urine and they have not reappeared. On October 11, this patient told me he had had no return of his hematuria, though he was still being treated for renal calculus. Microscopic examination of his centrifugalized urine showed absence of ova.

The other cases that I have had under treatment by tartar emetic injections have all shown improvement or cure; but many that have recovered from the direct effects of the parasite are still suffering, as the above case is suffering, from complications arising from the disease.

In one case, where the ova have disappeared from the urine for several years, the patient is still subject to recurrent hemorrhage from a papillomatous growth of the neck of the bladder which has recurved after successful removal a year ago.

Another is suffering from a severe cystitis of several years' duration, apparently caused by the presence in the urine of staphylococci, which do not respond to autogenous vaccines.

In another case, although the ova have disappeared for several years, an intractable Bacillus coli infection remains.

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A NOTE ON DERMATOPHILUS PENETRANS.

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The Chigger Flea (Dermatophilus penetrans), during the recent campaign in East Africa has been a positive scourge in certain localities. As there is an obvious scarcity of practical knowledge in the available literature on this flea a few notes may be useful.

The distribution of the parasite in Africa is very extensive. It occurs on the Western and Eastern sides of the continent, around the Great Lakes, and here and there right across the continent. It has also spread across to Madagascar, and, by the movements of the troops no doubt, will have been found to have been carried into many parts of Africa hitherto free from the pests; particularly towards the South.

As is well known, Chiggers flourish best in warm, dry sandy places, so that the coastal line of Africa is admirably suited to them.

I first made personal acquaintance with these parasites soon after landing on the East coast, and have ever since looked upon them as an enemy not to be regarded with contempt.

When the British forces landed at Lumbo on the mainland coast opposite the island of Mozambique, in Portuguese East Africa, the Base Hospital encamped at the edge of the low cliffs on the sea-shore, and hospital tents and officers' quarters consisted of E.P. tents and marquees. The ground was of a sandy nature, but contained enough humus to support a scanty vegetation and the ubiquitous cocoanut palms.

Lumbo was free from Chiggers, as far as I can ascertain, until a few weeks after the landing of the troops. Anyhow, we lived comfortably free from attack for some weeks after we got established.

In the meantime large numbers of Ascaris, native porters and white troops had been landed and had encamped over a wide area. Among these troops there
were certainly some who brought in the pest with them, for within a few weeks there were quite a number of men reporting for treatment.

One night, soon after I had retired to bed, I noticed an intolerable irritation of my toes. I threw back the sheets, and with a Deitz lamp examined the lower end of the bed as best I could while under a mosquito-net. I could see nothing that I thought might account for the trouble, and I suspected that my native servant, or "boy," had probably aired the bed-clothes that morning as usual and had carelessly spread them on some bush where the "buffalo" or "velvet" bean grew. The hairy covering of this bean is easily rubbed off and produces severe cutaneous irritation.

In the morning I noticed that the skin around the toes looked slightly reddened and I lectured my "boy" on his supposed stupidity. The irritation had ceased, however, and until a few days later the incident was forgotten. Some four or five days afterwards I had been on a long march one afternoon and noticed that the second toe of my right foot was painful on my return. I put this down to pressure due to a not too well fitting boot, but during the night the pain was severe and the toe throbbed. Thinking that I must have got it infected in some way, I was just about to put on a light pair of socks after my bath in the morning to give more room to the toe in the boot, when my "boy" noticed the trouble and examined the foot. He complacently remarked "du-du" (the Swaheli for "insect"), and asked for a needle.

I realized then, with a feeling of disgust, that I had become a victim of the Chigger-flea.

My "boy" operated upon the toe and removed six parasites from various parts of the foot around the toes. The parasite that had caused the discomfort was fully developed, and the rest were in different stages of gestation.

When the operation was over, and the sites had been treated with iodine, I said to myself, "Never again, if I can help it," and determined on stringent prophylaxis. My tent-companions were somewhat amused at the incident and my misfortune, so I retorted "Have your own feet examined!" Somewhat to my consolation and own amusement it was found that they too were the victims of this pest, and the discovery produced consternation in the erstwhile humorists.

Recollecting the night of my disturbance in bed, I remembered that I had half consciously noted a few barely visible animated black dots on the white sheets, which I had brushed off. Not thinking of Dermatophilus, or then realizing that these parasites would actually enter one's bed, I had regarded them as some species of the hosts of micro-insects that swarm everywhere in the tropics and are negligible. Undoubtedly, however, these black dots had been invading Dermatophilus and the irritation of the toes was due to their attack.

Dermatophilus will bite and parasitize both during the day and night, but these parasites are far more nocturnal than diurnal in their activities, and one's chance of becoming a host is almost nil in the daytime compared with what it is in the early hours of the evening and the hours of darkness. This fact I found is well known to the East African natives.

During my stay at Lumbo after this, Dermatophilus became a severe pest. However, I was never again troubled, by adopting the following simple precautions: After my bath in the late afternoon each day I rubbed into the toes and soles of the feet a little toilet vaseline, and then put on a pair of thick woollen socks.
an additional precaution, a little Keating's insect powder was sprinkled into my mosquito-boots. My "boy" was instructed to air my bed-clothes in the sun each day, supporting them on a cord well above the ground, and when making the bed later on in the day to dust a little Keating's between the sheets at the lower end of the bed.

The value and success of these measures was well proved, even in my own tent, because at first my tent-companions would not be bothered altering their routine. They were repeatedly victimized, until they became at length sadder and wiser men. By adopting the same prophylaxis they acquired complete protection also.

Even a fully developed *Dermatophilus* in the human skin may be easily overlooked. In the white human skin, however, the parasite may be recognized by a typical area. There is a small black dot surrounded by a circular blanched area of skin, which is again surrounded by a small margin of inflammation. The site under which the parasite lies is often not raised above the normal skin level.

To remove the parasites, use only a moderately sharp-pointed instrument, such as a clean blunt pin, or there is danger that the body of the insect will be pierced, leading to a greater chance of septic infection.

Remember that the parasite is encapsulated only, and is not adherent to the skin at all. Commence by gently introducing the point of the blunt pin into the central black dot. Clear the skin back all the way round until the parasite can be seen within, and until at last the pin may be thrust behind it, and the parasite cleanly enucleated. In this way only a small cavity is left in the skin, with little or no resultant bleeding, or likelihood of sepsis. The area should be treated antiseptically, however, after the parasite is removed.

The parasites that have been removed should be burnt, or there is danger that some of their eggs may hatch and give rise to a new generation.

I was interested to see that the natives of East Africa were alive to this danger, and it is the custom to screw each parasite up in a small piece of paper and set it on fire.

Occasionally cases were seen where the parasites had entered the skin around the fingers. These cases were all among drivers in the Mechanical Transport, and were accounted for in the fact that the drivers had often to get down on their hands and knees in the dust to attend to their vehicles.

The natives believe that it is only at night that infestation takes place, and they are, in the main, right in this belief I am sure. Also they maintain that only during the dry, rainless days are the parasites active and that rain and wet weather banish them for the time being. Another observation that I am inclined to support.