

With a view to meet these objections in cases where otherwise the twisted suture would be used, I have frequently dispensed with the thread altogether, fastening the ordinary glass-headed harelip pin by clamping a perforated shot passed over the point so as to keep the edges of the wound in contact. On many occasions I have used a suture formed of a single strand of fishing-gut, passed deeply through the wound and clamped down on either side to the skin with a perforated shot. This has given me most excellent results, having never failed in my hands to secure union. It may be left *in situ* many days without cutting into the tissues. If there is a very scanty supply of soft parts, and much tension on the suture, it is liable to cause some eversion of the cutaneous edge of the wound; this may be remedied by tying the free ends of the gut over the wound after clamping it down on the sides. The knot across the wound may be cut on the second or third day afterwards, and the shotted portion may be allowed to remain as long as desirable.

Mr. Wood's button suture is much on the same principle, though silk is used instead of gut.

The same may be said of Mr. Pollock's metallic studs or buttons, which answer the same purpose as the shot in my suture, though perhaps more efficiently. Mr. Pollock passes a silver wire through the edges of the fissure, and fastens it on the sides by drawing it down into a slit in the stud made to receive it.

The *interrupted* suture is in every way well suited for harelip. It is used and recommended by both M. Giraldès and M. Guersant, the former of these gentlemen often allowing the threads to remain in for a fortnight or three weeks. In this kind of suture silk-thread, fishing-gut, horsehair, or silver wire may be used. Of these, the last three are to be preferred, as exciting less irritation than the first.

The *continuous* suture is admirably adapted for the treatment of harelip in every respect but one—that is, that it cannot be removed part at a time; and in this respect alone it is inferior to the interrupted suture, though for securing close and accurate contact it is to be preferred.

Whatever kind of suture be employed, it should pierce the skin a third of an inch or more from the margin of the wound, and should be passed deeply, even down to the mucous membrane, though it is well to avoid entering the mouth.

(To be concluded.)

ON

## THE ENTOZOA OF ABYSSINIA.\*

By T. SPENCER COBBOLD, M.D., F.R.S.,

LECTURER ON COMPARATIVE ANATOMY AT THE MIDDLESEX HOSPITAL.

I PROPOSE this evening, Mr. Chairman, to discuss two important questions having reference to the welfare of the British troops and others engaged in the Abyssinian expedition. It will simplify the matter to place the two interrogatories together at the outset, and thus inquire: What forms of entozoa occur in Ethiopia and the neighbouring territories generally?—and to what extent are these parasites likely to occasion inconvenience or suffering to our troops? It may be remarked at once, that we have no definite knowledge of the actual number of helminth species proper to man abounding in those regions; nevertheless we can, with a probability almost amounting to certainty, point to the presence of at least *eight* different forms more or less prevalent in those parts. In addition to these, it is not unlikely that two other well-known kinds of entozoa—viz., *Tenia solium* and *Oxyuris vermicularis*—will hereafter be recognised as Ethiopian, so to speak. The eight forms alluded to comprise two flukes (*Distoma heterophyes* and *Bilharzia hæmatobia*), two tapeworms (*Tenia nana* and *T. mediocanellata*), and four round-worms (*Ascaris lumbricoides*, *Trichocephalus dispar*, *Sclerostoma duodenale* and *Draconculus medinensis*); in other words, two trematodes, two cestodes, and four nematodes. Respecting each of these I will now say a few words.

The *Distoma heterophyes* is a minute intestinal entozoon, about one-sixteenth of an inch in length. Dr. Bilharz, of Cairo,

found it twice, in enormous numbers, post mortem; and there is little doubt, from the smallness of its size, that it has been frequently overlooked. However, should it prove ever so abundant, there is every reason to believe that its presence in the living human "host" is incapable of giving rise to any severe or even troublesome symptoms.

We may, therefore, pass to the consideration of *Bilharzia hæmatobia*. This formidable parasite I have so named after its discoverer, the above-mentioned physician at Cairo. It is more or less prevalent all along the east coast of Africa from Egypt to the Cape, and is likewise present in the Mauritius. Two or three persons as "hosts" have brought it with them to England; and I have myself found it in an African monkey which died at the Zoological Gardens. In this unique genus of flukes the sexes are separate, the males measuring half an inch in length, the females three quarters of an inch. It takes up its residence in the bloodvessels, being most abundant in the veins supplying the abdominal viscera. In that situation it gives rise to a most distressing malady, and is said by Dr. Bilharz to affect at least one-third of the entire grown-up population of Egypt.

In a pamphlet published by Messrs. Groombridge, I have already warned the public of the dangers likely to arise from the possible naturalisation of this entozoon amongst us at home; and I may add that the conditions favourable to its establishment in this country are far less evident than obtain in the case of any tropical region. Should the parasite, by any chance, be carried back by native troops to Bombay, I have little doubt as to the serious consequences which would ensue.

The third parasite on our list is a curious little tapeworm called *Tenia nana*. This dwarf cestode measures only three-fourths of an inch in length, and, with the exception of the *Tenia echinococcus* (which I described to you in my last lecture), is the smallest species I can recall to mind at this moment. Though hitherto only once found, it may turn out to be comparatively abundant in Abyssinia. In any case, its presence is scarcely likely to give rise to grave symptoms.

The parasite next to be considered—namely, *Tenia mediocanellata*—is known to be extremely abundant, not only in Abyssinia, *par excellence*, but likewise in other parts of the world. It has been said that all the natives of Ethiopia are infested with it, and it is well known that the Burates of Asia are scarcely less free. It is especially worthy of notice that the Hottentots of South Africa acquired it during their wars with the Caffres. As Küchenmeister has remarked, they "enjoyed themselves amongst the cattle of the Caffres;" and, he might have added, as a consequence, the Caffre larval tapeworms subsequently "enjoyed themselves" in the intestines of the Hottentots. It is needless to enlarge upon the habits of life which so effectually ensured this result. Let me tell you, as "one of the things not generally known," that this parasite is by far the most prevalent human tapeworm in England. I have reared thousands of its larvæ in veal and beef. It is a delusion to regard pork as the most frequent source of tapeworm in this country, since my extended practical experiences and researches directly prove the contrary. On this score the public are frequently misled by persons who practically and experimentally know nothing about the matter. The *Tenia solium*, I repeat, is comparatively rare.

But I must now pass on to the consideration of the first nematode on our list—namely, the *Ascaris lumbricoides*. This entozoon, the common round-worm of this country, has a wide geographical range, and may be said to abound wherever there is a good fresh-water supply near human habitations. It is extremely common in the Mauritius, and is probably of frequent occurrence in Abyssinia. More accurate data on this score are much required. In like manner, the *Trichocephalus dispar*, though perhaps not actually observed within the Abyssinian territory itself, is known to be tolerably common in Eastern Africa. The former is a hurtful species, but the latter is rarely, if ever, seriously prejudicial to the health of the "bearer."

I come now to speak of a remarkable parasite, the *Sclerostoma duodenale*, which is common throughout Egypt and the Nile borders generally. Though a small viviparous nematode, it is, like the *Bilharzia*, capable of giving rise to a terrible disease. It has been ascertained that about one-fourth of the Egyptian population suffer from its presence. The sexes are distinct, the males being one-third and the females one-half of an inch in length. It is not merely located in Eastern Africa, but is common in Italy, in Brazil, and probably also in some of the West Indian islands. Dr. Hermann Weber has recently published an interesting account of the ravages com-

\* Being the last of a course of four lectures "On Certain Groups of the Invertebrata," recently delivered at the London Institution.

mitted by this entozoon in Bahia, (see Path. Trans., vol. xviii.) In all likelihood, the larvæ of this round-worm abound in the waters of the interior of Abyssinia; and it is obvious that, when once taken into the system, the species may be readily transferred to other warm countries, where, so far as is at present known, it has not hitherto gained a footing. Clearly there is danger to our troops from this source.

Lastly, there is the well-known guinea-worm, or *Dracunculus medinensis*, about which every traveller and resident in the East pretends to know something. That something, however, amounts to very little, notwithstanding that the literature of the subject is enormous, and extends from the time of Moses down to the present period. Here, I fear, we have no time to enter into the question; but I remark, in passing, that there seems every reason to believe that the so-called "fiery serpents" which attacked the Israelites during their sojourn in the wilderness were neither more nor less than dracunculi. In localities where the young abound in a free state, it is apt to give rise to severe endemics, whenever the locality is visited by numbers of persons insufficiently protected. The British troops in India have often been exposed to such attacks. In some parts of Africa, within limited areas, every native is affected with guinea-worm. It should be borne in mind that the free larvæ and young occur in natural stagnant pools, and in the argillaceous mud of exposed wells, tanks, and other reservoirs. The young females penetrate the skins of persons washing with or bathing in water where they abound.

Time, I see, forbids my entering, at present, into more minute particulars respecting these parasites individually; I will therefore supplement the above observations with a few more general practical conclusions respecting the eight parasites described as more or less prevalent in Eastern Africa. Three of their number may be dismissed as comparatively unimportant. These are, *Distoma heterophyes*, *Tænia nana*, and *Trichocephalus dispar*. In the case of *Ascaris lumbricoides* and *Sclerostoma duodenale*, even though it should be necessary, for final development, that their larvæ enter the tissues of intermediary bearers, there is clearly some danger, since in an early larval stage they must reside in open waters. The last-named parasite, if transferred to Bombay, would soon permanently establish itself there. In like manner the *Tænia mediocanellata* may be yet more readily transported thither, should the Hot-tentot experiences to which I have referred prove no real warning to the semi-raw flesh eating habits of our troops. The formidable *Bilharzia* will probably be sufficiently guarded against by the avoidance of stagnant waters employed as drink, but it is quite possible that imperfectly cleansed vegetables may become the medium of their transference to new human "hosts." Lastly, in order to avoid injury from the guinea-worm, it is necessary that the feet and legs be well protected; and in reference to washing or bathing, I would especially recommend the thorough drying of the surface by the somewhat rough use of warm or hot towels. It should be borne in mind that when the military hospitals at Bombay contained 1 per cent. of cases of dracunculus, 24 admissions per 100 from this disorder arose amongst the soldiers serving on the Gold Coast. (See THE LANCET of 31st August last, p. 271.) African negroes have carried this entozoon to the island of Curaçoa, where it has since become naturalised. Let not those interested reject the warnings which our scientific researches are calculated to afford. We know, unhappily, from the parallel case of colliery explosions, how commonly people prefer to trust to blind chances rather than to sound advice based upon accurate scientific data. A very few simple precautions, you perceive, may prevent a multitude of evils both present and remote. Let them be taken; and good, which may be unseen by the ignorant, will certainly result. For my own part, I may add that the prospect of this contingent result is the only sure reward which many years of toil bring to an almost single-handed English investigator in this department of experimental and practical zoology.

## ON GASTRODYNIA.

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THERE are few more painful affections, and very few more difficult to cure, than that peculiar functional derangement of the stomach known as gastrodynia, or gastric neuralgia. We know that neuralgia may arise from functional or organic

causes. The nervous system may be sufficiently deranged to pervert the function of sensation, varying in degree from mere tingling and numbness, to positive and unendurable pain. Angina pectoris, colic, gastrodynia, irritable testicle and uterus, are all familiar examples of altered sensation, and of agonising pain in the sympathetic system, or in one or other of its nervous ganglia. When the nerves of special sense are affected, we have tinnitus aurium, muscæ volitantes, and alterations of smell and taste. Looking to organic change as one of the causes of neuralgia, we may have lesions of the brain or spinal cord, and the pressure of tumours and spiculæ of bone, irritating the nervous centres. There is pain down the left arm from disease of the heart, pain in the right shoulder from structural change in the liver, and sciatica sometimes springs from disease of the hip-joint. A cancerous growth of the stomach, in its early stages, will cause precisely the same train of symptoms as gastrodynia, arising from poverty of blood and defective assimilation. Gastrodynia occurs under a variety of circumstances, sometimes selecting for its victims the apparently strong and plethoric,—at others the temperate and intemperate; but the nervous, the anxious, and the anæmic, and those of feeble constitutional vigour, are most prone to the affection. Those who indulge largely in food and stimulants, and take little exercise, are often the subjects of it. In most cases the circulation will be found at fault, and the nervous system imperfectly nourished. It is met with in persons of sedentary habits, and is very common in rural districts among the poor, who drink strong and hot tea, and scarcely ever taste animal food. I regard tea-drinking as a most common cause, and in men I have several times traced the misery to drinking coffee after a full dinner. The lower class in the north of England, who eat oat-cake, suffer greatly from gastrodynia. These are the most obstinate cases to treat, and they will not yield to treatment till the diet is improved. This complaint is usually met with in middle life, and in women more frequently than in men. The pain of gastrodynia is peculiar and almost characteristic; it is referred to the situation of the solar plexus, to a spot not larger than a shilling in some cases,\* whilst in others it occupies the whole epigastric region, shooting through to the back, beneath one or both scapulæ. When the pain is severe, and the patient has fasted some hours (and he will avoid eating to escape the torture that ensues), the stomach becomes enfeebled, and there is much flatulence. The over-distended stomach will of itself produce the phenomena, but in addition it will press up the diaphragm, and so mechanically interfere with the proper rhythmic action of the heart, causing palpitation, dyspnoea, faintness, and even syncope. After these attacks (for the pain often comes on in paroxysms of severity), patients frequently complain of superficial soreness and pain, so that they cannot bear the weight of their clothes. Some cases are relieved by taking food (probably from the temporary increased secretion of gastric juice); other cases are greatly aggravated by it, and there is positive torture until the food is rejected by vomiting, or it has passed through the pyloric aperture. Brodie has said that, since gastrodynia most frequently occurs in atonic cases, and often depends upon flatulence, any diffusible stimulant, giving temporary tone to the stomach, and causing its muscular fibres to contract and expel flatus, will give temporary relief. In many cases there is neuralgic headache, as a sympathetic action through the vagus. When this is present, it greatly assists our diagnosis of the cause of the epigastric suffering. The pain is far greater than the ordinary pain of dyspepsia; it is not the burning pain of gastric ulcer, nor the sharp and lancinating pain of cancer; it is a pure neuralgia—a dull, heavy, gnawing pain; and whatever exhausts the nervous system, as grief, anxiety, fear, bad living, &c., favours the complaint. It is now and then attended by hypochondriacal symptoms, and depression of spirits. Anæmia is a most fruitful source of this affection, and tubercular disease of the lungs is a frequent accompaniment. As in gastric ulcer, constipation and amenorrhœa are often present, and for the same reasons,—viz., the small amount of food which is taken, and the bloodless condition of the patient.

*Treatment.*—Under this head I shall speak, separately, of the chief remedies which have been tried from time to time. If the digestive organs are much deranged, and there is acidity, with a thickly-coated tongue, and especially if there is pyrosis, then magnesia, soda, and bismuth or lithia are of service. These may not be enough to effect a cure of themselves, but

\* These are by far the most difficult cases to treat; they resist one remedy after another. I have found preparations of iron and counter-irritation most applicable to this class of cases.