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S. G. O.

A CASE

OF

PETROLEUM-ETHER POISONING.

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SURGEON-GENERAL'S OFFICE

THE following interesting case of petroleum-ether poisoning was admitted to the University Hospital during the month of May, 1888 :

M. P., æt. 19, strong, plethoric man, weight one hundred and eighty pounds, a worker at Point Breeze Oil-Works, had been ordered to cleanse a large oil-tank, the substance used being petroleum-ether, or benzine. He was found soon after lying upon the ground in an unconscious condition, in which state he was admitted to the University Hospital. From a fellow-workman I glean the following history: A new hand at the work, he had evidently used the substance in too large a quantity, for he was found soon after in the condition described, but, as his fellow-workmen thought, dead. Active means for resuscitation were resorted to, but with no avail. While a conveyance was being sought to remove him to his home, he was seen to move. In doubt as to his condition, they hurried him to the hospital, where I found him in the

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following condition: A man with a remarkable fine physique; unconscious; pulse strong and full, 60; respiration 14, very feeble, almost imperceptible; slight cyanosis; temperature 96.2° in the axilla; the body was cold; apparently but slight peripheral circulation in the extremities, arms, and legs, notably the nose and ears, which felt like ice; pupils widely dilated, and did not react to light; nystagmus, conjunctivæ barely sensitive to touch; paralysis of lower extremities, with incontinence of urine and fæces. The upper extremities resisted movements. Urine was tested, and found normal, but with an ethereal odor. The driver of the patrol-wagon states he had a general convulsion (?) on his way to the hospital. Artificial respiration and friction, with mustard, of the body and extremities was immediately resorted to, and kept up for half an hour, when we were rewarded by the patient taking several deep inspirations voluntarily. We persisted in this course until we had further evidence of return of consciousness. In an hour and a half from the time of his admission he opened his eyes and spoke, complaining of severe frontal headache. This gradually disappeared towards morning, when he was feeling so much better that he insisted upon leaving the hospital, which he did that day, feeling, as he stated, "as well as ever."

Lewin (*Virchow Arch.*, vol. cxii., April, 1888) has written an extremely interesting article upon the poisonous action of petroleum upon the animal organism, from its internal administration, and with especial reference to its local action upon the skin ("Ueber All-

gemeine und Hautvergiftung durch Petroleum").

He succeeded in inducing a number of students to take the substance in a liquid form, and studied its action in varying quantities up to 300 c.c. He describes several varieties of its poisonous action, the principal of which are,—

1. The *gastro-intestinal* variety, including its action upon the kidneys.
2. Cerebral variety, with unpleasant after-effects.

During his stay in America several years ago, he visited the principal oil-works, and studied its action upon the skin. Its action upon the stomach and intestines is that of a *gastro-intestinal* enteritis. Upon the cerebrum it is somewhat similar to the case just recorded, with the absence of after-effects. The intense *acne* which is produced upon the body exposed to the substance, both in a liquid form and as a vapor, is familiar to those having charge of dispensaries in the vicinity of large oil-works.

The above case is interesting, as showing the effect of the absorption through the lungs. It is a rare occurrence at the oil-works, and the writer is unable to find any reference to a similar case. The profound unconsciousness, paralysis, partial anæsthesia, and convulsions (?), with incontinence of fæces and urine, lead us to infer that it must have a direct action upon the cerebro-spinal axis. It is possible the anæsthesia was complete when the patient was first discovered, as the distance from the works was fully two and a half miles.

The indications for treatment were simple, —to sustain the heart and respiration, which we did by artificial respiration and frictions, with the internal administration of coffee. Lewin suggests the use of apomorphine in those who have swallowed the drug in liquid form.

The symptoms in the above case compare favorably with those recorded by Lewin, with the following exceptions: In Lewin's cases no reference is made to its action upon the centres dominating urination and defecation. This may be explained from the fact that no case was so profoundly affected as this. The pulse was variable, irregular, slow, feeble, and small. In the above case, however, the pulse, though slow, was strong, full, and with high tension. The pupils did not react to light, which is in accord with the observations of Lewin, though Meyer (*Journal de la Société Méd. d'Anvers*, February, 1865) has noted, with the dilatation, normal reaction to light.

Petroleum-ether, or benzine, is a mixture of several organic compounds, which belong to the marsh-gas CH_4 series. It is rendered volatile at a temperature slightly above the bodily range. As petroleum-ether is a mixture and not a definite organic compound, the active factor in the mixture which gives rise to the above symptoms is not known. It is highly probable that each compound in itself plays a definite part in their production. Its great solvent property for fats and oils, in connection with its cheapness, make it particularly desirable for the purpose for which it is used.