

**AN INQUIRY INTO THE
ACTION OF MERCURY
ON THE LIVING BODY**

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PREFACE.

THIS is a selection from a work which the Author published many years ago ; and such further observations have been added as his experience has suggested. It has been revised and re-printed, for the sake of keeping up an inquiry into the probable action of medicines on the constitution generally, and on specific structures, and to determine whether they are really removing the natural disease, and not producing an equally hazardous or a more baneful artificial one.

In relating the appearances presented on dissection after the experiments, the Author has retained the expression, "inflamed," or "very much inflamed," with reference to the sympathetic nerve or its ganglia ; but he thinks it would be more proper to state that they were "red," or "very red," as denoting a state of less or greater irritation approaching to that of inflammation.

AN INQUIRY
INTO
THE ACTION OF MERCURY.

THERE is no active medicine whose employment is more general, and whose operations are less understood, than those of mercury; therefore, when it is considered how many suffer from its abuse, it seems to be a matter of great moment to ascertain the various changes it produces, some of which are so severe as to allow the system to recover very slowly, or never to return to its former condition, and in a few instances to induce sudden death.

As its effects increase according to the quantity used, it may be presumed either that it is absorbed and accumulates in the body, or that it produces a material change in some very important organs, which are capable of influencing the system generally. Two things only lead to a supposition that it is absorbed and taken into the system, as the peculiar taste frequently experienced in its use, and the changes in silver worn about the body. The peculiar taste experienced in its use may be often noticed in disorders of the chylo-poietic viscera, or the exposure of the

mouth to an impure atmosphere. Nevertheless, in the various experiments Mr. Hunter made on himself, both by taking it internally, rubbing it on the skin, and working crude mercury about in his mouth, he believed that in all of them it was brought to a state of solution. If mercury could be collected on silver worn about the body, when it has not been used externally, but only taken by the mouth, it might be presumed that it had previously penetrated the minutest vessels; but when it has been used by friction, no dependence can be placed on any such appearances, as some portion of the ointment may have come in contact with the silver, and have tarnished it.

In proof of the absorption of mercury, it has been stated that it has been found in various parts of the body after death. It appears very improbable that it should be taken into the circulation by the absorbents, and deposited by the terminal arteries, in its metallic form, for it must always have passed through the lungs; and in experiments with mercurial preparations introduced into the blood, inflammation of the lungs was invariably produced; and in those with crude mercury very numerous abscesses in the same organs. Nevertheless, as this hypothesis is still maintained, a few further observations will be offered.

It will not be denied that it has been found in the bones and even in the soft parts. When it has been swallowed in its crude state and not evacuated from the bowels before death, on the separation of the flesh by putrefaction, some of it may have insinuated itself into the bones of the most open texture. It is not impossible that even in the living body, it may have made its way from the intestines into other parts. In two instances, a large quantity was given in obstruction of the

bowels; in the one a great portion of it was found in the enlarged vermiform appendage of the cœcum; in the other, the whole of it was collected into one place near the obstruction, and might have escaped into various other parts, and insinuated itself wherever gravitation directed it. It is frequently used in anatomical pursuits; and globules may be found in preparations at a very distant period, when it has been forgotten that it had ever been employed.

It is not probable that it can collect in any part of the body without acting as an extraneous substance, either by producing inflammation and suppuration, or by becoming encysted. M. Gaspard* introduced quicksilver into the crural artery of a dog; swelling, and great pain of the lower extremity, were induced, and death in sixty hours. Numerous abscesses were found containing quicksilver; it flowed out on making incisions into the skin, cellular membrane, and muscles; the small arteries were freely injected, but none had passed through the capillary arteries into the veins, and there was not any in the secretions, or in any other part about the limb.

In July, 1753,† a young man, in making an experiment with a glass tube full of quicksilver, broke it, and to prevent the loss of the liquid, which ran out with force, he placed the thumb on the broken end, the point of which entered about the middle of the last phalanx. A small wound was the consequence, to which the patient paid very little attention; he applied a plaster, and it appeared reunited in six days; but at that time the thumb

* Mémoire sur le Mercure dans le Journal de Physiologie, tome 1.

† Mémoires de l'Académie de Chirurgie, tome 3.

became tense, and pain and fever, and every symptom of constitutional irritation, supervened. After considerable suffering for many months, such an incision was made as allowed the quicksilver to pass out freely, and the patient got quite well. No mercurial action during the whole period ever appeared.

Crude mercury, when swallowed, generally passes off without producing any specific effect. Mead* says, "I remember two accidents of this kind, and one of them proved fatal, in which when small quantities had been given for many days together, a violent salivation ensued, more than two months after the use of it had been left off. And not long since, I saw a young lady, who, having swallowed about six drachms every morning three successive days, was salivated three weeks. The flux then ceased, but returned after six months, and held a month; and once more came on in the same manner two months after. The breath was each time strongly affected, as is usual in mercurial spittings."

On considering the effects of various preparations of mercury, it appeared that even if they become absorbed and enter the circulation, or produce their effect by contact with living parts, they affect the nervous system. This opinion was strengthened in the first instance by considering the appearances presented in dissecting the sympathetic nerve of a person who seemed to have been under the influence of mercury; for both sides of the face were much swollen; the salivary and absorbent glands were much enlarged; the teeth were loose, and there was a separation of the gums. The ganglia and branches of the sympathetic

* On Poisons, page 196.

nerve were found larger than in any previous dissection; there was also an increased size of the par vagum. The other nerves were not enlarged. There was an encysted tumour in the liver, about the size of a pigeon's egg, and the substance of the liver was streaked with red in a peculiar manner, which appearance seemed to be the effect of inflammation. On finding this state of the sympathetic nerve and par vagum, it appeared desirable to make a further inquiry by experiments on animals.

EXPERIMENT I.

A moderate-sized, full-grown dog had five grains of submuriate of mercury given her on the 2nd of July, 1822, in the morning, and the same quantity at night. On the 3rd, she took the same quantity. On the 4th, she took four grains in the morning, and the same quantity in the evening, and a grain of opium was added to each dose, to prevent its purging her too much. 5th. She took three grains in the morning, and the same quantity at night, without opium. 6th. She took four grains in the morning; in the evening she took four grains more, and to this dose a grain of opium was added. In the morning a large ulcer, having the characters of a chancre, was perceived on each side of the upper lip. 7th. She took four grains, and one grain of opium. She appeared to swallow with difficulty. 8th. She took four grains without opium. Other ulcers were perceived about the gums. 9th. She took four grains, with one grain of opium. She would not touch either milk or water. About four o'clock p. m., bloody saliva kept constantly running from the mouth;