was enlarged, and the abdomen markedly distended. The temperature reached the normal line on the thirtieth day.

The post-mortem appearances are also similar, as the following short notes of necropsies performed by Drs. FitzHugh and Handson demonstrate:


**Case VI.** Private H. B., diagnosed as enterica, with perforation. Necropsy: Typhoid ulceration of ileum, towards the lower part of which was a large perforated ulcer. General suppulsive peritonitis.

**Case VII.** Private G. W., diagnosed as enterica with broncho-pneumonia. Necropsy: Typhoid ulceration of ileum; broncho-pneumonia at both bases.

**Case VIII.** Private G. K., diagnosed as enteric. Necropsy: Typhoid ulceration of ileum; large spleen; pus in both parotids.

**Case IX.** Private A. W., diagnosed as enteric, with suppurative peritonitis. Necropsy: Typhoid ulceration of ileum and cecum; large quantity of dark blood in the intestines; towards the lower part of ileum a large ulcer, at the base of which was adherent clot; large soft spleen.

**Case X.** Private E. T., diagnosed as enteric; hemmorhages. Necropsy: Typhoid ulceration of ileum and cecum; suppurative arthritis of knee followed by enteric. Necropsy: Typhoid ulceration of ileum; large spleen; suppurative arthritis of knee.

**Case XI.** Corporal A. B., diagnosed as typhoid enteritis. Necropsy: Typhoid ulceration of ileum; large spleen; pus in both parotids.

**Case XII.** Private J. A., diagnosed as enteric, with pneumonia. Necropsy: Typhoid ulceration of ileum; broncho-pneumonia at both bases; large spleen.

**Widal’s Reaction.**

In conjunction with Mr. Owen Richards I have also obtained in many cases typical clumping with a typhoid bacillus brought from England, and kindly given me by Dr. Eyras, of Charing Cross Hospital; for instance, in Case XI.

In Case IV above quoted (Driver S.) a typical reaction was given with a dilution of 1 in 20.

**Value of Inoculation.**

It is, perhaps, premature to give an opinion with regard to the value of inoculation; but, as far as I can judge, it does not have a marked effect in mitigating the attacks. Two of our patients who died of enteric had been inoculated.

**Dysentery followed by Enterica.**

Several of our patients have suffered from dysentery and enteric fever, the latter immediately following the former.

**“Simple Continued Fever.”**

Many cases are sent to us with a diagnosis of “simple continued fever.” Most of these are cases of enteric fever; nevertheless, now and then a case is met with in which the only symptoms are pyrexia and malaise, and which do not come into the category of any known diseases. It is possible that some of these are cases of influenza. The following is an example:

**Case XIII. History.** Private L., aged 19, admitted on May 1st under the care of Dr. Henham, had been ill for some days, and had had bad abdominal pain followed by diarrhcea; the stools were yellow. The temperature had been taken now and again, and had been found to range between 99° and subnormal. Condition on Admission.—The tongue was furred, brown, and dry; the temperature was 100° F. He had no headache; the abdomen was not distended; he had no abdominal pains or tenderness; the spleen could not be felt; there were no epigas and no cough.

May 4th. The temperature was still raised in the morning but usually lower at night. It varied between 101° and 96° F. The bowels were somewhat constipated; the motions dark and hard.

May 5th. The tongue was still furred, white, but was now quite moist. Still there were no spots; the spleen was not palpable, and the abdomen not distended. The patient and his bowels were still rather confined, and the temperature had been lower for the last few days.

May 14th. The temperature was normal and he felt quite well, and on May 21st it was noted that the temperature had remained normal. He had been on milk diet all along.

This patient never had any pain while in the hospital, and the only evidence of his illness were the furred tongue and the pyrexia. His blood was tested on May 9th but no clumping was observed.

**Absence of Malaria.**

Dr. Saunders informs me that malaria is not infrequently diagnosed as arising in the Karroo, but that he has never met with a case in his own practice. We have had cases of malaria here in which the malaria parasites were present in the blood, but in all these instances the patients had previously suffered from malaria in India or elsewhere. We have, however, not met with a case of malaria arising in South Africa.

**A Recent Observation on Filariasis Nocturna in Culex: Probable Mode of Infection of Man.**

By George C. Low, M.A., M.B., Edin., Crags Scholar, London School of Tropical Medicine.

[With Coloured Plate.]

While working during the last three months in the London School of Tropical Medicine under Dr. Manson on a series of filariated mosquitos (Culex ciliarius) forwarded to the latter by Dr. Bancroft, of Australia, I have been able to add some facts to our knowledge of the life-history of Filaria nocturna, facts which have special reference to the probable mode in which the human subject is infected by this parasite.

They give, if only indirectly, strong support to the inoculation theory of malaria, and add an additional argument, if such be required, for pushing forward the schemes now on foot for the protection of the human body from mosquito bite. As is now well known, the filaria embryo, after being swallowed by certain species of mosquito, undergoes a metamorphosis in the thoracic muscles of these insects. In the stomach (Fig. 1) it casts its sheath. It then quite the stomach and enters the thoracic muscles (Figs. 3 and 4), in which it passes through various changes (Figs. 3 and 4). These result in the acquisition of vastly increased size, a mouth and alimentary canal, and a peculiar trilobed caudal appendage (Fig. 7). Until Bancroft’s recent observations it was supposed that the filaria in the thoracic muscles of the insect had, being generally believed to occur in the water on which the insect had laid her eggs for the first and last time—quitted the body of its defunct intermediary host, entered the water, and through this medium obtained access to the alimentary canal, and thence to the lymphatic system of man. The principal reasons for this supposition were:

(a) That mosquitoes confined in vessels after they had fed on human blood deposited their eggs about the end of a week and almost immediately thereafter died, and

(b) That the filaria, on the completion of its evolution in the mosquito exhibited remarkable activity when placed in water, and a capacity for living in this medium for, at all events, several hours—an activity and capacity suggesting that water is its natural habitat at this stage of its life.

Ross, and subsequently Bancroft and others, have now shown that the female mosquito if fed can go on living and laying for many weeks after the meal on human blood and after depositing her first batch of eggs, provided she is supplied with nutriment, whether in the form of animal or of vegetable juices. It is manifest, therefore, that any filaria she may contain must find some other means for quitting the body of their intermediary insect host, and of getting access to the tissues of the definitive human host. Bancroft has made two attempts to introduce a filaria into the abdomen of man while still in the mosquito—a somewhat improbable as well as unnatural event; (b) that it might be stimulated to re-enter the oesophagus of a mosquito when the latter came to feed again on a human subject, and so creep along the proboscis by the natural channel and thus into human tissues. How near suggestion (b) is to the truth the following observations show:

To study the anatomy of the mosquito in reference to any possible migrations of the worms, sections of filariated mosquitos were cut after embedding in cellloid and stained. In serial sections of infected insects, killed at various times both before and after the final stage of the metamorphosis, it was found that the young filaria, after reaching their highest stage of development in the insect, instead of lying passively in the thoracic muscles, leaped out of that tissue, and in the vast majority of instances, travel forward in the direction of the head of the mosquito, and pass into the loose cellular tissue which abounds in the prothorax in the neighbourhood of the salivary glands. Although the large majority of the filaria take up this position very constantly, an occasional straggler is seen in the tissues between the thorax and abdomen, or in the abdomen itself even as far back as the Malpighian tubes, or in the neighbourhood of the ovaries. The situations last named could be expected to be the point of departure of these exceptional stragglers. If in these exceptions it will be found that the worms, after a short stay in the prothorax, pass along the neck, enter the lower
part of the head, and coil themselves up in the loose connective tissue immediately below the cephalic ganglion and the salivary duct (Fig. 5). Rarely are they found above the cephalic ganglion. From the head they can be traced, in fortunate sections, passing into the proboscis; not along the salivary duct, as is the case with the malarial parasite, for this channel is manifestly too minute to accommodate a body relatively so gigantic as the filaria; not along the osophagus or pharynx, as Bancroft suggested; but by making an independent passage through the base of the labium, forwards along the proboscis between labium and hypopharynx amongst the stilets. Here I have frequently found them stretching along almost the entire length of the proboscis, the head being invariably in advance (Fig. 5 and 6). Strange to say two worms nearly always lie together in the proboscis, their heads being, so to speak, tête-à-tête.

It is difficult to avoid the deduction that the parasites so situated are there normally, awaiting an opportunity to enter the human tissues when the mosquito next feeds on man. The sections when made on filariated insects at any period after the third week in every instance contained parasites either in the head, or in the proboscis, or in both.

It is interesting in connection with this fact to remember that these filaria have, after their feeding on human blood, frequently frequented fed on fruit juices. To keep them alive for the necessary time to permit of the evolution of the filaria this mode of feeding had to be resorted to. From this we may infer that the parasite has the power of discriminating between vegetable and animal juices. For instance, in this faculty of discrimination our mosquitos would have shown no filaria, as the parasites might have been expected to have passed out into the bananas on which they had been feeding long before the date at which they were killed.

Without actual and somewhat dangerous experiment it would be rash positively to assert that the filaria is inoculated directly into man by mosquito bite. Nor may we absolutely ignore the possibility of its gaining access to the human tissues through the medium of water or of vegetable into which it might have escaped by way of the proboscis, the cloaca, or along with the insects’ eggs. But the evidence of design implied by the position taken up by the parasite in the proboscis, and its declining to quit this position when the mosquito feeds on vegetable juices, is suggestive, and almost prove that the mosquito bite is the natural and, probably, the constant and only opportunity for the filaria to enter upon its next and final stage of development in the definitive host.

It is interesting to note that although degenerative changes appear to be produced in the muscles of the animal especially by the more advanced forms of the filaria, nothing of the nature of inflammatory change or of encystment, as in the case of trichina infection of vertebrate muscle, is ever observed. And further, that the rate of development is not uniform; sometimes advanced forms are found as early as the eleventh day, or immature forms so late as the third week from the presumed time of infection.

Bancroft is inclined to doubt Manson’s statement that the filaria casts its sheath before quitting the stomach of the mos-quito; in several of my sections the empty sheath is plainly visible in the blood contained in the stomach, thus proving that ecdysis is not an artificial phenomenon.

**DESCRIPTION OF COLOURED PLATE.**

Fig. 1.—Filaria nocturna in the blood in the stomach of newly fed mosquito. 

Fig. 2.—F. nocturna lying in thoracic muscle of mosquito after quitting stomach. 

Fig. 3.—F. nocturna in thoracic muscle of mosquito 9 days after feeding. 

Fig. 4.—F. nocturna in thoracic muscles 11 1/2 days after feeding; development nearly complete. 

Fig. 5.—F. nocturna in head and proboscis of mosquito 20 days after feeding. 

Fig. 6.—High-power view of another section showing exact route by which the filaria enters the proboscis, entering base of hypopharynx. 

**A CASE BEARING ON THE PARASITIC NATURE OF MAMMARY CANCER.**

By A. MARMADEUKE SHEILD, M.A., F.R.C.S.

As all evidence bearing upon the important question of the parasitic origin of cancer of the breast is of importance, I wish to place the following remarkable case shortly on record, for a reference to it may in future years be of utility.

In June, 1898, a married woman, aged 36, came to me with irritation and redness about the left nipple. The area affected was of trivial extent, about 2.3 cm. in diameter, and the symptoms had existed for six months. Some simple remedies were applied, and I watched the case for a few weeks, but by no means certain of the diagnosis. At length certain appearances of the well-known “raw” red character inclined me to the belief that the disease was of the nature of malignant dermatitis (Paget’s disease). This view was shared by a full meeting of the Dermatological Society, and moreover the universal opinion was expressed that the nipple and adjacent skin should be freely removed. I may add that so-called psorospermata were found in scrapings of the patch, but there was no perceptible deep induration or signs of malignancy present. Wishing to take advantage of the prevention of cancer, I went further, and advised the patient to submit to removal of the whole breast. To this after much reluctance she consented, and the mamma and pectoral fascia, with a large area of skin, were removed. I did not remove the axillary glands, because I believed the mamilla of the breast had not yet developed, and that I was exercising merely a precautionary measure.

The affected skin was kindly examined by Dr. Rolleston, who found the usual signs of malignant dermatitis, but no evidence of carcinoma in the breast beneath. I may add that I made a special note that to the naked eye themammary substance was quite unaffected.

I all went well until the present year, when in the month of April a patient noticed a small swelling in the region of the sternal end of the scar. This swelling was hard, about the size of a large pea, and red in colour. I excised it freely in May. Examination shows it to be spherical-cellied carcinoma, with much fibrous tissue. The sections are in the possession of Dr. Rolleston, and he informs me that they exhibit extreme vacuolation of the epithelial cells, appearances which have in the past often been described as psorospermata.

This is a disappointing but remarkable case shows that the infective nature of so-called malignant dermatitis of the nipple is very extensive and insidious, and takes place far earlier than is generally believed. We can hardly doubt, in this instance, that there was a connection between the two cases. There was certainly no cancer in the mamma to be detected, and I can hardly believe that “cell proliferation” could have existed or spread so far. The mamma was very voluminous, and the distance from the affected patch of skin to the secondary nodule considerable, at least 6 to 8 inches. It is hoped that this case will be read and commented upon by those working at the subject of the parasitic origin of cancer.

**MALARIA IN THE SUB-ALPINE REGION.**—Professor Pagliani, President of the Piedmontese Society of Hygiene, has proposed the establishment of a propaganda for the prevention of malaria in the Sub-Alpine region. A meeting was held at Verceili, at which Professor Biuzzi, Professor Bozzolo, and others were present.

**AMERICAN THERAPEUTIC SOCIETY.**—In pursuance of a proposal made by the Therapeutic Society of the District of Columbia, for the establishment of an American Therapeutic Society, a meeting was recently held in Washington, when the new Society was organised. Dr. Horatio C. Wood was elected President. Among the members of Council we note the names of Professor W. Oser of Baltimore, Professor H. J. Hare, Dr. J. V. Shoemaker, and Professor Tyson of Philadelphia. The Society will become affiliated with the Congress of American Physicians and Surgeons, which meets in Washington every year. The meetings of the American Therapeutic Society will be held annually.