These drafts came out to South Africa direct from England, and on landing were at once moved up to Pretoria. None of them had had any previous foreign service, being with one exception lately recruited, so that no previous infection seemed possible. All these affected men were known to have bathed in, and in some cases to have drunk from, the Spruit below the camp. Of the six cases occurring in the draft of 206 men arriving in November, one reported sick with ova in the urine twelve weeks after arrival in Pretoria, one after fourteen weeks, three after four months, and one after seven months; but in the latter case the man asserted that he had had the disease for about four months before reporting sick. Among these cases, where there is no possible doubt that the disease could only have been contracted during a residence, at the most of seven months, in an infected district, the incubation period was shown, in one case at least, to have been not more than twelve weeks.

I am, &c.,

W. W. O. BEVERIDGE,
Major, R.A.M.C.

London,
August 3rd, 1907.

WANTED, AN EXPLANATION.

TO THE EDITOR OF "THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—There are two points in Colonel Forman's paper and in his later letter that are, I think, of some special interest; first, the absence of mosquitoes; and second, his remark that "fish never eliminated mosquitoes anywhere, and never will." It is a curious but interesting fact, well known to occur in all orders of insects, that certain species in their distribution are sometimes prone to be extremely local for no apparent cause. This has been remarked on by Wallace, and discussed in his work, "Darwinism," though, as I am away from a library, I am unable to give the exact reference. To give a familiar example: the swallow-tail butterfly (Papilio machaon) is confined in England to the Fen district of Cambridgeshire, though across the Channel and throughout its enormous geographical range, it is a common garden insect, like our cabbage whites. This narrow distribution in England is not due to the local growth of the food plant, which is the wild carrot and fennel, both of common occurrence throughout the Southern counties, at any rate. Again, in the smaller moths (Micro-lepidoptera) it is not unusual to find a species common, or perhaps abundant, on one particular bush, and not a specimen on any other to all appearance precisely similar in the whole district. It is difficult to account for such extreme cases, but so far as my experience goes, it generally occurs in species which are at the geographical limit of their distribution, and where, to maintain even a precarious existence, they have to seize upon every factor of a favourable
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nature. These factors may be, and doubtless are, unrecognisable to our senses. I am not contending that the absence of mosquitoes at Sarant Wadi is a sign that they are at the limit of their geographical distribution, the absurdity of which is obvious, but to point out that their absence from a locality where we should expect to find them is not in itself an unique occurrence, and should not greatly surprise us, when we consider that such phenomena are common to all orders of insects—the Diptera included.

Colonel Forman’s observation regarding the effect of the presence of fish destroying mosquitoes is quite different to mine, and I am rather surprised he finds himself justified in expressing such a confident opinion regarding their inability to get rid of these insects. My investigations tend very much in an opposite direction, and I may say that Mr. E. Ernest Green, the Government Entomologist, Ceylon, holds the same views as I do, and I judge it of some importance that the advantages of preserving fish for the purpose of keeping down mosquitoes should be widely recognised and acted upon. If Colonel Forman had written “frogs” instead of “fish,” I should certainly have agreed with him.

In Colombo there are two fairly extensive lakes, one nearly a mile in length, which lies just at the back of the Military Hospital and Married Soldiers’ Quarters, and also, I may remark, at the bottom of my garden belonging to the quarters next the hospital. These buildings are within a hundred yards of the lake. There was in my time a singular absence of mosquitoes, an absence which not only surprised, but I need hardly say, delighted me greatly. No mosquito nets were in use in the hospital, and only for two or three months in the year did I use them myself, neither did the married families require them. I do not say that mosquitoes were entirely absent, but in a locality where one might expect them to swarm, they were remarkably few in number. This was usually attributed to the strong sea breeze, but though this possibly was of some benefit, it was not the prime factor. I frequently searched the lake for mosquito larvae, and satisfied myself there were few or none, and I attributed their absence to the fish. About the year 1898, a species of dipterous insect, the name of which I forget for the moment, became not only increasingly common, but a positive plague; they swarmed in myriads at dusk and after dark along the margins of the lake and in the dwellings near it, making the lives of the inmates almost unendurable from the swarms attracted by the lights. Sheltered walls in the day-time were black with them; fortunately they had no biting powers. The services of the Government Entomologist were requisitioned, and an exhaustive report issued, the main point of which was that the fish in the lake should be strictly preserved to devour the larvae of the “lake flies,” as they were called. I may mention parenthetically that the mosquitoes did not increase in the same ratio, the reason doubtless being that the surface-feeding larva of the Culex was a readier prey for the...
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remaining fish than were the partially concealed larvæ of the "lake fly."

It would be interesting if one of the Corps now stationed in Colombo would state: first, whether fishing is allowed, and secondly, whether the "lake flies" are still numerous, and to what extent.

It must have been some time previous to this that Mr. Green and I were discussing the mosquito question when strolling through the Botanic Gardens at Peradenia. He remarked to me that he had been searching for larvæ without success in the ornamental waters of the gardens, though they were swarming everywhere else. We both attributed their absence to the small fish of the minnow tribe kept in these fountains, and we then and there set to work to investigate, and though both of us were fairly proficient in this branch of sport we completely failed, and the conclusion was irresistible that the fish were responsible for our empty bag. These small fish, many of the size of whitebait, are of universal distribution in India and Burma, and are found in what would appear to be impossible situations. They abound in the rice fields of Burma, and appear, much to our astonishment, in considerable numbers after heavy rain in what were previously dried-up puddles.

Until an investigator, with more time on his hands than had Colonel Forman, has definitely proved the absence of these small fry in the water round Sarant Wadi and "in the innumerable shallows that no fish, however small, could get into," I am inclined to think the "fish theory" will satisfy local conditions, and no hypothesis, however fascinating, is required.

Ivybridge,
S. Devon,
August 12th, 1907.

N. Manders,
Lieutenant-Colonel, R.A.M.C.