extracted in a more direct line. In this case, through the stone being of a large size, and exceedingly rough upon its surface, the extraction was rendered very difficult, but by gentle and sustained traction it was safely removed. The case proceeded favourably, and the patient had, at the date of Mr. May's observations, nearly recovered from the operation.

Mr. Field (whose recent retirement from the Society I will here take occasion to notice with regret,) presented a morbid specimen taken from a girl who died from what he considered to be acute stricture of the œsophagus, and from the history of the symptoms, it would appear that such had been the case. On examination after death, an enlarged tuberculous bronchial gland was discovered lying on the right side of the trachea, a little above its bifurcation; another longer than this, and also tuberculous, situated immediately below the right bronchus, was so placed that it pressed on the œsophagus and closed its canal, which was slightly dilated above this point, and contracted below it, leaving no doubt that death resulted from this cause. A section of one of these tumours displayed a mass of tuberculous matter, containing two or three cells filled with pus, and some streaks of carbonaceous matter, the whole being enveloped in a tolerably firm capsule. The base of the right lung contained several small tubercles, one of which was rapidly advancing to suppuration.

In the course of the discussion which followed, Dr. Cowan took occasion to observe, that a tumour similar to that of the bronchial gland existed in the lower lobe of the lung, while there was no tubercular degeneration in the upper lobe, and said he thought the case came under what the French called bronchial phthisis, the chief diagnosis of which was the age of the patient and the absence of the usual signs of phthisis of the lungs. The age at which this affection is generally found to occur, is from 6 to 12 years, and the disease is produced by the deposit of tuberculous matter in the bronchial glands. It was not improbable, that in this case, the pressure upon the blood-vessels by the tumour might have so altered the condition of the lung, as to occasion a tuberculous deposition in its lower instead of its upper portion, and it was fair to infer that if this pressure had not existed, there would have been an equal and extensive distribution of deposit throughout the whole of the lung. A conversation upon this ingenious explanation concluded the discussion.

Dr. Cowan was then requested to read his promised paper on statistics, the object of which was to prove the value of the method of registration in public institutions as well as in private practice. He exhibited a series of elaborately-constructed tables drawn up from the records of 4443 dispensary cases, according to the method recommended by Mr. Farr, which for perspicuity of arrangement and accuracy of detail, was as perfect as the most sanguine enquirer after statistical information could desire, and at the same time he read an explanatory report for the four years in which the recorded cases had occurred. This report, from its locally-interesting character, excited considerable attention, as a complete tabular history of the registration of an institution which admitted from 1000 to 1200 cases annually, out of a population of little

more than 20,000. The charity, including every district of the town, was scarcely, (to use the words of the narrator,) attended at all by country applicants, and might be said fairly to represent the average diseases of Reading. I will not enter at large into a description of the tables, which are complete as far as they can be made so. Every circumstance has been stated to render them highly valuable to medical practitioners, especially to those residing in the town; and Dr. Cowan deserves the thanks of the profession for this instance of his industry and method. The tables as well as the report has been published in the "Transactions" of the Provincial Association. There is one part of the report, however, which so immediately concerns the sanitary condition of the town in general, and is so important to us all, as guardians of the public health, that I cannot close my notice of this valuable paper without offering to your observation one of the remarkable truths which it develops. Speaking of the general health of the town, he says, "Though Reading may be considered as on the whole decidedly healthy, its immunity from febrile disorders would be still greater were hygienic arrangements more effectually carried out. It still contains many miserably constructed houses, badly-drained and badly-ventilated courts, the supply of water is insufficient, the sewers are often injuriously exposed, and in one or two limited districts the under soil is saturated with water. The sewerage of some of the principal streets, though from soil and inclination easily accomplished, is also far from being satisfactory, and the grated openings of the main drain are, in warm weather, the sources of noxious and disgusting effluvia."

(To be continued.)

ON THE MEDICINAL LEECH: (SANGUISUGA OFFICINALIS, SAV.)

By THOMAS BRIGHTWELL, Esq., Norwich.

(Read at the Anniversary Meeting of the Provincial Medical and Surgical Association, at Norwich, Wednesday, August 19th, 1846.)

The existence in Norwich of an artificial pond or reservoir, in which for many years from twenty to thirty thousand of the medicinal leech are kept, has enabled me to investigate the natural history of this animal, and to offer some suggestions by which, perhaps, we might at least aid in supplying the quantity needed for our own consumption, instead of being almost entirely dependant, as we at present are, on a foreign supply. Any information on this subject is the more important, as it is stated, that, from a variety of causes, there is an increasing scarcity of the animal. It appears that at least ten millions of leeches are imported into London alone every year, and from the extent of the demand it is obvious that any suggestions for the preservation and rearing of the medicinal leech in this country, are not undeserving attention.

The medicinal leech, *Hirudo medicinalis*, or, according to modern nomenclature *Sanguisuga medicinalis*, is found throughout nearly all Europe, and, in small quantities, in this country. The greater number of those imported are sent from Hamburg, and are obtained in Hungary, Austria, and Prussia; some are also imported from France and Portugal. The dealer

in Norwich says he considers the Prussian leeches bite the best, and that the French leeches are slow biters, and that the Portugal leech is not fit for use till it has been kept some time in the ponds. These varieties attack and even destroy each other; the Hungarian particularly, attacking and biting the Prussian when they are first put together. The merchants abroad keep them in natural ponds for about two months before they are imported, and import them closely packed in bags. A leech, used for medicinal purposes, is found in considerable numbers in the Madras territory, and attempts have been made to export them from thence to the Cape of Good Hope, where leeches are very dear, but I believe the experiment has not hitherto succeeded.

The varieties of the leech are so distinctly marked that the dealers recognize them instantly, and they bear their proportionate value in the market. The dealer in Norwich knows the varieties at first sight, and seems well acquainted with their qualities. He states that he is the only person in this county who has an artificial pond for their preservation, and that he has been abroad to procure information and the material to form his ponds, and he professes to have some secret means, unknown to any but himself, by which his leeches are preserved and supported, and the water kept pure. One of the principal points to which his attention has been directed, that of the propagation of the species and rearing the young, he has signally failed in, owing, in part, to his entire ignorance of the ova when deposited, and the young in its early state. In fact, when I first visited his ponds, about four years ago, he was so ignorant of the ova deposits of the leech that he considered them to be the germ of some noxious animal, and uniformly destroyed them as soon as detected; and he, at that time, pointed out as young leeches the small *Planariae* that were common in his pond, and looked to them as increasing his rising stock; whereas, the *Planaria*, though externally very like a small leech, is an animal of totally distinct organization, and not of the same family as the leech.

Dr. James Rawlins Johnson, of Bristol, published two small volumes upon the subject of the medicinal and other leeches, the last of them containing the translation of a memoir, by Dr. Noble, of Versailles, on this subject; and in the last of these volumes, which was published in 1825, the ova deposits of the medicinal leech seem to have been first made known in this country, and good figures of them were given. No information is, however, afforded by these publications as to the rearing of the young.

Aided by the information in these volumes of Dr. Johnson's, I have endeavoured to extend his observations, and have succeeded, after several failures, in rearing the young and carrying them through the cold of our winter, after their first development.

The leeches in the pond in Norwich, begin to make their ova deposits in the months of June and July, and in this latter month, great numbers of the ova deposits (called by Noble *cocoons*), may be found, firmly fixed to the sides of the leaves of the aromatic flag, with which the pond is planted. From three to six or seven ova may be seen in each cocoon, and about three weeks after the cocoons are produced, the fœtus of the young may be seen moving in them; and about three weeks after the young have quickened, they

make their exit from the cocoon, by piercing through a soft aperture at the end. The young, when first developed, are very minute and transparent, so much so, that very careful observation is necessary to detect them, and they evidently search for, and immediately require, food, or they soon perish. For two successive years I had no difficulty in procuring the cocoons, and securing a plentiful supply of young leeches as they issued from them; but I failed in affording them the needful nourishment, and after a few days they all died. I tried various experiments to feed them, by offering them blood, pieces of small earth-worms, small animalculæ, and by placing them in some of the clay from the leech-pond, and other devices, and though some of these means appeared to succeed for a short time, they all eventually failed.

I observed that the young leeches attacked pieces of very small earth worms, but from their size, they could not swallow them. It occurred to me, that, if I could procure some red worms as small or smaller than the young leeches themselves, I might succeed in rearing them, and that probably some of the *Lumbricus tubifex* of Müller might answer this purpose.

This minute red worm, which I take to be the *Tubifex rivulorum*, of Lamarck, occurs in myriads in shoally parts of dark muddy ponds, and appears in large patches, of a blood-red colour, disappearing on the least disturbance of the water. This worm is smaller than a fine thread, and shoals of them fix themselves on the mud, and protrude their bodies into the water, keeping up an incessant waving motion, withdrawing into the mud on the least alarm. They are more difficult to detect than the young leech; but by taking some of the mud where they are found, and washing it repeatedly in clear water, they may be detected.

On trying the young leeches with these worms, I perfectly succeeded in my object. They greedily devoured them, seizing them at one end, and gradually absorbing them till they were gorged with the spoil. By this means they became strong and active; and last winter, by keeping some of them in a small pan, with sufficient clay from the leech-pond to enable them to bury themselves in it during the cold weather, I have succeeded in carrying them through the winter, and have now in my possession some leeches upwards of a year old, healthy and vigorous.

The young leeches when well fed, increase rapidly in size, and gradually assume a dark colour; the leeches of the second year are nearly the colour of the adult leech, and are, when at rest, about three quarters of an inch in length, whereas adult leeches are often found six or seven inches long. The leech is said not to obtain its full size and maturity under five years.

I find it stated in a popular work, that the medicinal leech does not seem to take any solid aliment, but subsists on the fluids of fish, frogs, &c. This is certainly incorrect, as I have already shewn; and I found, that on placing some young leeches of another species with the common tadpole, the tadpole ate the leeches.

It appears to me, that with proper care and attention, it would not be difficult to preserve the young leeches in their first coming from the cocoons, in pans prepared for the purpose, and to furnish them with the required supply of food, till the cold weather came on, when they bury themselves in the clay; and that they

are vigorous and strong enough in their second year to be turned into the ponds, where they would probably shift for themselves.

The leech is a very prolific animal, and it is probable that some thousands might be reared every year, in the pond, in Norwich, if the plan I have suggested were properly attended to.

The leech, in its young and tender state, becomes the prey of many other animals, and especially of other species of leeches; and it would therefore be essential that the young should be carefully preserved and kept separate for the first year.

Many other points relating to the natural history of this animal remain to be determined, and to these I invite the attention of naturalists. No one has, I believe, hitherto detected the medicinal leech in coitu, nor seen their mode of depositing the cocoons; nor is it known whether, in their adult state, they prey on other, and what, animals, nor how long they are able to remain without food; nor is the duration of their existence known. They are subject to various diseases well known to the dealers, are much affected by the weather, and frequently die off by thousands, in spite of the best precautions taken to keep them in health.

The annulose animals do not present a very inviting field of observation; but in the family of which we are now treating there are many species, of beautiful form, and singular habits, especially those of the *Clepsina*, a small genus of straw-coloured leeches, which prey on the flat fresh-water snail, *Helix planata* of Linnæus, and which are furnished with a long retractile proboscis, enabling them to pursue and reach the snail, in the inmost recesses of its convolute shell,—a form, adding one more to the innumerable instances continually presenting themselves to the observers of nature of marked design, and the beautiful adaptation of means to the end proposed, all proclaiming the Architect whose works are perfect, while His ways are past our finding out.

ON DILATATION OF THE HEART, CONSEQUENT UPON TEETOTALISM.

By RICHARD CHAMBERS, M.D., Physician to the Essex and Colchester Hospital.

(Read at the Anniversary Meeting of the Provincial Medical and Surgical Association, held at Norwich, August 19th, 1846.)

CASE I.

A gentleman, aged 50, of good constitution, and accustomed to live freely, became a convert to teetotalism. For a period of six months subsequently, there was no perceptible alteration in his state of health; but about this time he became subject to attacks of nervousness, and paroxysms resembling angina, which gradually increased in frequency and intensity up to the time that I visited him.

I saw him on the 16th of August, 1844, in consultation with his ordinary attendant. In addition to the above particulars I ascertained, that repeatedly in the course of the night and day, he was subject to attacks of breathlessness, that compelled him to rush to an open window to relieve the sense of impending suffocation. In the intervals he was quite

cheerful. He complained of pain in the back of the head; pulse 84; bowels regular; urine copious. On examination of the thorax, (which was extremely well formed,) I found the lungs perfectly sound; the action of the heart was regular, and its sounds unusually clear, but there was scarcely any impulse. He had been bled the day before, (principally at his own request,) but with no relief.

As he had latterly been using a restricted diet, I placed him upon meat daily, with four glasses of good old port, and prescribed five grains of the carbonate of ammonia every four hours, and three grains of the sulphate of quinine thrice a day.

Under this line of treatment he began gradually to amend. At a subsequent period the sulphate of zinc was prescribed for him, and with the alternate use of zinc and quinine, and an increased allowance of wine, his health has been sufficiently restored to enable him to participate in the manly and trying game of cricket.

CASE II.

Henry Taylor, aged 30, a working gardener, applied at the Essex and Colchester Hospital, June 4th, 1846, complaining of headache and general weakness. He was of middle stature, and of a full habit, presenting a slightly bloated appearance. His appetite was good; pulse 78; bowels regular. On stethoscopic examination, the lungs were found to be perfectly healthy; the heart's action was regular, the sounds clear and healthy, but there was only a very slight impulse. He slept indifferently. For the last six months has been a teetotaler, but denies that he was a drunkard previously.

R. Pil. Saponis; Rhei; utrq., gr. iiss. M. Fiat pilula omni nocte sumenda.

R. Ammon. Carb., gr. v.; Tinct. Camph. Comp., dr. ss.; Aquæ, oz. j. M. Sumat ter indies.

15th. His wife applied for medicine for him to-day, and I found that my suspicions as to his intemperate habits were correct.

R. Pil. Saponis, gr. v.; omni nocte. Rept. haust. To have a little gin-and-water after dinner.

This treatment was continued up to the last fortnight, and being free from complaint he discontinued his attendance.

I bring these cases before the Association as examples of dilatation of the heart, consequent upon the adoption of teetotalism. The *modus operandi* appears to me to be the yielding of the muscular structure of the heart, in consequence of the less stimulating character of the blood; but, in addition to this, it must not be overlooked, that another element may also be in operation,—I mean an actual increase in the quantity of blood to be circulated, as I have invariably found that a great increase of appetite accompanies teetotalism; not a healthy appetite, but a morbid craving for food, and to oppose which opium is frequently resorted to.

The cases present the principles of the treatment to be adopted, and there is but one caution necessary, and that is to draw a careful distinction between actual determination of blood to, and merely congestion of blood in, the brain. In the cases just related the headache was referred to the back of the head, and appears to have arisen from venous congestion, but on the stethoscopic induction I wish to place the chief reliance.