

suddenly and without warning, being perfectly well; they are all at once seized by a sort of vertigo, which brings them to the ground perfectly lifeless."

Dr. Bartolomé exhibited morbid specimens taken from the following case:—

W. L., aged 18, was admitted into the Sheffield General Infirmary, October 26, 1849, labouring under disease of the heart. On admission there was a loud double murmur over the aortic valves, and a still louder one over the mitral valve accompanying the first sound. The dulness, on percussion over the region of the heart, somewhat increased downwards, and more perceptibly so on both sides, and the patient was much emaciated. From the character of the action of the heart the pericardium was suspected to be adherent. He died on the 2nd of November.

On examination the heart was found dilated and hypertrophied; the aortic valves much thickened and opaque; both auricles filled with coagulated blood; the pericardium not adherent to the heart, but firmly bound down to the diaphragm; the kidneys lobulated and exceedingly dense; spleen small and indurated. The other viscera quite healthy.

Foreign Department.

FRANCE.

Resumé of a Memoir on the Structure of the Voluntary Muscles of the Heart in various Classes of Animals.

BY M. LEBERT.

Before entering into the details of this *resumé* the author alludes to a work recently published by M. Prevost, in order to state that his own researches were made quite independently. He then proceeds as follows:—

If we seek to reduce the different component elements of voluntary muscular fibre to certain general rules, we find that muscularity offers four different degrees, on an ascending scale, before it arrives at the perfect tissue which, by its contraction, is subservient to locomotion. The first degree is that of mobility without muscular fibre. It is thus that certain animals are observed to be capable of movement, in which, nevertheless, we are unable to detect striæ, cylinders, and granules—elements which we know to be characteristic of muscular fibre. We here find as the base of the animal scale general qualities of matter without molecular structure, which we propose to call "anhystic" muscular tissue. It is met with in the entire class of infusoria, (properly so called,) in several of the polypes, and in some of the cystoid worms.

The second degree of muscularity, is that in which we do not as yet find the essential element of muscle, the muscular cylinder, but only fibres enveloped in a transparent substance, but not grouped into fasciculi. It is true that these fibres form veritable muscular

planes, sometimes parallel, at others crossing each other at right angles, or arranged in a radiated manner around the different orifices of the body. These muscular laminae which are met with in the polypes, molluscs, &c., may be denominated the fibrillated tissue of spontaneous movement.

The third phases in the evolution of muscles is that in which the fibres group themselves into cylinders or bundles, and when the muscular laminae are replaced by regularly-shaped muscles, or varied form. This condition is frequently seen conjoined with the former in the same animal. The general appearance of this first development of the muscular cylinder is subject to great variety of aspect. In some fibres the fascicular grouping is faint, in others distinctly marked in their outline, but deficient in fibres in the interior. The cylinders are generally enveloped in an intermediate substance, which is the prototype of the cellular tissue of the higher classes of animal life. It is important to notice here, that this form of muscular fibre offers many differences as to the arrangement of the molecular granules contained within the cylinders. In some these granules are in very small quantity, in others they are so numerous as almost to mask the fibrous structure. This third variety of muscular fibre, which may be called the cylindrical, is the character of a great number of the lower classes of animals, and is general in the annelidæ and mollusca.

We arrive now at the fourth degree of evolution of muscular fibre, that perfect state which we meet with in all animals from the mollusca up to the highest of the vertebrata. In spite of the numerous treatises on the intimate structure of voluntary muscular fibre, we are convinced that there are still numberless errors imparted, errors which can only be rectified by careful microscopic dissections. As in the nervous fibre, the primitive nerve tube is the last essential element of innervation, so the muscular cylinder is in reference to voluntary movement. It is not the primitive fibre, nor the transverse striæ, but the cylinder itself, which is, so to speak, the unity of motor force; the frequency of the transverse striæ is but one of the essential qualities.

Under the term primitive cylinder, we include every portion of muscular tissue which has a definite longitudinal outline, and mostly characterized by the presence of transverse striæ. These long parallel and flattened cylinders, by their aggregation, form muscular fasciculi, and in the higher animals are invested with a cellular sheath. There is one system of aggregation of the primitive fibres, which has not been sufficiently insisted upon, viz., their union in sets of four or more into one bundle, which is marked with transverse striæ independently of those belonging to each component fibre. There is some difficulty in distinguishing this secondary from the primary cylinder, unless close attention be paid to its aspects.

Great importance has with reason been attached to the existence of the above-mentioned transverse striæ. They are absent from the muscular fibres of the heart in most animals, and even from the voluntary muscles in some. As regards the substance of the heart, it

appears to hold an intermediate station between the voluntary muscles of animal life, and the muscles of organic life. But to return to the surface of the muscular cylinders. The transverse striæ are formed of rounded folds, slightly prominent, which encircle the cylinder without communicating as in the spiral. They are not the results of contraction, but are permanent; the only difference they undergo being a greater or less approach to each other accordingly as the fibre is in a state of contraction or relaxation.

The internal surface of the cylinder is in close contact with the same transparent substance which unites the primitive fibres together. The primitive fibres themselves are very fine, and alternately opaque and transparent throughout their entire length.

The nutrition of muscular tissue takes place by transudation. The blood-vessels are seen to take the direction of the cylinders, and the capillaries are often placed in their interstices. We have never seen an instance of a capillary penetrating a cylinder.

The innervation of muscles is accomplished by the distribution of the terminations of the nerves to the muscular substance. Although disposed to place great confidence in the observations of Weber, that the alternate nerve filaments lose themselves in the very substance of the cylinders, we have not been able to confirm this view. As far as our investigations have enlightened us, the primary nerve-tubes run between the muscular planes, two or three forming isolated loops, but not giving off any communicating branch with other sets; it is, therefore, by general contact, and not by separate penetration, that the cylinders are excited to action.

The mode in which contraction of muscular fibre takes place has long occupied the attention of physiologists, but as Weber's observations are remarkable for their exactitude, I cannot do better than refer to them.

M. Weber has laid down the general law that a different mode of contraction under galvanism exists in the muscles of animal and organic life, which corresponds to their difference in structure more especially in regard to the transverse striæ.

The muscles of animal life contract the instant that galvanic excitation commences, either directly, or by the nerves, and continues as long as that excitation persists. The muscle of organic life, on the contrary, some time elapses before the contraction ensues, and the contraction continues also after the galvanic current has been discontinued. M. Weber has found the instantaneous contraction in all cases of striated muscular fibre. Thus in the œsophagus, those fibres which are striated are seen to contract immediately, while others non-striated are slow in responding to the galvanic stimulus. The iris of mammiferæ which is non-striated, contracts in the latter mode, while the iris of birds, which contains striated fibres, contracts immediately. These curious researches render it probable, that in the lower grades of animals in which the striated fibre does not exist, the contraction resembles that of the fibres of organic life.—*Gazette Médicale*, Dec. 8th.

On the Effect of Pneumo-Thorax on the Sounds of the Heart.

The variations in the extent to which the sounds of the heart are transmitted are well known. The transmission is impeded by emphysema, increased by consolidation of the lung, and occasionally, as stated lately by M. Racle, by pleural exudation. M. Barth has lately published a curious instance of some rare auscultatory phenomena observed in a case of perforation of the pleura. The patient, a man aged 22, when first seen, was labouring under pleurisy, with effusion, as evidenced by general symptoms, by dulness on percussion at the left base, absence of respiration and ægophony at the angle of the scapula. Subsequently there were signs of softening, no doubt tuberculous, of the left lung, and, finally, perforation of the pleura and pneumo-thorax. This announced itself by the usual symptoms of metallic tinkling, of tympanitic note on percussion, and ringing voice and cough. But, in addition, the sounds of the heart had, on the left side, a distinctly metallic character, which, although not uncommon in some cardiac affections, has not, Mr. Barth believes, been noted in pneumo-thorax. M. Barth entertains no doubt that the air in the pleura, maintained at a certain tension, produced this metallic note, and suggests the possibility of, in some cases, the same note being given by the apex of the heart striking near a stomach distended with gas. In this case, also, there was a friction-sound in the cardiac region synchronous with the heart's movements, which M. Barth believes to have been entirely pleural, and produced simply by the pericardium rubbing against the inflamed pleura. A similar case is recorded by Dr. Stillé, of Philadelphia.—*L'Union Méd.*, Jan. 1st, and *Medical Times*.

AMERICA.

Wound of the heart—the Patient living ten Days.

Dr. W. S. Bowen presented to the New York Pathological Society the specimen, and read the notes of the following very interesting case:—

D. R., aged 21, admitted December 13th, 1848, with a stab in the left mammary region, near the sternal end of the fourth rib, about half an inch removed from the sternum; received two days before admission.

Dec. 17th.—Patient complains of an acute pain near the situation of the wound; has some febrile excitement; respiration slightly accelerated. The friction sounds of pleurisy, and the evidences of moderate effusion are present. Venesection. Tart. Antim.

19th.—Pain greatly mitigated; febrile excitement abated.

20th.—Evidences of effusion still present; some roughness of the first sound of the heart.

22nd.—Fell on the floor of the ward, while crossing it, in a state of syncope; complains of intense pain and a sense of constriction across the chest; pulse feeble, frequent, and intermitting, the intermissions

occur after every third pulsation; extremities cold; skin blanched; cold clammy perspiration over face and body; extreme thirst.

He became comatose, with dilated insensible pupils, and stertorous breathing, and died December 23rd.

Examined nine hours after death.—On removing the cartilages and ribs, the left pleural cavity was discovered to be filled with blood; slight inflammatory redness of the costal pleura, and the lung was compressed to one-third its natural size. The pericardium was also filled, and the heart pushed over to the right side. Removing the heart, with its appendages, the pericardium was found perforated within the mediastinal space two inches below its reflection from the vessels to the heart. Around the orifice, for several inches, were the evidences of inflammation, both on the internal and external surfaces—to wit, capillary injection and shreds of coagulable lymph; this was more particularly the case upon its internal surface. The heart itself was found perforated half an inch to the right of the septum; the perforation entering the right ventricle about a line below the anterior semilunar valve of the pulmonary artery, passing entirely through this ventricle, and entering the septum ventricularum just at the base of the posterior valve, and coming out into the left ventricle at the orifice of the semilunar aortic valves, one of which was grazed. These orifices were lined with coagulable lymph; and, without displacing it, admitted the introduction of a good-sized probe.—*New York Journ. Med.*, Sept. 1849.

Wounds of the heart, when penetrating its cavities, are always fatal, though the patient often lives for a considerable period after the accident. In some recorded, life was prolonged for sixteen or seventeen days, but they ultimately proved fatal. A large collection of cases is to be found in the *Dictionnaire des Sciences Médicales*.

Wound of the Brain—Recovery.—BY WILLIAM KENNEY, M.D.

The subject of this case, which is reported in the *Western Journ. Med. and Surg.*, Oct., 1849, was a lad 17 years of age, who received a stab with a common pocket-knife, blade two inches and a half in length, and three-quarters of an inch in width, tapering abruptly on back and edge to a point. The wound was in the left temporal region. The knife was driven with such force as to penetrate the brain the full length of the blade, at a point midway and about three-quarters of an inch above a line drawn from the external angle of the eye to the *meatus auditorius internus*. The handle of the knife, as it stood, looked slightly forwards and upwards, and was so firmly fixed between the divided bone, that it was with great difficulty that the knife was removed. During its presence in the brain, and after its removal, the patient complained of great pain in the left eye, and over the frontal region of that side. Its removal was followed by hæmorrhage, to the amount of ten or twelve ounces, vomiting and stupor. The patient was taken from the street, his wound washed, and without farther dressings being applied was placed in bed, with

the head raised, and ordered the free use of cold applications to the scalp, sinapisms to the extremities, twenty grains of calomel, rest and quiet. Under this treatment in less than three weeks he entirely recovered.

Correspondence.

INTRA-UTERINE CRYING.

To the Editor of the Provincial Medical and Surgical Journal.

SIR,—Every labourer in the Well of Truth works in danger of brickbats and other missiles, and fortunate is he who gets much of the precious metal safely above ground and fairly into circulation, without sustaining some damage at the public Assay Office; but with so amiable and venerable a Warden of the Mint as Mr. Pope, no minor need fear unjust treatment.

My notes on a case of intra-uterine crying questioned by Mr. Pope,* would never have appeared in print, had the evidence of my own senses alone formed a packed jury; but as four anxious persons distinctly testified to the facts stated, and as the case occurred not far from the residence of our excellent Editoric accoucheur, I ventured to put the issue into his parturient hands. Now, I am sure Mr. Pope will admit that—

"There are more things in heaven and earth,
Than were ever dreamt of in his philosophy."

I will endeavour to show him one. The longitudinal fibres of the gravid uterus, contracting in distinct paroxysms, as is well known, advance the foetal head by fits, on its passage to the world; when, anon, by their relaxation, the head being drawn up by the body, recedes, ("the liquor amnii having escaped") in returning, withdraws atmospheric air with it into the relaxed uterus. Slight contraction and relaxation of this organ, ("half pains") may easily excite the respiratory instinct, and this may be followed by the first infantile cry. Such is, I believe, the rationale of the facts I have recorded, which will ever remain orthodox in my creed, though the Pope's bull should anathematise this and many other occurrences of the same kind, mentioned by credible authors.

The "guttural," or the laryngeal sounds, are easily distinguished by any "auld wife," from those of "intestinal gas," tho' their music be never so charming.

Between disputants for truth, especially of the same corps,

"Good humour should prevail,"
"And so I'll end the subject with a tale."

Master Beck entered the world with a face like an angry winter sun—in a towering passion, up *at all ends*, like a hero who perceives that he has to make his way through the world militant; so he showed fight like a Briton.

In the whole course of my obstetric doings I never saw such a young Turk, and he continues one of the strongest children in the neighbourhood.

* See *Provincial Journal*, No. I., 1850.