defeated his attempts to gauge the viscosity in a series of appropriate cases. In contrast with the rising pressure of many elderly men might be set the low pressures in the young and athletic. In temperate and active men under 30 or 35 years of age the pressure ranged from 95 to 105 millimetres Hg (Hill and Barnard's sphygmometer.). If the opinion here expressed that the arterial tree was prone to be "self strained," and that arterio-sclerosis was a result rather than a cause of high pressure, the tendency to such rises and their causes should be watched. There was no definite reason to allege that a rise of this kind was to be regarded as of the nature of gout, whatever gout might be, though it might well depend on some perversion of assimilation or excretion having an affinity to gout. If the morbid tendency to rise of pressure was detected in time the disposition was remediable, chiefly by deobstruent, dietetic, and gymnastic means, some such change of habits of life being of course permanently imposed upon the patient; if, on the other hand, it was not detected till the strain had resulted in a new "set" of the vascular tissues, if palliation was possible cure was out of the question. Hitherto it had been difficult to measure blood pressures; and finger estimates very properly had not commanded a ready acceptance; the personal equation of the observer entered too far into such observations. Now, however, they had useful instruments for the purpose invented by von Basch, Hill and Barnard, and Oliver; Professor Allbutt had used that of Hill and Barnard.

Sir WILLIAM BROADBENT said that in general he was in agreement with the paper, though he considered it necessary to have some definite understanding of what was meant by the rise of blood pressure in later life. Professor Allbutt had noted the marked effect which emotion had in producing a rise of blood pressure and there were many other conditions which temporarily produced a like effect. The registration of the blood pressure in the radial artery would not distinguish between a fugitive and permanent rise of pressure, as, for instance, in the two conditions aortic regurgitation and advanced arterial disease. The real cause of high blood-pressure was the obstruction to the flow of blood in the small arteries or in the capillary network. He considered that the obstruction was probably in the capillary network and he knew of no other explanation for the occurrence of miliary aneurysms of the smaller arteries unless they were produced by the