

have had of the disease originating in the Nile basin. It suggests the possibility that many cases may have occurred, but because of the trivial nature of their symptoms, they have either not noticed their condition or not thought it worth troubling about.

I think Lieutenant-Colonel Simpson's remarks and his quotations from Major Smith's report on this disease, on pp. 664-7 of the December number of the *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, 1910, should be re-read with these few notes of mine.

#### QUININE AS A MALARIAL PROPHYLACTIC AND CURATIVE.

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IN a recent article ("Quinine as a Malarial Prophylactic; a Criticism," *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, November, 1911) Captain P. S. Lelean questions the use of quinine as a prophylactic against malaria. I think most medical officers in India must be very disappointed with the results of the use of quinine for this purpose. In many of the most malarious stations quinine has been used for several years, yet the disease still continues with unabated force, especially in bad years such as 1908. I was always very sceptical myself of quinine as a prophylactic, but was partly converted when I read Ross's book on "Malaria," where the results of this practice in Italy are given. When the number of deaths from malaria, checked by European doctors, falls from nearly 16,000 in 1900 to 3,000 in 1908, and there is a corresponding fall in the admissions both amongst the civil and military population, brought about entirely by the use of quinine, one cannot help thinking there must be something in it.

Possibly, the reason for the success in Italy compared with that in India is in their method of administering the drug. In India it is difficult to get the troops to parade every day, so generally quinine is given twice a week; also the insoluble sulphate is the salt usually administered, while in Italy soluble salts like the bisulphate are given in doses of  $6\frac{1}{2}$  to 10 gr. every day according to the prevalence of malaria in the locality.

It is generally considered that parasites are most easily killed by quinine in their early stages, so the Italian method of dosage should be the better, especially if the quinine is given just before dusk in order that it may be present in the blood at the most likely time of infection. The daily use of quinine is also the method recommended by Ross, and I think it well worthy of a more extended trial in India.

In conjunction with this subject the long continued use of quinine as a curative of malaria is worth consideration. There is no doubt that quinine is a specific for malaria while an attack is in progress, but whether

it should be continued for long periods after the fever is over is another question. Personally, I had an attack of benign tertian more than a year ago; I only took quinine for a week after the fever left me, but I have had no recurrence. Similarly, I had an attack of malignant tertian this year and only took quinine for a similar period, with no recurrence up to the present. Ross recommends a "rigorous quinine treatment for four months," but the Italians, on the other hand, insist that quinine does not have much effect on relapses; Caccini especially, who has studied the question very carefully, holds this belief. One instance he gives is worth quoting. A band of seventy-five Calabrian workmen had become infected in July, 1900, and subsequently took quinine until December, a period of about five months. Fourteen months after the first infection sixty-two of these men were exposed to a very severe wetting with rain, while the remaining thirteen found shelter. Within a week every one of these sixty-two men was attacked with fever, but those who had not been exposed escaped. What was the use of a continued course of quinine with all its discomforts in these cases? It seems that after an attack of malaria some great depression in vitality is sufficient to produce a relapse, even if much quinine has been taken.

This accounts for the great number of enteric patients who at the beginning of their illness combine with it an attack of malaria. In the case of an officer who had not had an attack of malaria for fifteen years I found malignant tertian rings in the blood during his first week of illness from paratyphoid fever.

I think that in India we might easily get a solution to the question of whether a long course of quinine is necessary by watching malarial convalescents in those Himalayan hill stations that are above the malarial zone.

When Ross was experimenting with birds he found it was sufficient to move them to a cool place for their parasites to diminish in number. A year or two ago a statement was published describing how the malarial convalescents at Kasauli were treated, and reporting the excellent results that were obtained by the continued use of quinine, but unfortunately no control was given of malarial convalescents who took no quinine. I would suggest that half the malarial convalescents at Himalayan stations be treated with quinine and half without any at all, except, of course, for actual attacks. We should soon get some results which would show the true value of long-continued courses of quinine after attacks of malarial fever.