CYANOSIS WITH DEFICIENCY OF THE INTER-VENTRICULAR SEPTUM.*

By JAMES JOHNSTON, M.B.,

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THE subject of the present remarks, J. Thompson, aged 9, the son of healthy parents, was apparently in perfect health until seven years old. He had never suffered from rheumatism in any form, nor was there any history of shock or violent exertion. About two years since, he complained, for the first time, of dyspnoea, pain across the chest, and dizziness. He then had the first of a series of epileptic fits, and from that time gradually became cyanotic.

When admitted into the Children's Hospital, on February 6, 1872, his face and extremities were very blue; the lips deep purple. The conjunctival membrane was congested. On examining his chest, the apex-beat was found in its normal position, with a heaving rather than accentuated impulse. There was a loud systolic murmur, harsh and rough in character, most distinct at the midsternum opposite the cartilage of the fourth rib, barely audible at the ensiform cartilage, and not running up the sternum; not heard over the aortic valves in the second right intercostal space, only as a soft murmur over the pulmonary valves in the second left intercostal space. Posteriorly it was heard slightly opposite the upper angle of the scapula, but not at the lower angle, *i.e.*, the mitral district. This *bruit* was barely perceptible at the apex of the heart, but was limited to a space on the sternum opposite the fourth left rib cartilage. There was no regurgitation into the veins. The *bruit* was most distinct in the horizontal position, and frequently disappeared when he was raised upright; and when this occurred the boy complained of faintness and intense præcordial pain, and then was convulsed. The lungs were well and fully distended. There was no increase in the number of the respiratory movements, no cough or expectoration, and he never spat blood. The liver was not enlarged. The kidneys acted well; no albumen was detected in the urine. The first fit that was noticed in the hospital was on February 24, about eighteen days after admission, and they recurred at uncertain intervals until a week before his death; during the last week, they were much more frequent, with painful intermissions and deep cyanosis. About ten days before death, symptoms of pulmonary congestion came on with cough and frothy expectoration, but no blood. He died on June 10th, after a series of fits, in the intervals of which his mind was clear, but with pain and faintness. In forming my diagnosis, the intense venous congestion and blueness of skin clearly showed that, from some cause, the blood was not being fully oxygenised. The quiet respiration, the freedom of the lung from all symptoms of congestion, at a time when the whole system was gorged with venous blood, indicated, quite independently of the site and character of the *bruit*, that the mischief was not caused by any imperfection in the mitral or aortic valves. On the other hand, this state of the lungs might co-exist with partial plugging of the pulmonary artery; a solution which was rendered highly probable by the history of the case, a certain definite time having been noted at which the cyanosis and other symptoms came on. Yet this view was rendered improbable by the absence of any signs of dilatation of the right auricle or regurgitation into the jugular veins. I could only account satisfactorily for all the symptoms by a reopening of the foramen ovale; but in that case I should have expected more hypertrophy of the left ventricle, with a more distinct apex beat than was found in the case. On *post mortem* examination, June 17, every organ was found deeply congested with dark fluid blood. In the right auricle the inferior and superior cavæ were normal in size and position. The foramen ovale was closed. The tricuspid orifice was perfect, and the valves healthy. In the right ventricle the pulmonary arterial orifice was so small that it hardly admitted an ordinary probe. Immediately above, and to the right side of this orifice, the aorta could be felt open to the ventricle. The septum ventriculorum being deficient at the upper part for about half an inch, the finger could be pushed with ease into the aorta, from either the right or the left ventricle. The aorta seemed to be placed over both ventricles, so as to receive the blood from both as from a common cavity. The ductus arteriosus was patent, in its normal position, and of the diameter of an ordinary goosequill; in length about one-eighth of an inch.

There can be no doubt that this state of the heart was congenital. Numerous cases are on record in which the heart, in its development, has not kept pace with the rest of the body, so that in a full-grown child the heart of a fœtus in the fifth or eighth week of existence is

found; corresponding to the lower type of heart found in the Saurian reptiles, in all of which, except the American alligator, the normal heart consists of two auricles, and one ventricle partially divided by a septum, which separates the aorta from the pulmonary. This form of septum has been met with in many cases of congenital malformation, but in this one we find the septum deficient in the upper portion. Attention was first drawn to this class of cases by Sandifort, about the middle of last century; since that time Tiedemann, Quain, Farr, and others have contributed largely to the pathology of these cases. I shall not, however, detain you now with quotations from these authors, but simply draw your attention to a few points of interest in this case.

1. Life was prolonged until the ninth year; most of the cases of this form of cardiac mischief survive but a few days or months at most.
2. Cyanosis did not come on until early in the seventh year. Graily Hewitt records the case of a child which lived to the fifth month, and in which the skin was of normal whiteness unless moved or excited, when it became cyanotic immediately. In his case the pulmonary was obliterated and the septum deficient.
3. The small orifice of the pulmonary and the full size of the ductus arteriosus give support to the view proposed by Farr, that, in these cases, the lungs receive their blood from the aorta through the ductus, thus reversing the ordinary course; and here we should note that—
4. Dr. Peacock gives the case of a child twelve months old, in which there was a deficient septum and aorta common to both ventricles, but no ductus arteriosus or pulmonary artery, the lungs receiving their blood from the aorta by vessels corresponding to the branchial vessels of early foetal life.
5. One peculiarity in this case of Dr. Peacock's leads to the fifth point of interest; *viz.*, at times, in the upright position, the *bruit* (which was a loud systolic one like that in the present case) entirely disappeared, although loud and harsh when the boy was lying down, just as it did in the present instance.
6. In all or most of the cases the lungs were not fully distended, in fact atelectasis prevailed. In the case now before you the lungs were fully and well dilated; resonant on percussion, and the respiratory murmurs were perfectly normal until the last ten days of life; and this fact, so manifest at the same time that there was an absence of all symptoms of a dilated auricle or overloaded right side of the heart, caused me to diagnose the probability of reopening of the foramen ovale. I cannot close the paper without drawing attention to the clearness of the mental powers at a time when he was subject to epileptic fits on alteration of position. The retained carbonic acid cannot be fairly considered as the factor causing the fits.

RETROFLEXION OF THE IRIS.*

By A. SAMELSON, M.D., Manchester.

JOHN COATES, of Todmorden, aged 30, a "twister and drawer" in a cotton-mill, was admitted a patient at the Manchester Royal Eye Hospital on the 2nd of August.

[Having never known his parents, he was brought up in the work-house, and seems to have lost the sight of his left eye in infancy, as he never recollects seeing with it. This eye, at present, has no perception of light, and appears singularly flattened on both sides, at the distance of a few lines from the corneal margin; there is ciliary staphyloma, particularly developed above the limbus corneæ, tremulous iris, and a totally adherent narrow pupil, occupied by a siliqueous cataract. Having been hurt by the wheel of a cart which he was driving, he has had his right leg amputated a number of years ago, and is wearing a wooden leg.]

On the 24th of July last, he met with an accident to his *right* eye in the following way. He had been seated on the floor, to have his dinner, in the mill where he was working, when, in getting up, he slipped and fell with his head against a piece of iron which projected from the wall at the height of about two feet from the floor. The eye, after the accident had just occurred, is said to have been painful and bloodshot, but there was no bleeding. For two nights he could not sleep from pain, and could not keep his eyes open for two days; he cannot now "stand the sun" as well as he could before the accident. The eye was bathed with camomile tea, and a camomile-poultice was kept applied to it for the first two nights.

Status præsens.—The iris appears as a narrow seam only at its attached border, widest (about $1\frac{1}{2}$ lines) at the outer and lower periphery, narrowest at the top and inwards, in which latter situation it presents traces of a solution of continuity; two minute roundish knobs are seen to project, respectively upwards and outwards, from what

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* Read in the Surgical Section at the Annual Meeting of the British Medical Association at Birmingham, August 1872.

represents the pupillary margin; this margin, from the varying width of the remaining seam of iris, is not regularly circular. There is a small patch of greyish-white opacity upwards and outwards, and a similar dot inwards and downwards, upon the capsule of the lens. Otherwise the latter is perfectly transparent, and its margin can be distinctly traced with the ophthalmoscope throughout the entire circumference. With the movements of the eye the lens as well as the visible remnant of iris is sometimes seen to shake a little. The anterior capsule further presents the following phenomenon, in reflected as well as in refracted light. About the centre of the pupil, three plait-like figures are seen, nearly vertical, resembling elongated cells; in focal light they can only be distinguished when the eye is directed inwards; they noways interfere with the transparency of the crystalline body. The whole contour of the lens, as dividing the latter from the surrounding hyaloid membrane, being so distinctly traceable, we naturally look for the ciliary processes. But nothing can be made out at all resembling these. When the eye is turned either extremely inwards or outwards, a dark figure is, indeed, observed beyond the outline of the lenticular margin, but that figure, far from presenting anything like the beautiful and regular design of the ciliary processes, appears rather like a uniform and slightly tremulous mass, somewhat shaggy in its outline. The vitreous body presents extensive floating opacities when seen with the ophthalmoscope. The optic papilla and the retina are in no wise abnormal in their appearance. The tension of the eye is somewhat increased.

The patient reads No. 4 of Jaeger's types from four to nine inches. His acuity of vision is about one-thirteenth, with — 16 it is one-fifth. Through a stenopaic aperture he reads, with some difficulty, No. 1 Jaeger, and the acuity of vision, with — 16, is nearly two-sevenths. He states that he never could see well at a distance, but he never tried the effect of glasses, and that he could read the newspaper at a greater distance from his eye than at present. Neither atropine nor Calabar are found, in an appreciable way, to affect the results as stated. After the instillation of atropia, however, the seam of iris appears to become somewhat narrower still. (The patient states that he sees black specks floating before his eye, even more when the latter is closed, and that he finds his sight somewhat improved since his admission.)

As the investing membranes of the eyeball were evidently not injured in the accident, the question naturally presents itself, as to what has become of the bulk of the iris. From the appearances described, the necessary inference seems to me to be that, in the concussion caused by the accident, a displacement of the vitreous body must have occurred, sufficient to allow the iris to become folded back upon itself. Apart from the support lent to this view by most of the phenomena described, I have only further to state that the inner free edge of the iris-seam, when examined in focal light with the aid of a magnifying lens, far from appearing sharp or torn, rather gives the decided impression of such an increase of thickness as must necessarily arise from a doubling of the membrane. The black figure, which I have described as seen beyond the equator of the lens, I hold to be the image of the backfold of the iris reflected from the hyaloid membrane. If my interpretation of the phenomena be correct, the case is one of those to which Von Ammon has directed attention in his elaborate article in the first volume of the *Archiv für Ophthalmologie*. Instances of traumatic retrusion of mere segments of iris I have seen ere this, and presented at the Manchester Medical Society.

TRAINING FOR THE TRIPOS.

By J. M. WINN, M.D.,

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THE vast importance of rigid attention to the bodily health, whilst preparing for an examination, was forcibly brought to my mind by a recent occurrence at the College of one of our Universities. A young friend of mine, of great mathematical talent and unwearied industry, lost the first place at his college examination, simply from the effects of indigestion caused by his having incautiously eaten some articles of food at lunch, just before he went in for his examination, which disagreed with his stomach. On the first day, he was so confused from the malassimilation of the food, that it was with great difficulty he got through his work; on the second day, he rallied, and ultimately came out second, losing the first place by only one mark. Who can doubt that, but for the unfortunate lunch, he would have come out first?

Whilst so much has been written on the subject of training for bodily

contests, how little has comparatively been done towards furnishing anything like a systematic guide as to the best rules to be followed in order to maintain the brain and nervous system in their highest state of integrity, at a time when both are strained to the utmost, not only by the efforts of the will and intellect, but also by the hopes and fears which are excited by a trying ordeal. The question whether our Universities have raised the standard of their requirements too high, and induced an amount of study under which the health of those who are determined to distinguish themselves often fails, is one that I will not enter upon now. My present object is to offer a few medical suggestions, which may possibly lead to an improved system of hygiene, for those who are training for academic honours.

If we keep in view the difference between the structure of the nervous and muscular tissues, it becomes evident that a somewhat different kind of diet is required for the nutrition of the former from that of the latter. In order to develop and support the muscular organisation, a large proportion of animal food is requisite; not so, when the object is to supply the waste of the more delicate and subtle tissue of the nervous system. Fatty matter and phosphorus enter largely into the composition of the brain. It has been estimated that the former (brain-wax, or brain-fat, as it has been called) amounts to about one-third, and the latter (phosphorus) to one-twentieth or one-thirtieth of its solid substance. It is now generally believed that exertion of the will and reasoning powers causes an expenditure of the brain-material, and a corresponding exhaustion of the nervous force. However, it must not be forgotten that prolonged bodily exercise exhausts the nervous force, as muscular contractions are commonly brought into action by nervous influence; hence the importance of a student's avoiding excessive bodily efforts, which expend that nervous energy so essential for brain-work. Whilst "training for the tripos," he should, however, take gentle exercise for at least two hours daily in the open air, and his diet should be light, simple, and nutritious. Large quantities of animal food and malt liquor conduce rather to somnolency than to mental activity. There is a common saying that "fish feeds the brain," which may depend on the phosphorus it contains; certainly there can be no doubt that some sorts of fish, such as soles, whiting, plaice, etc., are peculiarly suitable to a weak digestion. I may incidentally observe that I have found a fish diet especially serviceable for those predisposed to phthisis. A certain amount of rest and sleep, as well as a due supply of healthy blood, are absolutely necessary to maintain the brain in a working condition. Above all, the amount of mental work must be in proportion to the physical strength. I knew an instance of a gentleman who attempted to read ten hours a day, and, whilst doing so, his competitors got ahead of him; he then wisely reduced his time of work to eight hours. He then recovered his lost ground, and came out a wrangler. There are men of iron constitution who can afford to laugh at these precautions, and who can excel both in mental and bodily exercises. A friend of mine who went in for a public examination, surpassed most of his contemporaries, who were his equals in mental capacity, by sheer power of physical endurance. The suggestions I have offered are not for such as these, but for men of less physical stamina, and I hope they may lead to an improved system of academic hygiene.

THE HOSPITALS OF CHRISTIANIA AND COPENHAGEN.

By HENRY S. TAYLOR, Esq., Guildford.

HAVING recently visited the hospitals in two of the Northern capitals, I send a few notes of observations made therein, hoping that they may interest the readers of the JOURNAL.

In the Royal Hospital at Christiania, I had the good fortune to find Dr. W. Boeck going round, who took the trouble to explain to me, in my own language, the nature of the more important cases under his care. The practice of syphilisation, which has had so zealous an advocate in that distinguished physician, is still pursued by him exclusively in all forms of constitutional syphilis, and was being carried out in a great number of the cases before me; and, as I was told, with unvarying success. His plan is to inoculate the patient in the first instance with virus from a fresh sore, and then to continue the inoculation every third day with discharge from the sores thus artificially produced, until it ceases to have any effect, when the cure is considered complete, the constitutional symptoms having disappeared *pari passu*. The parts selected for inoculation are the chest and abdomen, and the operation is performed with a large lancet, which, after being charged with h