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 œsophagus or pharynx, as Bancroft suggested; but by making an independent passage through the base of the labium, and pushing forwards along the proboscis between labium and hypopharynx amongst the stiletts. 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 insects after their meal on human blood had subsequently frequently fed on fruit juices. To keep them alive for the necessary time to permit of the evolution of the filariæ 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 did it not possess this faculty of discrimination our mosquitos would have shown no filariæ, 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 tissue 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, are 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 mosquito, 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 mosquito; 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, $\times 60$. Fig. 1a, the same, isolated, $\times 125$. (Australia.)
 Fig. 2.—*F. nocturna* lying in thoracic muscle of mosquito after quitting stomach; first day after feeding, $\times 60$. Fig. 2a, the same, isolated, $\times 125$. (China.)
 Fig. 3.—*F. nocturna* in thoracic muscle of mosquito 9 days after feeding. Great increase in size; commencing differentiation of alimentary canal. (Madras.)
 Fig. 4.—*F. nocturna* in thoracic muscles 11½ days after feeding; development nearly complete. (Australia.)
 Fig. 5.—*F. nocturna* in head and proboscis of mosquito 20 days after feeding. Shows parasites coiled up below cephalic ganglion and extending along proboscis between labium and hypopharynx $\times 60$; part of another filaria can be seen passing along the neck from the prothorax to the head. (Australia.)
 Fig. 6.—High power view of another section showing exact route by which the filaria enters the proboscis. The salivary duct is seen entering base of hypopharynx. (a) Fragments of filaria; (b) labrum; (c) base of hypopharynx; (d) labium; (e) pharynx; (f) cephalic ganglion; (g) eye; (h) muscle; (i) salivary duct opening into base of hypopharynx. (Australia.)
 Fig. 7.—*Filaria* dissected out of mosquito 50 days after feeding. The tail with its appendages shown more highly magnified. (Australia.)

A CASE BEARING ON THE PARASITIC NATURE OF MAMMARY CANCER.

By A. MARMADUKE 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, as I was 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 psorosperms were found in scrapings of the patch, but there was no perceptible deep induration or signs of cancer present. Wishing, as I thought, to make sure 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 that carcinoma 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 appearances 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 the mammary substance was quite unaffected.

All went well until the present year, when in the month of April the patient noticed a small "lump" in the skin near 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 spheroidal-celled 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 psorosperms.

This 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 more early than is generally believed. We can hardly doubt, in this instance, that there was a connection between the two affections. There was certainly no cancerous change 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 Vercelli, at which Professor Bizzozero, 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. Osler 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 three years. The meetings of the American Therapeutic Society will be held annually.