is but a phase of its therapeutic action; it is the application of the drug to the parasite and not an immunizing of the body against the entrance of the parasite we have to deal with; therefore, he firmly believes that quinine, as long as the malarial infection it will prevent its development—the development though not the introduction of the germ. Further, that as some types of the parasite are highly amenable to the drug given therapeutically, similarly its prophylactic power will be greater against them; thus we should certainly expect it to be a timely prophylactic as against the benign tertian but less active against the malignant tertian. The value of the drug is apt to be underrated in consequence of its being given to patients in a fashion and often under conditions in which it cannot be absorbed, as in states of severe gastro-intestinal catarrh. Such failures should be eliminated in assessing its prophylactic value. I should recommend that in future experiments in prophylaxis be made with the aid of the microscope that this is the case to the particular type of malarial parasite it is used against, and also that the gastro-intestinal condition of the individual experimented upon be investigated and recorded.

V.—Lieutenant-Colonel James C. Marsden, I.M.S., Madras.

Lieutenant-Colonel Marsden said: I have invariably given quinine both as a prophylactic and as a therapeutic agent for the last twenty years, and the results have nearly always been satisfactory. I may not repeatedly expect that if it will cure under my care some years ago made an impression on my mind. It was a private case, of which I have unfortunately lost the notes, and I speak from memory.

The patient was a man, the headquarters of a very malarious district; he was a German missionary who had been brought down from the Bumpa Hills. It was a case of malarial fever of the remittent type with the usual symptoms. He was put on quinine as a matter of course, though much against his own wish, as he informed me that the drug had on a previous occasion produced bloody urine. I rather scouted the idea, but the urine showed heme at my next visit was undoubtedly hemoglobinuria, blood being found by the usual clinical tests, and corpuscles apparent under the microscope. Each time quinine was repeated this symptom was observed; when the drug was omitted the urine was non-hemoglobinuric. The case did not improve in spite of treatment, cold packing, ice, etc., and the patient died from hyperpyrexia with a temperature of 106° before death. I may observe that this is the only case in all my service that I have ever observed such an effect produced by quinine. I myself still consider quinine our sheet anchor in malaria in all its manifestations.

VI.—David C. Reeve, M.R.C.S., L.R.C.P., Surgeon, Medical Officer, L.D.O. of the London School of Tropical Medicine.

Mr. Reeve said: Quinine was used as a prophylactic on a large scale in Nigeria by the West African Frontier Force in 1896. Unfortunately I have not the figures at hand, but as the quinine was not given in suspension on the farm the force being divided into small detachments the figures would not be very valuable. I, however, arrived at the following conclusion, namely, that 5 grs. of quinine administered daily, although that amount does not markedly reduce the number of attacks of fever, lessens their severity and also the case mortality. I do not agree with Dr. Fielding-Ould's experience with regard to the sloughing caused by hypodermic injections of quinine; personally I have never produced sloughing by these injections but the injection should be administered intra-muscularly not hypodermically, and with careful antiseptic precautions. When I proceed to a malarious country again I shall take 2 grs. of quinine three times a day, as I believe a small quantity of the drug circulating in the blood is more likely to act beneficially than one large single dose.


Dr. Harford-Battersby stated that from personal experience he believed strongly in the prophylactic action of quinine. He and many others whom he has known suffered severely from malaria, but on taking quinine prophyllactically he had been free from fever, and others had been greatly benefited. He quoted the case of Mrs. Bishop, the well-known traveller, who in travelling in malarial districts had stated that she took quinine and gave to each of her servants a pill containing 1 gr. of quinine daily. None of them had ever suffered from malaria even when they had travelled in company with other expeditions which had suffered severely. As regards the curative effects he urged the importance of giving quinine at the right time. He believed it to be the best course to see that the bowels were opened, and then to give 10 grs. of quinine at the commencement of the sweating stage, but in no case should the administration be more than for two doses. He said that the disease was often cured after the onset of the disease. He believed that the heroic doses formerly given were a mistake, and brought the medicine into discredit. With reference to possible evil effects of administering the drug, he alluded to the supposed tolerance of quinine, which was more particularly the case with malarial fever, and dealt with the subject of administration. He had employed Burroughs and Wellcome's tabloid with good results and had never known them pass unchanged by the bowel. He considered it to be of some importance to dis guise the taste of quinine as the various methods of prescribing it might interfere with its tolerance.

VIII.—Major E. M. Wilson, R.A.M.C., C.M.G., D.S.O.

Major Wilson said he did not think quinine had much prophylactic effect. In the case of Indian malarious fever the drug was given in large doses in all parts of the world, whilst West Africa appeared to be the home of hemoglobinuric fever, which was seldom found in India, was a powerful argument in favour of this view. He regarded the view that quinine caused this fever as a most mischievous doctrine. He related a case in which quinine had cured severe vomiting in malaria and believed that it could be found effectual in curing many symptoms which were malarial in origin although not so commonly associated with malarial fever. He dealt with the methods of administration. He had employed Burroughs and Wellcome's tabloid with good results and had never known them pass unchanged by the bowel. He considered it to be of some importance to dis guise the taste of quinine as the various methods of prescribing it might interfere with its tolerance.

IX.—B. S. Ringer, M.D., Canton, China.

Dr. B. S. Ringer narrated a case of blindness due to quinine. A Spanish Roman Catholic priest, living amongst the Chinese up the country, near Amoy, in the Tokien Province, had suffered from a severe and prolonged attack of malarial fever, for which he had taken large and frequent, but indefinite, doses of quinine. On arrival in Amoy he found him suffering from dimness of sight, and on the second visit he found him to be quite blind. The fever had, however, disappeared. Ten-grain doses of potassium iodide were then administered, and the sight gradually returned, and was eventually quite restored.

X.—Lieutenant-Colonel C. B. Maitland, I.M.S., Professor of Surgery, Madras Medical College; Senior Surgeon, Madras General Hospital.

Lieutenant-Colonel Maitland asked for information on the result of giving malarial fever patients the drug given in large doses in all parts of the world, whilst West Africa appeared to be the home of hemoglobinuric fever, which was seldom found in India, was a powerful argument in favour of this view. He regarded the view that quinine caused this fever as a most mischievous doctrine. He related a case in which quinine had cured severe vomiting in malarial fever. He gave it in one epidemic, with even better results than from quinine. The drugs were given to alternate cases. No bad effects resulted from the blue, but the men's clothes and sheets became blue, and as the drug was procured with some trouble, four hours after the onset of the disease he believed that the heroic doses formerly given were a mistake, and brought the medicine into discredit. With reference to possible evil effects of administering the drug, he alluded to the supposed tolerance of quinine, which was more particularly the case with malarial fever, and dealt with the drug when given in large doses in all parts of the world, whilst West Africa appeared to be the home of hemoglobinuric fever, which was seldom found in India, was a powerful argument in favour of this view. He regarded the view that quinine caused this fever as a most mischievous doctrine. He related a case in which quinine had cured severe vomiting in malaria and believed that it could be found effectual in curing many symptoms which were malarial in origin although not so commonly associated with malarial fever. He dealt with the methods of administration. He had employed Burroughs and Wellcome's tabloid with good results and had never known them pass unchanged by the bowel. He considered it to be of some importance to dis guise the taste of quinine as the various methods of prescribing it might interfere with its tolerance.

The British Medical Journal] TREATMENT OF MALARIA BY QUININE. [Sept. 1, 1900.
of malaria in pregnant women suffering from some other disease—for example, enteric fever. With reference to the giving of tabloid he had found that the hardest and most thickly-coated tabloid was effectual if broken first and given with a meal. When swallowed rapidly with water there was no taste.

XI.—James Cantlie, M.B., F.R.C.S.,
Surgeon, Seamen’s Hospital, Royal Albert Docks, London.

Mr. Cantlie said: We know so little concerning malaria in infants, and the weakness of the young child when administered to the mother, that the following case may be instructive:

A child of three months old, born of parents who had long resided in the South of China, but who at the time of the child’s birth and afterwards resided in England, contracted a “feverish” attack which lasted 6 weeks, and died all the usual symptoms of this disease. The child was not teething; the mother was feeding the child wholly until we well on in the illness, when cow’s milk was given as well as the breast. A rise in temperature occurred every evening, followed by sweating during the night or early morning. As other plans of treatment had proved useless, the mother was put on 4 grs. of quinine thrice daily, and the child on 3 grs. of quinine thrice daily. By the third day the child lost the fever and had no return. Examination of the mother’s milk for the malarial parasite proved negative.

XII.—Edward Henderson, M.D.,
Shanghai.

Dr. Henderson said: In the European population of Shanghai the benign forms of malarial poisoning are almost solely represented. No experiments in prophylaxis by the administration of quinine can be quoted as the cases are not sufficiently numerous. A dose of 15 gr. of quinine given in the sweating stage after the temperature had fallen, followed by a few smaller (5 gr.) doses, is usually sufficient to put an end to an attack. With these small doses cinchonism is rarely troublesome. I have never seen any degree of permanent harm following administration of quinine. Children suffer from cinchonism much as adults do if equivalent doses are given, but the effect may easily pass unnoticed from the child’s inability to describe sensations. I think quinine decidedly a dangerous drug to be used under any circumstances. A system of following the administration of quinine. Children suffer from cinchonism much as adults do if equivalent doses are given, but the effect may easily pass unnoticed from the child’s inability to describe sensations. I think quinine decidedly a dangerous drug to be used under any circumstances. A system of following the administration of quinine. Children suffer from cinchonism much as adults do if equivalent doses are given, but the effect may easily pass unnoticed from the child’s inability to describe sensations. I think quinine decidedly a dangerous drug to be used under any circumstances.

XIII.—Major Ronald Ross, I.M.S. (Ret.),
Liverpool School of Tropical Medicine.

Major Ross pointed out that in old cases of malaria there might be a secondary form due probably to enlargement of the liver and spleen—a form of a continued type not directly due to the parasites, and not amenable to quinine. This form had been noticed also by Vandyke Carter, Kelsch, Kiener and others, and was observed by the speaker while studying kala-azar. Torti was the first to point out that quinine should be given before the access, and Major Ross cited an instance of the kind. He expressed strong opinion in favour of the view with which he agreed. He considered that the drug should be continued for three months after infection, and that it was best given in solution.

XIV.—Guthrie Rankin, M.D., M.R.C.P.,
Physician to the Seamen’s Hospital Society, Greenwich.

Dr. Rankin related a case where hemoglobinuric fever was contracted about fourteen months after settlement in Central Africa by a young man who, during that time, took no prophylactic.

The patient was invalided home, and experienced a mild attack after his return to England. He returned to Africa after four months perfectly well, and during a half year was free of any return of malarial trouble. During the whole of his second residence he took quinine daily, in autophylaxis, and he was free from all constitutional symptoms, but had suffered for some months from a persistent dermatitis of both hands, which he ascribed to the long use of quinine. Dr. Rankin, wishing to in the experience of the patient who had largely used quinine in the tropics, the widely expressed experience of the absence of cinchonism could be accounted for by the fact of its administration to patients suffering from malaria, because in the practice of every physician in the tropics, whenever a patient purchased comparatively small doses of the drug, was not uncommon.

XV.—Oswald Baker, M.D. (Lieutenant-Colonel J.M.S., ret.),
Physician, Seamen’s Hospital, Royal Albert Docks, London.

Dr. Baker stated that quinine was given in this country in doses aggregating 15 gr. daily, extending over long periods of time without any prejudicial effect whatever. He thought the reason quinine so often failed as a prophylactic was because it was not administered in sufficiently large quantities. He thought it would be desirable to publish the opinion of his results on the subject. He was of opinion the prophylactic dose was the same as the curative dose.

XVI.—Colonel Kenneth Macleod, L.L.D., M.A., M.D.,
Professor of Clinical and Military Medicine, Army Medical School, Netley.

Colonel Macleod remarked that Dr. Manson had pointed out the importance of using the microscope during the administration of quinine as a guide and check. This was, when practicable, obviously desirable. But the practice involved considerable labour, and in cases in which the parasite was not present in the peripheral circulation might be accompanied with doubt and disappointment. In these cases as Dr. Manson had now reminded them pigment and pigmented leucocytes were probably recommended another and more extended use of the microscope as a means of detecting malarious infection in a community. This system of exhaustive examination of the blood of a community, he contended was necessary, because parasites might exist without any symptoms of malarial infection. The mode of using the microscope was still more laborious, and could only be possible under special circumstances in small communities; but if the extirpation of malaria by means of quinine was attempted it must be resorted to. The use of the microscope and other means of controlling the presence or absence of the disease in small communities would enable the country to be eminently healthy.

ON THE METAMORPHOSIS OF THE FILARIA SANGUINIS HOMINIS IN MOSQUITOS.

Especially with Reference to its Metamorphosis in the Anophelines Rossii and other Mosquitoes of the Anophelines Genus.

By S. P. James, M.B.Lond.,
Captain I.M.S., Quilon, Travancore, India.

Dr. James said: Dr. Bancroft's discovery of the metamorphosis which the filaria sanguinis hominis (the embryo of the filaria Bancrofti) undergoes in the bodies of certain mosquitoes, has recently been confirmed by Dr. Bancroft in Australia; and I desire in this paper first to make some remarks on the time necessary for this metamorphosis in different mosquitoes; and afterwards to describe briefly the experiments which I have carried out on feeding mosquitoes on the blood of filariated persons, which prove that mosquitoes of the Anophelines genus are capable of acting as efficient intermediaries hosts for this parasite.

Dr. Bancroft discovered that mosquitoes can be kept alive