ABSTRACTS OF THE ERASMUS WILSON LECTURES ON EVOLUTION IN PATHOLOGY.

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LECTURE II.—SUPPRESSION OF PARTS—(continued).

Supernumerary Vertebrae and Half-Vertebrae.—In this lecture an attempt was made to explain certain malformations of the spinal column, especially the occurrence of half-vertebrae and supernumerary vertebrae, as being due to the full development of mesoblastic somites, which in the ordinary course became suppressed. The type of the process was taken from the green turtle. Professor Kitchen Parker had found that, in the early stages of this chelonian, the vertebral column had fifty-one somatomes, but the adult only forty-one. Careful comparison of the stages showed that seven segments aborted in the neck, and three in the caudal series. This suggested an ancestry from forms with a much longer tail, and neck not unlike a Plesiosaur. That similar suppression occurred in mammalia and man was exceedingly probable, for supernumerary vertebrae were by no means infrequent in the various regions of the spine; besides, the disposition of the cervical nerves indicated that within approximately recent periods one element at least had undergone suppression in that section of the column.

With regard to half-vertebrae. Quite a number of cases had been placed on record in which one-half of a vertebral centrum, with its transverse process, lamina, and spine had been wanting. On the other hand, instances of one, two, three, and even four, half-vertebrae too many, had been described. Examples of human fetuses with tails had been recorded by competent observers, and in these cases the tail was composed of notochord, surrounded with muscular tissue. The only satisfactory manner of explaining such cases was to believe that, in the embryo, more mesoblastic somites were formed than were utilised in the formation of the permanent vertebrae; but, in some instances, the somites normally suppressed went on to full development. Occasionally, however, the suppression exceeded its usual limits, and a diminution in the vertebral segments resulted. Reference was made to Cope's observation on the skeleton of *Eryops megaloccephala*, an extinct batrachian exhumed from the Permian formation of Texas. In this animal, each vertebral body was normally composed of two lateral pieces. This discovery seemed to show that, in the bilateral nuclei composing the odontoid process of the mammalian axis, we had an example of the retention of a very primitive character.

Sacral and Coccygeal Tumours.—In this section, the lecturer adduced additional evidence in support of the view that the various congenital tumours of the sacrum and coccyx belonged to four classes: (1) sacral spina bifida (often falsely called lipomata); (2) tumours originating in the post-anal gut. These were often called congenital sacral sarcomata, and were supposed by many to originate in Luschka's coccygeal body. This structure, however, with its pedicle, was really the persistent remnant of the terminal section of the gut, hence the gland and the tumours had a common origin; (3) cystic tumours originating in the neurenteric canal (rectal dermoids); and (4) parasitic foetuses of various degrees, from a more or less perfect child to an ill-shapen conglomeration of mature tissues, fingers, toes, bones, gut, etc. A good deal of collateral evidence was adduced from various sources, commencing with the *Siphonophora* and working upwards to man, in order to show that a single ovum might give rise in some cases to two embryos; that is to say, the medullary folds in some cases failed to fuse, and each remaining distinct gave rise to a more or less separate individual; and this had actually been witnessed in an amphibian.

The Ovary.—The ripening and suppression of ova in the foetal ovary, not only of man, but of many mammals, was next described, and it was argued that this wholesale suppression of ova indicated an ancestry from forms which had been, like fish and amphibians, in the habit of producing a very large number of offspring. Now, as the environing conditions had changed, such enormous production was useless, and would be harmful, the ova were quietly suppressed in the follicles. Collateral evidence was furnished by supernumerary mammae, for these clearly indicated not only that man's ancestors produced a greater number of offspring than at present, but that the

male shared with the female the duty of giving suck to the young. The existence of additional mammae so frequently in the male was another link in the chain of evidence that vertebrates were descended from hermaphrodite ancestors. The lecturer was further of opinion that the curious arterial communication between the subclavian and external iliac arteries, by way of the internal mammary and deep epigastric arteries, was to be accounted for by regarding it as a remnant of a row of mammae originally extending along the thorax and abdomen.

SUBSTANCE OF SOME REMARKS CONCERNING CASES OF VALVULAR DISEASE OF THE HEART, KNOWN TO HAVE EXISTED FOR OVER FIVE YEARS WITHOUT CAUSING SERIOUS SYMPTOMS.¹

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I PROCEED now to call your attention to some of the "afternoon cases," which are not included in the tables; and I shall confine myself to relating some broad facts in the history of a few patients who illustrate, in a signal manner, the long duration of heart-disease without characteristic symptoms, and the importance to the public of a sound judgment concerning the course which such cases are likely to pursue.

CASE I.—In the early part of 1842 the house-governor of one of the largest London hospitals, being about to marry, petitioned the committee for rooms wherein to dwell with his wife, and proceeded to insure his life. The office refused to accept the insurance upon any terms; and in reply to the urgent questions of the candidate, who averred that in the whole course of his life he had never been ill, said that he had a serious disease of the heart in the form of mitral regurgitation. To the further question of the proposer, whether he would live six months, the reply was that he might. Then the house-governor, with the characteristic inaccuracy of patients, informed the committee that he had a mortal disease of the heart, that he could not live six months, and that he withdrew his application for rooms. The committee considered the matter, and fearing that the house-governor might die suddenly in the wards, they superannuated him; and, furthermore, believing that he had but a short time to live, they superannuated him on full pay. In 1854, this gentleman, one of my earliest patients, consulted me for indigestion, and I discovered that he had a loud rasping systolic murmur, heard not only in the mitral area, but all over the left side of the chest. Beyond the symptoms of indigestion, due to the patient's indiscretions, he exhibited no other evidence than the murmur of the existence of cardiac disease. Without being particularly careful, he continued to live, work, and enjoy life until 1874, when, at an advanced age, he died of an attack of acute bronchitis. Thus, for thirty-two years after having been condemned to die of heart-disease, he continued to enjoy more than average health, to discharge the duties of a town rectory, and to draw his full pay from the hospital.

CASE II.—Mrs. W., whom I have often seen with Dr. Leddard, came first under my observation when she was a young woman, over twenty years ago. She consulted me for indigestion and uric acid gravel; but I found that she enjoyed average health, that she was in no wise hindered in the course of her ordinary life; and that she had no complaints which could be justly ascribed to disease of the heart. Nevertheless, this organ was seriously affected; it was greatly enlarged, and probably adherent to the pericardium. There was a loud systolic murmur in the mitral area, and there were both direct and regurgitant aortic murmurs. The ventricles, however, were sound; there was a moderately full, and doubtfully diastolic pulse; the bases of both lungs were free; there was no enlargement of the liver; the urine was of normal density, and free from albumen; and the patient was not conscious of distress of breathing or of palpitation. Twice since first I examined her, this lady has had bronchitis and pulmonary congestion; three or four times she has had gastro-hepatic catarrh, and lithiasis, and now and again she has complained of fugitive "rheumatic" pains. But on the whole she has had comfortable health; and although I have not seen her within the last two years, I am informed that there is no sensible change in her condition, and that she is able to pursue a useful and an enjoyable life.

¹ Read in the Section of Medicine at the Annual Meeting of the British Medical Association at Brighton.

CASE III.—Miss W., now about 38 years of age, consulted me some sixteen years ago for neuralgia, with subcutaneous extravasations of blood, and a bizarre condition of the whole nervous system. She made no complaint of her heart, nor of any symptom plainly connected therewith. But the heart was much hypertrophied; its action, although moderate in frequency, was tumultuous, and there were loud double murmurs within both the mitral and the aortic areas; indeed, the sound of the basic reflux was almost as loud as any that I have ever heard. The pulse was dicrotic, and the cervical veins did not completely empty themselves during inspiration. Since then this patient has suffered at various times from nerve-storms, and has been seen by Sir James Paget, Sir Joseph Lister, Dr. Wilson Fox, and Dr. Leadam. I examined her a few weeks ago. The heart was in the same condition as when I examined it sixteen years before; and the patient declared not only that she had no complaint to make concerning it, but also that she was in excellent health.

CASE IV.—Fifteen years ago, I was consulted about Mr. G. B. by his family, who had been recently told that he had serious heart-disease, and that his life must be necessarily of short duration. The mother, having no hope of her son's recovery, merely asked me by what means his life could be as long as possible preserved. The lad, then about sixteen, was dark, florid, moderately well nourished, and healthy-looking. To my inquiries about his ailments he had but one reply. He suffered nothing, and was quite well. The heart, however, was much enlarged; a loud systolic *bruit* was heard in the mitral area; there were direct and regurgitant aortic murmurs; the impulse of the heart was diffused and heaving; the cervical veins were rather full, and the pulse was somewhat jerking and collapsing. I recommended the patient to be sent, in due time, to the university, and to follow a simple regular occupied life. After much conflict of opinion and prolonged opposition, this recommendation was eventually followed. The lad passed through his university career in safety, and took at last a good degree. Some time after this I was again consulted as to the future course which the patient should pursue. Knowing that he had theological leanings, and was of a religious habit of mind, I recommended the Church. Accordingly he went to a theological college, passed his examinations with success, was ordained to a curacy in the north of London, and settled down into a busy life. In the course of more years of study and of work, the patient suffered occasionally from indigestion; and twice, having a cold at the time, from a little congestion of the lungs, with streaks of blood in a catarrhal expectoration. This gentleman, once doomed to perpetual rest and idleness, is now incumbent of one of the largest parishes in England, and continues to pursue an active, a useful, and a comfortable life.

CASE V.—Some years ago I was consulted by a wealthy midland merchant, about fifty years of age, who told me that his local advisers, having discovered that he was the subject of some grave heart-disease, urged him to relinquish his business, to retire into the country, to abstain from exercise as well as from occupation, and to follow the ways of an invalid life. He told me, furthermore, that in following this counsel he would have to pass from affluence to privation, and that he was nervous, depressed, and ill. After a careful examination, I could discover in the patient no evidence of disease beyond a loud, even, systolic, mitral murmur. The ventricles were strong, and acting steadily about seventy times in the minute; a good volume of blood was passing through the radial pulse; there was no congestion about the bases of the lungs, no enlargement of liver, no enteric catarrh, no material alteration of the urine, and none but subjective troubles of the general health. To my question how long he had felt ill, the reply was clear and conclusive. He had felt ill only since he was told that he had heart-disease; before that, he was full of activity, enjoyment, and health. I then recommended the patient to practise a careful dietary, to take only moderate exercise, to resume his business, to indulge in occasional recreation and change, and to discontinue the digitalis and aperients which he had been taking since the discovery of his disease. I have twice heard of this patient since he followed my counsel, and I was told that he was well.

CASE VI.—Eight years ago I was summoned to see Mr. H. T., over seventy years of age. Four months before the time of my visit, he had a bad cold, and was seen and examined by a medical man in the country. This gentleman told him that he had serious heart-disease, that his life was in danger, that he must live on one floor and take no exercise, that he must not strain or lift weights, or suddenly rise from the recumbent to the erect position, that he must have light food every three hours, and that he must take plenty of alcoholic stimulants. He added that his family had persecuted him into the following of this regimen, that ever since he had been losing

flesh, strength, colour, and comfort in life, that his sleep had deserted him, that his feet were swelling, and that his family, now themselves alarmed, wished to hear what I had to say and advise.

The patient had mitral and double aortic disease, a moderately hypertrophied heart, a jerking frequent pulse, and some basic pulmonary congestion. There were, in addition, a loaded tongue, nausea, flatulence, constipated bowels, turbid urine, a faintly yellowish dry skin, oppressive headache, and a very irritable temper.

I directed the patient to have three simple nutritious meals a day, to return to the moderate use of sherry, to drink little liquid, to sponge with warm water and clothe warmly, to drive daily, and to potter about in the park as much as his strength would permit, to join in the family life, and to take every night for a week a quarter of a grain of calomel, followed in the morning by a small dose of sulphate and phosphate of soda in a quarter of a pint of hot water. I am not sure that the medicine contributed much to the patient's recovery, but it is beyond doubt that the diet and the restoration to freedom did, for, in about a month, the patient had regained his former condition, and regarded himself as well. Two months ago I again examined this patient. The heart was just in the same condition as before, but restored to the ordinary freedoms of his eighty years, he was without complaint, and satisfied with his life.

Now, you will have noticed that, in all the cases selected for illustration, I have recommended the patients to return, in a more or less modified degree, to a strict observance of the physiological conditions of life as respects diet, clothing, exercise and occupation. And, in the great majority of cases of chronic valvular disease of the heart, this recommendation is not only just in itself, but necessary to what is best and most enduring in curative results. But here a word of warning is necessary, for it is not at all times justifiable, or even safe, that such a recommendation should be given. When the heart is irritable, frequent, intermitting or irregular; when the murmurs vary in character and intensity; when there is any suspicion that recent changes have been occurring in the interior of the heart; and, more especially, when there is any febrile disturbance of the system, it is necessary that the patient should be kept at rest and fed upon the lightest food. For it will not be safe—it will, indeed, be full of the gravest peril—to permit a patient having valvular disease accompanied by such conditions, to indulge in any of the ordinary freedoms of health. Of many cases that I remember illustrative of this danger, I shall mention only one, which I saw last year with Dr. Henderson. A young girl about 16 was discovered to have considerable mitral regurgitation, and, there being a suspicion that at least some part of it was of recent origin, she was kept exceedingly quiet and carefully fed. After a time, however, she was taken to a consulting physician, who, upon examination, said that he did not regard the affection as of serious moment, and advised that she should resume her studies and return to the freedom of ordinary life. In a fortnight she began to flag; the heart became frequent and irregular; the general health rapidly failed; and in a month the child had all the symptoms of endocardial fever, from which, after various accidents and long suffering, she died.

I now proceed to bring before your notice, in relation to the general subject under discussion, another fact which may be regarded as worthy of further inquiry and of closer consideration. It is this: that organic murmurs of the heart, once firmly established, and even lasting for some years, may eventually disappear. I shall select again from my own experience several illustrations of this occurrence. But, in the first place, let me remind you of what happens in respect of the mitral murmurs associated with chorea. It is now beyond doubt that many of these are produced by organic changes in the valves; and that, of the changes so produced, the great majority, together with the murmurs indicating their presence, eventually disappear. I can recall to mind many cases of this kind which have happened within my own experience—and, indeed, I can remember but a few instances in which the mitral *bruit* of chorea has continued to be clearly heard after ten years from the time of its appearance. It is, therefore, to be believed that destructive changes, arising not from degeneration but from inflammation, may be so completely repaired as to leave behind no clinical evidence of their former existence.

And in the second case I must also remind you of what sometimes happens in the young, to mitral valves (I am not quite sure about aortic valves) injured by the local processes of rheumatic fever. There has been, as we shall suppose, conclusive evidence of an attack of simple endocarditis; the fever subsides; the patient recovers, and his restoration to the freedoms of health is conditioned and qualified by the existence of a loud systolic murmur. You lose sight of the patient for a year or two, and when next you examine the heart, you fail to discover any conclusive evidence of its unsoundness; what has

exactly happened you do not know. It may be that the exudation upon the valves has been removed, or it may be that it has become, through lapse of time, so contracted, hard and smooth, as to be no longer capable of producing a murmur, or of influencing adversely the cardiac action. But, anyhow, the murmur is gone, and nothing remains to tell the story of former disease.

But these recoveries from valvular inflammations are not confined to the young; they happen sometimes in the old; and I shall now furnish you with a few illustrations of both.

CASE VII.—Twelve years ago I saw, with Dr. Murray, in Portland Place, a young lady, about 17, who was suffering from a severe attack of rheumatic fever. A few days after I first saw her, she had an attack of endocarditis, accompanied by increased swelling in the joints. The attack was severe, and the constitutional disturbance prolonged. Eventually, however, the patient regained her health, although for two or three years longer she continued to have loud systolic mitral and aortic murmurs. Examined a year ago the patient was found to be in good health, and every trace of the cardiac murmurs had disappeared.

CASE VIII.—Some years ago I was summoned, by Dr. Reid, of Highbury, to give my opinion about the case of a boy, who was suffering from severe mitral incompetency. Dr. Reid had become anxious about the case, and was discussing with me what should be the future of the patient and upon what lines he should live.¹ We agreed upon these points; but when I gave the opinion that the murmur was likely to disappear, my colleague was disposed to dissent. Nevertheless, in a year or two the murmur did entirely disappear; and I owe to Dr. Reid's frankness and kindness the opportunity of being able to acquaint you with the fact.

CASE IX.—In 1860 I attended Dr. G. during an attack of rheumatic fever, complicated by severe endocardial inflammation. After four months' illness, the patient recovered; but for some years—I know not exactly how many—he had loud systolic aortic and mitral murmur. In 1871, he was carefully examined by Dr. Herbert Davies, who, discovering no evidence of the existence of heart-disease, certified the life for ordinary insurance.

CASE X.—Twelve years ago the late Dr. Anstie summoned me to see a connection of his, and to consider with him whether she was in a fit state to undergo an operation for hæmorrhoids. Mr. Curling met us in consultation. The lady was about forty-two years of age, married, very nervous, and the subject of recurring rheumatic attacks. It was supposed that in one of these attacks the endocardium had become affected. At any rate, there was a distinct regurgitant aortic murmur, and the first sound within the mitral area was exceedingly rough. Five years afterwards, no murmur was to be heard, and the valvular sounds were clear and well pronounced.

CASE XI.—Eleven years ago I saw, with Dr. Oppenheim, a gentleman, aged 74, suffering from gouty endo-pericarditis. The physical signs were well marked, and there was considerable local and constitutional distress. He recovered in two months; but there remained, with some habitual distress of breathing, systolic, aortic, and mitral murmurs. After three years, neither Dr. Oppenheim nor I could discover any material change in the sounds of the heart, both murmurs having entirely disappeared.

I could cite many other cases to illustrate the disappearance of murmurs originating in rheumatic inflammation of the valves; but as this point in our present discussion is a subsidiary one, I shall content myself with the cases already related or adverted to, and proceed to consider some of the practical applications of the facts which I have in various ways brought before your notice.

[To be concluded in our next issue.]

PERSISTENT VOMITING AS A CAUSE OF EAR- TROUBLES.

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As far as I am aware, vomiting is not usually included in the list of causes occasioning catarrh of the middle ear. It is well known that aural affections frequently complicate general wasting diseases, especially in their final stages. The pharyngeal muscles waste along with the rest of the body, and the sufferer's last days are aggravated by distressing tinnitus and vocal reverberation. This last symptom is most annoying. Whenever any movement occurs in the throat, nose, or mouth, the sound is conveyed to the tympanum up the unduly patent Eustachian tube, causing an unnatural ringing and roaring noise in the ears.

¹ The case was read in full at the Brighton meeting.

Wasting of the "constrictor sacculi pharyngis" and undue patency are sufficient, in many cases, to account for the symptoms complained of, but a further cause appears to have been lost sight of—that is, impaction of minute particles of regurgitated food or mucus in the tubes during the act of vomiting.

In the simple act of vomiting the contents of the stomach are not infrequently ejected through the nostrils, and the tubal orifice may easily become plugged. Should the act be repeated constantly, as often happens in renal and cerebral affections, the plug of mucus may be driven still further up till it becomes lodged at the narrowest part—at the junction of the cartilaginous portion with the bony part of the tube.

With the exception of Von Trötsch's classical case, in which a grain of barley was discovered *post mortem* impacted in the pharyngeal orifice of the Eustachian tube, I know of no others where foreign bodies have been supposed to have gained entrance into the auditory apparatus through the pharynx.

The following case is interesting, as the patient accurately described his symptoms from the outset. During a violent fit of vomiting, in which some of the contents of the stomach poured out of the nostrils, he felt as if his right ear suddenly became plugged. He endeavoured to ease the dull tickling sensation by inserting his little finger in the external meatus, but with no result. When I saw him next morning he was slightly deaf, and complained of his voice reverberating in his ear, and of a continuous throbbing, which he said felt "like a pulse in the ear." The drum was unaffected. Though instructed how to perform Valsalva's method, he derived no benefit, and could not force any air into the right ear, though he felt it in the left distinctly. Swallowing, yawning, coughing, sneezing, sometimes seemed to ease him for a minute or two, but the worry soon returned. Some days after the left ear went in exactly the same way, and I found that he could not hear the watch at half the proper distance. At this time the right drum appeared to bulge slightly below and behind, and the sense of having a drop of fluid in the ear seemed to depend on the position the head was held in. Whether any fluid ever gained entrance into the cavity of the tympanum, or whether it was simply retained secretion, is impossible to say. As the patient was rapidly dying from an abdominal sarcoma, it was not considered justifiable to resort to any operative procedures for the restoration of the patency of the tube. The symptoms, therefore, persisted, the tubes remaining blocked to the last. Without any leading questions, the patient distinctly attributed the numb feeling in his ears to the vomiting. Deafness was not complained of, and no doubt he might have heard the watch had it not been for the subjective aural sensations which drowned all faint sounds.

A man with locomotor ataxy, after an unusually severe series of "gastric crises," noticed that he was deaf. Roaring noises in the ears were complained of, with stiffness behind the lower jaw. The throat was not inflamed, and Politzerisation failed to move the drums, which were apparently healthy. Examination with the fork showed that the fault lay in the conducting apparatus. When seen a few weeks later, both drums were perforated, the man expressing himself easier since the ears began to run. Since then the tubes have been kept open, and the perforations have healed. In this case the blocking of the tubes was not due to inflammatory congestion as far as could be made out. A subacute inflammation did take place, but owing to the patient's irregular attendance, its course was not accurately watched. It may fairly be urged that his neurotic condition may have influenced the ear-affection, for neuralgic pains and tinglings in the face and head were constantly complained of.

The suddenness of the onset in both cases, and the absence of the usual cause of increased flow of blood to the middle ear, or of any irritation of the tensor tympani muscle, make it probable that the persistent vomiting had something to do with the causation of the distressing tinnitus and partial deafness.

CASE OF POISONING BY DUBOISIN.

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As cases of poisoning by duboisin are somewhat rare, the following may be of interest.

On July 13th, at 11 A.M., H. J. H., aged 75, consulted Mr. T. Priddin Teale with reference to his eyes. H. J. H. is suffering from slow-forming senile cataract, and on several occasions atrophine has been used for purposes of examination. On this occasion, however, two discs, each containing 1-200th of a grain of sulphate of duboisin, were placed in the eyes. Very shortly afterwards, patient complained