ART. XIX.—*Continued Fever as met with in Calcutta, and its Treatment.* By ROBERT F. DEDRICKSON, L.R.C.P., Edin.

DURING the months of March, April, and May, and less frequently in June and July, continued fever is very prevalent among the shipping in the port of Calcutta. When we consider the life of those that live on board ship we will at once understand why this is so. A fever that is known to be caused by vicissitudes of temperature, excessive heat, intemperate habits, and exposure to the moist night-air of the above months, at once gives us the clue; since sailors, in nine cases out of ten, suffer from each one of these exciting causes. The most common cause, however, is, I believe, exposure to excessive heat. This may be either direct or indirect. Directly, for instance, when men are sent during the noon and midday heat to scrape the ship's side or to repair rigging aloft, and are thus exposed to the direct rays of the sun; and indirectly, by sleeping in a close and confined bunk in an ill-ventilated iron ship that has been seething hot all day, and reaches its internal greatest heat but a short time before the men retire to rest. It is much to be regretted that some rule is not made imperative that Europeans be not employed in exposed positions about the shipping during the hours of say from 10 a.m. to 4 p.m. daily. But, while taking all this into consideration, we must not forget that sailors are most improvident men, and, as a rule, most reckless and careless with regard to their health, preferring to squander their money in excesses to providing themselves with clothing suitable for warm climates.

"Continued fever" consists of febrile symptoms, which last from twelve to thirty-six hours, or sometimes even from five to six days. The temperature varies from a shade above normal to 103° or 104° ; but if it goes beyond 104° , or even remains at that elevation over four days, the fever is accompanied with one of its serious complications—high temperature. Thus the symptoms are—increase of temperature, pungent dry heat of the skin, the pulse is frequent and full, there is headache (sometimes intense), the tongue is coated with a white fur, the breath smells excessively unpleasant, there are pains in the bones and small of the back, the bowels are confined or are very loose, there is loss of appetite, the face is flushed and the eye congested, and there is total disappearance of prickly heat, which remains absent till the fever has departed. If a man suffering from this fever is asked what he complains of he is almost certain to

answer, "a pain down the back and in the loins, a severe headache, and no appetite." He will frequently express his feelings by saying he feels "sore all over," just as if he had received a good beating. The following is a typical case:—

CASE I.—John T. complained on Monday of pain in the back and severe pain in head; bowels not opened for two days; tongue coated with white fur; feels ill all over; thinks he has got the fever and ague; temperature in axilla, 102° ; skin hot and quite dry; pulse, 120; complains of great thirst; remarks that "prickly heat," from which he had been suffering so much, has quite gone.

Tuesday.—After taking four doses of salicylate of soda, says he has perspired a little during the night, but feels worse; his bones are all sore, and he feels quite sick in stomach; temperature, 101° ; pulse, 110. To continue the salicylate for twelve hours more.

Wednesday.—Has perspired freely during the night; his skin is quite cool and moist; temperature, 98.4° ; pulse, 90; no headache; says he feels slightly better. Ordered to take three doses of sulphate of quinine, at twelve, four, and eight o'clock, of five grains each; to take a table-spoonful of castor-oil in the morning. After this he mended rapidly, being quite restored to health at the end of eight days.

This case is a very fair example of continued fever in its mildest form. It is a curious fact, yet one that I have very frequently and carefully noted, that as the fever lessens and there is a well-marked improvement in the patient, he is certain to inform you that he feels much worse; that he has pains in all his joints, and this even when the fever may have quite disappeared.

Now a few words with regard to the treatment of this simple continued fever before I go on to its complications. The first point to be considered is the reduction of the temperature, and one of the best medicines with which I am acquainted for doing this is certainly the salicylate of soda, given either in 10-grain doses every third hour till profuse sweating occurs, or in one or two large doses. There is now prepared an aerated water, each bottle containing 120 grains of salicylate of soda, of which the patient may take half, and the remainder in three hours should the first dose fail to excite sufficient sweating. It has the advantage of being agreeable to the taste, and may be iced before using. It is well to mention here that very alarming symptoms are sometimes produced by a single large dose of this drug, but there is no real danger. However, it behoves one to be on their guard, and it is a wise rule to see a patient at least four hours after taking a dose of

60 grains. The symptoms that it produces are—flushing of the face and noises in the ears, wandering of the mind, and often even stertorous breathing. These all, however, usually pass away rapidly. I have never seen any alarming symptoms by giving the drug in 10-grain doses every three hours, and it is in this way that I recommend it in treating fever with a temperature under 103° . I have found by this treatment that the fever is abated in from twelve to thirty-six hours, and as soon as the temperature is normal it is well to stop the salicylate, and give three 5-grain doses of quinine, which may be continued for a few days till the patient's health be quite restored, paying attention at the same time to the secretions, giving castor-oil purges if there be any necessity. The diet all through should consist of that most easily assimilated—such as chicken-broth, sago, vermicelli, and rice. The stomach is usually in a weak state, and it may be necessary after the fever is over to give infusion of calumba combined with nux vomica to restore it to vigour. The pains which are frequently left after the disappearance of the fever will be often the symptoms which the patient will complain most of. I have found a liniment composed of equal parts of aconite, chloroform, and opium, well rubbed into the painful parts night and morning, most effectual. On this failing to give the relief sought, it is well to administer hypodermically from the one-fourth to half a grain of acetate of morphia with the $\frac{1}{120}$ of a grain of atropia at bedtime for a couple of nights. This will hardly fail to give relief.

I shall next proceed to the consideration of what may be called the complications of continued fever. The most frequent one I have met with is high temperature. I have before mentioned that when the temperature exceeds 104° , or remains at that elevation for over four days, it is a very serious complication. It is such cases that will usually be found to have been brought about by direct exposure to the rays of the sun, and are what may be termed a “touch of the sun.” Indian residents who have gone to Europe to recruit their health frequently state that they have had sun-stroke. If these cases are carefully inquired into it will most likely be found that the case was one of this continued fever with high and lasting temperature. It is in these cases in which there is incessant and almost unbearable headache all over the head, but with its greatest intensity referred to the temples. Patients will describe this pain as though their head was bursting open; that they felt continued throbbing and thumping in the temples; that

their head seemed to be filled with water, and that they could hardly move it from side to side, it seemed so heavy. Very frequently there will be wandering of the mind, which the patient may be aware and complain of. The face is deeply flushed, and the dry burning heat which is met with in simple continued fever is here much intensified. This fever is very common in intemperate people, and very fatal.

I will now quote a case which I met with a short time since, though the temperature did not quite reach 104° :—

CASE II.—W. B., a clerk in a merchant's office in Calcutta, not more than a year from home, consulted me for what he described as a bilious attack. On my taking his temperature I found it to be over 103° . I sent him home, having ordered a diaphoretic mixture, to be taken every third hour. On my calling to see him next morning I found the skin had not acted; temperature still over 103° ; feels very drowsy, dropping off to sleep every minute. Ordered to take ten grains of salicylate of soda every three hours. On my calling to see him next day I found him on his back in bed, perfectly unconscious, with stertorous breathing, livid in the face, the temporal arteries and jugular veins standing out in bold relief. Quinine was administered hypodermically, but with no benefit; and in less than an hour from the time I arrived he expired.

The points of interest in connexion with this case are that he had probably been suffering from fever for six or seven days before he consulted me; during the time he had what he called a bilious attack, and from some cause unknown he had not taken the medicine I ordered containing the salicylate of soda. It was also a serious case (though the temperature was not extremely high), as showing two facts which are worth remembering—the complaint of excessive drowsiness (which is always a serious one), in common with a weak circulation. I heard after his death that even during the hot season he had to have his feet covered, as he was constantly complaining of the coldness of his extremities. This was a case probably of fever of the duration of ten days, and for the last three days he was under my observation he had a temperature of over 103° . Now, with regard to the treatment of this high temperature, it is so necessary to cause its sudden reduction that it is hardly to be thought of giving any medicine that will require hours to act. Hence here we must give the salicylate of soda in a large dose, say of 60 grains, and repeat that quantity in an hour if the first dose has not caused a well-marked reduction in temperature—say at least a degree. Quinine in large doses of from

20 to 30 grains will also be found very useful in these cases. The great disadvantage it has is its liability to cause vomiting, but if a patient can retain 20 grains of the drug a speedy and well-marked reduction of temperature may be looked for almost with certainty. Some time since I saw a patient at seven o'clock p.m. with high fever, temperature 105° , bounding pulse, and other serious symptoms. The only drug available was quinine, of which I gave him 15 grains, and repeated it in two hours. Both doses were retained, and on my visiting him next morning he was almost well, temperature being quite normal. Quinine may also be administered hypodermically, and in this way is sometimes of great benefit. I think it is well to administer with each hypodermic from the $\frac{1}{120}$ th to the $\frac{1}{80}$ th of a grain of atropia, as it tends much to stimulate the heart's action, which is mostly very weak; and as we know that quinine even in small doses will cause irregularity often in a healthy heart, it is well to guard against this, and atropia is the most suitable drug under the circumstances.

Ergot of rye is also a most valuable medicine, not only in its action as a diaphoretic, but by its well-known power of diminishing the calibre of the blood-vessels supplying the brain. This action alone should point out its great worth in these congestive fevers, and I have frequently tested its value.* It is the best medicine I know for relieving the violent pains in the head and reducing the throbbing of the temporals which is sometimes so violent in this fever. It may be given in doses of from half to one fluid drachm of the liquid extract, or administered hypodermically in the form of a solution, made by dissolving 4 grains of Bonjean's ergotine in 30 drops of water and adding a few drops of glycerine. Of this solution 20 to 60 drops may be injected, and repeated hourly till relief is obtained.

Continued fever is sometimes accompanied with diarrhœa, which may be the symptom for which the patient will consult you. I have noticed it is only in the mild cases of the fever that it is met with—indeed I am inclined to think that it acts rather beneficially if it be not too violent. It appears to relieve the head symptoms, and by reducing the volume of blood prevents the fever taking on a congestive action. Its treatment is simple. An ounce of castor-oil with 15 drops of laudanum will usually check it after two or three motions. If this should fail, I have found 10 grains of

* Cf. Paper on Treatment of Heat Apoplexy by same author. *Dubl. Journ. Med. Sci.*, Oct., 1878.—ED.

Dover's powder, combined with 20 grains of the aromatic powder of chalk taken immediately after a motion, and repeated if required after two hours, very successful.

In bringing these observations on the continued fever of Calcutta to a close, I wish to state that my inferences have been drawn from observation of the disease as met with in Calcutta, and that mostly among the shipping; and that, though I am well aware of the many other methods of treating the fever and of reducing high temperature, spoken so highly of and probably with justice, I refrain from making mention of any other means than those that have proved most successful in my hands.

PILOCARPINE AND JABORINE.

DRS. HARNACH and MEYER (Liebig's *Annalen der Chemie*, Band 204, Heft 1, July 31, 1880) have examined the chemical and pharmacological properties of commercial pilocarpine, and the result of their researches has led them to the conclusion that a new alkaloid, which, in lieu of a better name, they have called "jaborine," is contained, together with pilocarpine, in pilocarpine of commerce, jaborine being, in fact, formed out of pilocarpine. According to the authors, pilocarpine is in its physiological effects analogous to nicotine, while the effects of jaborine they found to be identical with those of atropine. The separation of jaborine and pilocarpine is based upon their different degrees of solubility in various menstrua, the separation being facilitated by the non-crystallisable property of the jaborine compounds. The presence of jaborine in commercial pilocarpine was indicated by the action of the latter upon a frog, traces of jaborine causing spasms of the heart. Pure pilocarpine the authors found to contain no jaborine. After having, by means of its physiological effects, determined the presence of jaborine in commercial pilocarpine, the authors set to work to prepare it in at least sufficient quantity as to enable them to experiment upon it. The raw material selected for this purpose consisted in part of jaborandi leaves and partly of the so-called false jaborandi, piper reticulatum, and other kinds of pepper. Not having been able to obtain jaborine in a state of perfect purity, the authors have not been at present able to represent it by a formula. Jaborine is a very strong base, differing from pilocarpine by being difficultly soluble in water and easily soluble in ether. Its salts dissolve readily in water and alcohol, and are not crystallisable.—*Chemist and Druggist*, Sept.