ACUTE FORMALDEHYDE POISONING.

BY

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FORMALIN, a 40 per cent. solution in water of the gas formaldehyde, acts, when taken internally, as an irritant poison, but its toxicity and the symptomatology are still little known. Of the few cases described in the literature, an imbecile, aged 26, died thirty-two hours after swallowing between 1 and 3 oz. (30 to 89 c.cm.) of a 4 per cent. solution of formaldehyde.¹ Gerlach's patient,² a girl, aged 21, survived a dose of 2 to 2½ oz. (60 to 70 c.cm.) of 35 per cent. formaldehyde; and Zorn's case,³ a man of 44 years, about ½ oz. (15 c.cm.) of a 35 to 40 per cent. solution. Klüber⁴ described the symptoms of a man who drank an unknown quantity of formalin and recovered. These last two cases were referred to pretty fully in the *BRITISH MEDICAL JOURNAL*, 1901, vol. i, EPITOME, Nos. 42 and 300. Levison⁵ had a fatal case of a man, aged 60, who lived only twenty minutes after swallowing an unknown quantity (estimated at 2 to 3 oz.) of commercial formalin.

The case now recorded is as follows:

A married man, a brushmaker, aged 63 years, who had been a heavy drinker for about forty years, was off work and drinking on April 15th and 16th, 1912, and left home about 8 a.m. on April 17th without taking any breakfast. He was seen, about 9.15 a.m., when near a well in a public park, to become rapidly ill. He staggered, doubled up over a low railing, and retched viscid mucoid material. He was put on a seat and grew rapidly unconscious, with body stretched out and head bent back over the seat. It is not certain from the description if this was or was not opisthotonus, a condition induced in animals by injection of formalin. The man was supposed by bystanders to be in a "fit," and was laid out on the grass with collar loosened. He was breathing "heavily," with chest heaving and eyes rolling, and was perspiring moderately. Accounts differ about pallor or flushing of the face. No convulsions or twitchings of muscles were noticed, nor was any attention drawn to coldness of hands and face. After being unconscious for about fifteen minutes he gradually became conscious, and when seen by a policeman at 10 a.m. refused to give his name, saying nothing was the matter with him, and denying having drunk from a bottle seen in his pocket. The policeman, after smelling the contents of the bottle, at first had the impression that he could detect the same odour in the man's breath. The man did not again vomit, but was now suffering very severe abdominal pain, causing him at intervals to double up almost on his hands and knees. There was some froth about his mouth, but no discoloration of the lips or mouth was noted. He staggered along with assistance for about 100 yards, then fell to the ground writhing with pain, and relapsed into unconsciousness, from which he did not again emerge.

At 11 a.m. he was admitted to hospital, unconscious, intensely collapsed and almost pulseless. His skin was pale, cold, and clammy. The mouth was opened with a gag, but showed no discoloration, and did not smell of formalin. All reflexes were absent on admission, except the corneal reflex, which was lost also in a few minutes, and respiration stopped. The stomach was washed out, stimulants given, and artificial respiration applied, but death occurred at 11.53 a.m.

On the man's person were found a written message clearly pointing to suicide, and a 6-oz. bottle containing 3½ oz. (108 c.cm.) of formalin, found by analysis by the iodine method to contain 34 per cent. of formaldehyde as well as a little deposit of paraformaldehyde. This was proved to have been given by the Sanitary Department to the man's wife for disinfecting purposes four years previously. She then used at least half the quantity of formalin missing from the bottle. She has the impression that she used about three-quarters, but is not so certain of this. It is unfortunate that the police authorities did not order a *post-mortem* examination, but the information as above given was collected from reliable witnesses.

There can be no doubt that death was in this case due to swallowing a quantity, not exceeding 1 oz., of commercial formalin. The man, though thin, undersized, and probably of low vitality from alcoholism, was not known by his family or medical attendant to suffer from any organic disease. He had never had any kind of "shock," and there is no history of epilepsy in the family.

In the cases described there seems to have been considerable variation in the symptoms, due probably in part to the dosage. Here the points of interest are the tendency to vertigo, the unconsciousness, and the greater implication of the respiratory than the circulatory system, all

of which occur in most of the cases quoted. The predominance of cerebral symptoms, leading to early death, gave little opportunity for the development of signs of irritation of the kidneys and the alimentary canal, apart from the intense pain in the latter and the initial vomiting. This case confirms the deduction to be drawn from the others that formaldehyde is really a potent poison, probably differing little in degree of toxicity from carbolic acid.

REFERENCES.

¹ Bock, *Indiana Med. Journ.*, 1899, vol. xviii, p. 122. ² Gerlach, *Muench. med. Woch.*, 1902, p. 1503. ³ Zorn, *ibid.*, 1900, p. 1588. ⁴ Klüber, *ibid.*, 1900, vol. xlvii, p. 1416. ⁵ Levison, *Journ. Amer. Med. Assoc.*, Chicago, 1904, xlii, p. 1492.

A SCHEME FOR MEDICAL BENEFIT.*

BY

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BECAUSE we are unanimous in the statement of the conditions we require if we are to work in the Government way, it does not of necessity follow that we think the Government way is the most business-like, efficient, or economical that could be adopted. All we say is that, given the form, we must have certain essential conditions.

The normal form of medical benefit that the framers of the Act undoubtedly contemplate is, of course, contract or club practice. This is the very system that for twenty years and more doctors have been kicking at, and although, granted adequate safeguards and pay, it can be both efficiently and profitably carried out, yet few will be bold enough to say that it constitutes, even under the best auspices, an ideal relation between patient and doctor.

Again, speaking broadly, the Act gives medical benefit to insured persons only, and uninsured women and children have no share. Inasmuch, however, as this measure is "an Act for the prevention and cure of sickness," it is perfectly clear to medical men, and indeed to any one whose mind is informed by biological knowledge, that the best way to attain the object thus indicated in the title of the Act is to make provision first and foremost for the medical care of women and children.

Here, then, are two shortcomings—I should rather say capital errors—of the Act the adoption of contract practice and the exclusion from medical benefit of uninsured women and of children.

The British Medical Association report on club practice a few years ago, and the Majority and Minority Reports of the Poor Law Commissioners all took for granted the inclusion of the dependants, the women and children, in the medical benefits provided by the legislation for which these documents were supposed to pave the way. It is strange that this very proper assumption should have been falsified.

But, it may be asked, very pertinently, suppose women and children are included, how is it possible to provide medical care for all this enormous mass of population? Where is the money to come from? How could it all be done?

Considerations such as these appear to checkmate any attempt at more elaborate and more expensive medical provision. Let us, therefore, survey the board, and see if by some adjustment we cannot achieve victory in the face of defeat.

First, let us consider how doctoring is actually provided for the women and children. They have taken singularly little part in the friendly society movement. Provident dispensaries have certainly made a provision for medical attendance on women and children; but the areas of their success are very local and patchy, and do not extend. Public medical services have made, so far, no very deep or widespread impression on the problem. The National Deposit Friendly Society has the great advantage of offering to any doctor whom the patient may select a payment for work done. Part of the fee is paid from the patient's own deposit and part from the pool to which he

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