

possible that this belief may not be maintained, or that further and more complete statements as to the nature, position, and appearances of these bodies may lead to great doubt as to whether they were such. That they were indicative of some disease there can be no doubt. Is there any alternative view which may be offered as to their nature, which is consistent with the other appearances, symptoms, and mode of death?

"The appearances described in the brain and its membranes indicative of some disease were—(1) Undue adhesion of the dura to the pia mater, attributed by the medical men to old inflammation, which they believed to have resulted from a blow or fall. The extent and character of these adhesions are not stated. (2) The presence of small millet-seed-like bodies in the pia mater above described. (3) A firm condition of the brain six days after death, with marked distinction of the grey and white matter. If this condition is accurately described it is very remarkable, and would, in my opinion, indicate disease. (4) General and well-marked congestion of the vessels and membranes of the brain and of the brain-substance.

"It seems not improbable that the first three of these conditions may have been the result of some old chronic changes such as are found in some forms of insanity, for (a) the hypothesis of injury to account for (1) unless there were other signs of such injury, would, I think, be inconsistent with experience. (b) These may have been small fibrous nodules, such as are found under similar conditions to (1). This must remain uncertain. (c) A firm condition of the brain so long after death in such weather would, in my experience, be inconsistent with health, and would very probably indicate a similar indurated or fibrous condition which may be associated with (1) and (2).

"If any value attaches to (4) it would probably indicate that death occurred in an attack of acute congestion supervening on the chronic brain disease. At present, as the tubercular nature of these bodies in the pia mater is maintained, the further questions arising out of the other possible view need not be discussed; but it is important that this alternative be not lost sight of."

It is only right to add, that, as I have said before, the tubercular nature of the nodules seems now to be pretty certainly established. Of the "acute congestive attack" in paralytic dementia, I do not think I have had any post-mortem experience; the statement rests on the authority of Griesinger. But by the combination of paralytic dementia with tubercle, all the facts of the case would be fully explained. Rapid wasting is not infrequent in some cases of general paralysis and other forms of insanity, even where food is taken in fair quantity.

In view of the importance of the issues, not only in the present case, but in future cases of a similar kind, it has seemed only right to state the grounds on which the view of starvation alone appears to me to be untenable. And if food was supplied in insufficient quantity, the proof of that fact must, in my opinion, rest entirely upon positive evidence as to the food actually given.

ON FILARIA BANCROFTI.

By T. SPENCER COBBOLD, M.D., F.R.S.,
PROFESSOR OF BOTANY AND HELMINTHOLOGY IN THE
ROYAL VETERINARY COLLEGE.

THOSE who take an interest in helminthological studies may remember that in the month of July last I was permitted to announce in THE LANCET (p. 70) the discovery of a new entozoon. In honour of the discoverer I named the worm "*Filaria Bancrofti*"; and further, in consonance with the views of Dr. Bancroft, I expressed the opinion that this worm was neither more nor less than the sexually mature representative of that microscopic hæmatozoon which Lewis has denominated "*Filaria sanguinis hominis*." Judging from the amount of correspondence which I have received, the announcement appears to have excited much interest abroad; but in this connexion I can only find space to express regret that I am not in a position to utilise more fully the interesting matter that has been thus freely com-

municated. To Mr. Clarence Visich, of Malaga, who was formerly connected with St. George's Hospital, I am indebted for a set of capillary tubes charged with blood from one of his chylurous patients, and also for an extended set of notes of cases bearing on this subject. My acknowledgments are also due to Dr. Sonsino, who not only brought the subject before the Biological Section at the recent Geneva Congress, but who also offered to exhibit Dr. Bancroft's specimens to the meeting. Time failed me to comply with his thoughtful suggestion.

What I have now to say is the result of personal observation, based on materials sent by Dr. Bancroft. If space permitted, I should not merely supply some further account of the entozoon itself, but should also add a few particulars of the cases furnished by Dr. Bancroft, together with copies of the photographic illustrations accompanying them. The most interesting portrait is that of a youth presenting an axillary tumour of filarious origin, for which Dr. Bancroft proposes the title "*Helminthoma elastica*" (in harmony with the more distinctive characters of the growth). It is to be hoped that his cases of *helminthoma*, *elephantiasis*, *varix*, and so forth, will be published separately.

On the 28th of August I received a small collection of entozoa. The box contained the promised *filariæ*, and also eight bottles filled with various intestinal worms taken from animals. The *filariæ* were enclosed in four small tubes and preserved in glycerine. Three of the tubes (marked 1, 2, 3) contained sexually mature worms; the fourth being labelled "*Sediment from adult Fil. sang.—young and ova.*" I shall describe their contents in succession.

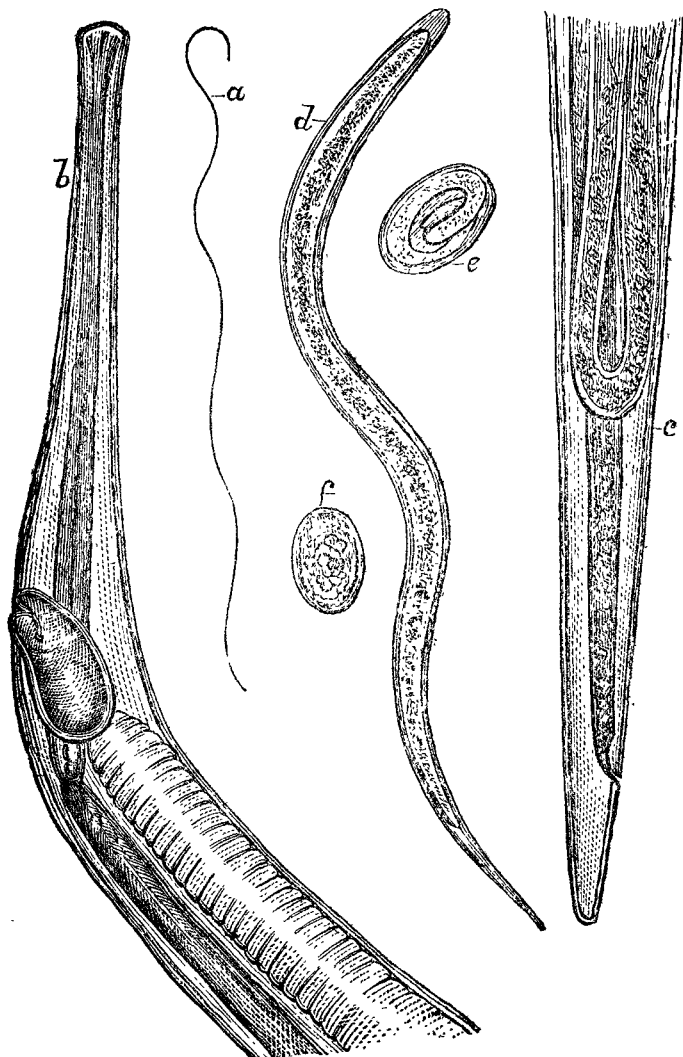
On the 6th of September I examined the *filaria* in tube No. 3. The specimen was injured and in four portions; these collectively measuring three inches in length. Although, to the naked eye, the worm appeared to Dr. Bancroft to be of the thickness of an ordinary human hair, yet actual measurement showed it to be about $\frac{1}{30}$ " at the thickest part. Notwithstanding mutilation and partial evisceration, I made it out to be a female.

At the same time I likewise examined the specimen in tube No. 1. This was also a female. Towards the centre of the body an accidental hernial protrusion of the uterine horns and intestine had taken place. In a rough lithograph sent by Dr. Bancroft, this specimen is figured and described as the "parent worm of the *Filaria sanguinis*, emitting young *filariæ* from two loops."

On the 14th of September I examined the contents of tube No. 2. In it I found one tolerably perfect female *filaria*, and also a delicate shred forming part of one of the uterine horns of another worm. This filament measured one inch and a half in length, and was coiled round the complete worm. On transferring it to a watch-glass containing water, hundreds of embryos made their escape. Owing to the transparency of the tissues, I had much difficulty in finding the reproductive outlet in the perfect worm, and the effort to find the opening was all the greater because my interpretation of Dr. Bancroft's figure had put me off the right track. It seemed so natural to suppose that the "loops" protruding from the centre of the body resulted from an ordinary prolapsus uteri, so common in preserved specimens of nematodes. At length I found the vagina and its orifice to be situated close to the head (about $\frac{1}{20}$ " from it), the anal orifice being placed within the $\frac{1}{30}$ " of an inch from the extremity of the tail. Presumably, these openings were both on the ventral line, but I could not determine the point with certainty. The vaginal pouch, $\frac{1}{100}$ " long, was crowded with embryos, and a constriction marked its junction with the uterus proper, which appeared to me to divide lower down at a distance of $\frac{1}{10}$ " from the head. Towards the tail a fold of the tuba Fallopii was seen to extend to within $\frac{1}{30}$ " of the extremity. All sections of the uterine system were crowded with germs, eggs, and embryos in their usual relative situations.

My examinations of the ova and embryos were chiefly made from the "sediment" sent in the special glass tube. The fully formed embryos were $\frac{1}{125}$ " in length by $\frac{1}{3500}$ " in breadth. They each showed a double skin, the outer envelope in the more advanced specimens leaving clear spaces at either end of the body, resulting from commencing ecdysis. I saw no trace of intestinal tube, but a central line of condensation marked an early differentiation of the somatic granular contents. The less advanced embryos

were mostly enclosed in a chorionic envelope, the smallest free embryos measuring only $\frac{1}{200}$ " in length, by $\frac{1}{300}$ " in breadth. These had no double contour. The ova, whose yolk-contents were still in various stages of cleavage, gave an average long diameter of $\frac{1}{200}$ to $\frac{1}{100}$ of an inch.



a, *Filaria Bancrofti*, female, natural size. b, Head and neck, showing oesophagus and vagina; magnified 55 diameters. c, Tail of same, showing fold of tuba, and termination of intestine; magnified 55 diameters. d, Free embryo; magnified about 400 diameters. e, Intra-chorionic embryo; magnified 300 diameters. f, Egg; magnified 360 diameters.

Such are the facts that I have been able to make out. If they do not supply all that one could desire, they, nevertheless, enable me to extend and amend the characters of the species as follows:—*Filaria Bancrofti* (mihi). Body capillary, smooth, uniform in thickness. Head with a simple circular mouth, destitute of papillæ. Neck narrow, about one-third of the width of the body. Tail of female simple, bluntly pointed; reproductive outlet close to the head; anus immediately above the tip of the tail. Length of female, $3\frac{1}{2}$ in.; breadth, $\frac{1}{200}$ "; embryos, $\frac{1}{200}$ " to $\frac{1}{125}$ " in length, by $\frac{1}{300}$ to $\frac{1}{225}$ in breadth; eggs, $\frac{1}{100}$ by $\frac{1}{150}$.

The male of this worm I have not seen.

As regards the nomenclature, I have associated Dr. Bancroft's name with the sexually mature worm as being in harmony with the binomial method and little calculated to mislead. At the same time it helps to fix both the source and date of the discovery (Brisbane, Dec. 21st, 1876). This concession in the matter of nomenclature towards a highly meritorious observer, and able surgeon, detracts nothing from the higher merits of Lewis, who first named the immature worm, *Filaria sanguinis hominis*. Both Dr. Salisbury and myself had previously been made acquainted with intra-chorionic embryos, which are, I think, the young of *Filaria Bancrofti*; but it was reserved for Lewis to discover the hæmatozoal character of the young of this worm and actually to take them from the blood. Should my determination of the genetic relationship of these embryos with *Filaria Bancrofti* be subsequently verified, it would obviously be absurd to call the adult worm *Trichina cystica*; yet Salis-

bury gave this name to the urinary parasite. It certainly was a very singular thing that when I was actually treating my little African patient for trematode hæmatozoa, it never once occurred to me that the numerous nematoid embryos, mixed with the *Bilharzia* ova, were also hæmatozoal. It was alleged that my patient had passed worms two or three inches long by the urethra. Naturally I concluded that these were the parents of the eggs and embryos, and therefore urinary. The inference was wrong; but it has since become instructive, as showing how near one may go towards a discovery without actually making it.

Appendix.—Since the above was written Dr. Lewis has himself furnished additional means of identification. His mature *Filaria sanguinis hominis* and my *F. Bancrofti* are clearly the same species. I will go further, and express the opinion that all the various larval forms severally described by Salisbury, Lewis, Sonsino, Wücherer, Crévaux and Corre, Silva-Lima, Bancroft, and myself, are referable to one and the same species. If Lewis's trinomial name for the adult worm be adopted in place of *Filaria Bancrofti*, I have personally no objection.

Portsmouth-road, W.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ST. MARY'S HOSPITAL.

INJURY TO THE PALMAR ARCH; TETANUS AND HÆMORRHAGE; LIGATURE OF THE BRACHIAL ARTERY; RECURRENT HÆMORRHAGE; LIGATURE OF THE RADIAL AND ULNAR ARTERIES; RECOVERY.

(Under the care of Mr. HAYNES WALTON.)

For the notes of this complicated but instructive case we are indebted to Mr. Rayley Owen, house-surgeon.

C. F—, a fine-looking boy, aged three years and a half, was brought to the hospital on the 26th of June, with severe hæmorrhage from the palm of his left hand. The father stated that while running his son fell and cut his hand on a piece of a glass bottle. A small but deep wound over the deep palmar arch of the left hand resulted. Hæmorrhage was stopped by tight pressure, and the boy progressed favourably until July 4th, when bleeding began again suddenly; and in this instance also it was arrested by pressure; but as it broke out again next day, the lad was admitted into the children's ward. On admission the temperature was 102.2° and the pulse 125. The father alleged that on the preceding day the boy complained of stiffness in his jaws and difficulty in swallowing, as well as of increased pain in his hand and arm; and he further stated that while standing the body was suddenly arched forwards and the head bent back. The wound was suppurating, and had an offensive smell. The child was quite sensible, but could scarcely open his mouth or put out his tongue, and he complained of pain in his chest, face, and head, but none over his spine. Two grains of calomel, and afterwards two five-grain mercury-and-chalk powders, were given, after which the bowels were well opened; four grains of bromide of potassium and one drop of tincture of opium to be taken at night. In the evening the hands and mouth began to twitch, the chest and abdomen became quite rigid, the body arched, and the face had a most peculiar grin. The severity of the symptoms was much increased when the temperature was taken, which was 100.8° . The spasm, which varied in intensity, recurred every fifteen minutes. Trismus was most severe, and it was with difficulty that the boy could be got to swallow.

On July 7th he was rather better, and the attacks were not so frequent, but in the evening bleeding recurred, but