

applied. In both cases considerable swelling of the tissue took place, but the pain was not nearly so severe as after injection; there was no purulent discharge, the free ends of the drain separated in ten days, and all traces of inflammatory thickening rapidly disappeared. The inflammatory process was not sufficient in degree to give rise to actual pain, or to an appreciable rise of temperature; but it was evidently to this slight amount of inflammation that the cure was due, for hardly any fluid drained away, so that the correctness of the theory on which the mode of treatment was based was disproved by the clinical results observed. I would therefore regard the cases now under consideration as examples of treatment by a catgut seton, and not as specimens of catgut drainage, a subject to which I shall presently refer. In the first case failure was evidently owing to the entire absence of inflammation; in it we have evidence that absorption of the catgut had occurred, and in the others we have no reason to doubt that the same process has taken place; and when we bear in mind that it was not a single thread of the material that was employed, but bundles containing nine threads—two being employed in the double hydrocele, and inserted simultaneously,—the readiness with which absorption took place seems somewhat remarkable, while the slowness of the inflammation in the hydrocele of the cord is striking; for, as Mr. Curling says, "incision and seton are not free from risk, being liable to excite diffuse inflammation of the connective tissue of the part," in illustration of which he mentions a case where "such severe inflammation of the connective tissue succeeded the introduction of a single thread of silk through an encysted hydrocele of the spermatic cord of a boy, that suppuration took place in the iliac fossa, and for a time endangered the patient's life, though he ultimately recovered."<sup>4</sup>

(To be concluded.)

## NOTE ON THE ACTION OF QUININE.

By W. H. T. POWER, B.A., M.R.C.S., L.R.C.P.

THE extreme importance of ascertaining the precise action of one drug, on any morbid state, induces me to publish the following remarks.

1. Having had large experience of the action of quina in malarious diseases, I have for some seven years pondered over the matter, not being satisfied with the explanation of its *modus operandi* as given in the ordinary text-books. In the story of the epidemic in Mauritius of 1866-67, written by (then) Surgeon-Major J. Small and myself, we pointed out that the *relapses* of the fever, during our first winter at home and subsequently, invariably occurred after a *sudden* fall of the atmospheric temperature (the "wet and dry bulb" and "maximum" and "minimum" thermometers, being read twice daily); a fall not necessarily to freezing point, but such a fall as, even in summer, would produce a sense of being chilly.

2. Dr. E. L. Fox, in THE LANCET of July 29th, 1876 (p. 154), gave a case of sunstroke, in which, after the subcutaneous injection of quina, the patient recovered. I ventured to suggest to him its mode of action, which he added to a note of his in THE LANCET of Sept. 28th, 1876 (p. 444). And in the ordinary treatment of sunstroke the cold douche is used, which would act on the nerves of the cutaneous bloodvessels, which I also, below, give as the action of quina.

3. I believe the post-mortem signs of death from sunstroke are the same as those from malarial fever—viz., congestion of the venous system, and the blood of the body may be said to be found in the pulpy spleen and in the smaller veins.

4. Malarial poison, as is well known, may take some time before showing its existence in the body. This is well shown in the case of a sergeant, who remained in the centre of the malarial district for some months after the regiment left Mauritius, and had his first attack of ague (much to his disgust) while rounding the Cape of Good Hope, when, he told me, the weather became suddenly very chilly. He was a

very intelligent, well-educated man, and, besides, brought with him a medical certificate from a surgeon-major, who was a passenger on board the same vessel. (Such a case furnishes a warning as to certain hill sanatoria being malarious, the real fact being the colder temperature may bring out the fever signs, the disease having been really acquired, though not shown, either by residence in, or by merely passing through, a malarious district.)

5. In the *Practitioner* (vol. from July to December, 1872) is a summary of a paper by Dr. C. Boisz, where it is stated quina acts on the vaso-motor nerves and spleen in health.

6. Quina acts apparently, as a drug, just as the heat of the fire does when the burnt finger is put close to it (the old-fashioned remedy for a small burn, to stop the pain), and as Skey's plan of painting a strong solution of nitrate of silver over a burnt surface, to relieve pain. I believe I am right that in both these cases the palsy of the vaso-motor nerves is overcome, the circulation restored, and the pressure of the stagnant blood in the swollen veins on the nerves removed.

7. That any agent, such as heat, causing such palsy, might possibly be overcome by using large doses of quina (in the case of heat I do not know how large). I refer to those numerous cases of death in all classes which often occur from the terrible heat in the Red Sea; persons already with a weakened action of these nerves from malaria are exposed to a fresh cause of venous blood congestion—viz., atmospheric heat,—and suffer accordingly.

8. Of course it would *not* follow that after the palsied nerves had lost almost all control over their organs, quina would have this action, nor in the cases of the enlarged spleen, liver, &c., where hypertrophy of their framework has occurred.

9. As a general point, I may refer to the fact that it is most dangerous in the early morning, when it is coldest, and when (as I found in Mauritius) the bodily temperature in health is lowest in the twenty-four hours; and, again, this action of cold coincides with the effect produced by sudden cold in causing relapses of "ague" in temperate climates, in those who have been exposed abroad in hot climates to the influence of malaria.

10. Supposing this to be a correct explanation of the action of quina, might it not be a fair deductive *guess* that in sufficiently large doses it would be of use in *all* cases of fevers &c. of any description where the tendency to death is by congestion of the right side of the heart, the lungs, or the general venous circulation, especially in the smaller vessels.

11. Of course, if the disease were so far advanced that the stomach was, to all intents and purposes, a lifeless bag, as in the stage of collapse in cholera, quina would be useless, unless, indeed, it might be taken into the system by subcutaneous injection. The action of the cold douche in sunstroke would be on the nerves of the cutaneous circulation, this being an *external* agent, while quina would have the same effect as an *internal* agent.

The worst cases of malarial poisoning I have seen occurred at night, at which time heatstroke is also very fatal. Cases which I have ventured to call "malarial collapse"—i. e., cases in which men have had either mild attacks of ague or no attacks at all, and have been free from fever for some days, go to bed sensible, and a few hours after are found to be apparently asleep, but really not conscious. In these cases (after I had lost one patient, to my astonishment and disgust) I used to administer a twenty-grain dose of quina, and repeated it again in an hour if the pulse got slower, and I lost no more such cases.

I am aware how incomplete this paper is, but I am desirous of bringing the subject forward, since in the last volume of "Materia Medica" that I have seen quina is called an "antiperiodic," which, in the first place, does not tell us anything of its action, and in the second place it acts just as well in cases where there are no "periods," and in these cases, where the malarial poison acts more like a lightning-stroke, giving the system, as it were, no power to establish a reaction—i. e., to develop a stage of pre-natural heat—cases I have called *malarial collapse*.

I can only venture to hope that whatever mistakes of reasoning may occur in this paper, these very errors may lead some one more capable to define the real action of this drug, an action so utterly unlike any other, that only those who have seen cold collapsed human beings almost snatched from death's very door by one large dose of it are able to appreciate it.

<sup>4</sup> Curling on Diseases of the Testis, third edition, p. 182.