

dose after chloral has been used for some time, has not been observed by me; and the statement as yet rests on no well-authenticated cases. I have already referred to this in my Treatise on Chloral Hydrate (third edition, Berlin), remarking that Crichton Browne's case (*The Lancet*, 1871, vol. i. p. 440) cannot be adduced as an instance of the injurious action of chloral. The patient, who was the subject of melancholia, took, for ten months, two-gramme doses of chloral, and then sudden death occurred after a dose of two grammes. How often does not sudden death occur in the insane without the cause being known? That death should occur suddenly after a single dose of two or three grammes may be explained by a fact which does not place the conscientiousness of the vendor in a very pleasant light. Before its introduction into practice, chloral was known to most chemists by name only, so that preparations were brought into the market which not only contained little chloral, but were loaded with noxious ingredients. I can here relate some facts showing how chloral hydrate completely fell into disuse in certain districts. In Bavaria, a patient of Dr. Siegmund, a Berlin physician, used no chloral, although suffering from severe insomnia, because it always made him ill; and he heard the same complaint from other persons. Dr. Siegmund repeated the experiment with another preparation of chloral, which at once produced the desired result; and from that time the patient has used this chloral without perceiving any bad result.

With such impure preparations it is impossible for the physician to learn the dose.

A case interesting in this respect has been described by a Bavarian physician, Dr. Mayer, in the *Correspondenzblatt der deutschen Gesellschaft für Psychiatrie und gerichtliche Psychologie*. A physician was obliged to administer to a female patient, on account of insomnia, six or seven grammes of chloral. After the administration of one of these doses, the physician was called to the patient, who was in a very deep sleep, which lasted forty hours. On inquiry, he found that the otherwise not very conscientious apothecary had brought a new preparation into use. In this case, the first preparation was fortunately only deficient in

chloral, without containing injurious substances. Other cases, however, may be related which cause suspicion.

In a hospital here chloral hydrate was used, and the physician came to me in a state of perplexity to describe the peculiar effect of the chloral. The patients did not obtain rest, but became delirious; their faces assumed a very red appearance, and their conjunctivæ were evidently injected. I had the chloral hydrate given to me, and now use it in demonstrating to my pupils the impurities, consisting of various products containing chlorine.

It is in America especially that a bad chloral hydrate is constantly supplied, and I am, therefore, not surprised that a dose of twenty grains should have produced a fatal result in a case reported there. Dr. E. F. Ingals relates, in the *Chicago Medical Journal and Examiner*, a case which Dr. Aschbough had seen in a friend's practice. This case is incapable of being analysed, as an exact description is not given, and I agree with the opinion expressed by the *Medical Examiner* that a case of this kind ought to be described clearly. Already before this, I believe, I was able to assert that a chloral or a commercial solution was in use, regarding which it was impossible to learn what material was employed in its manufacture.

From the first it has been my endeavour to furnish the manufacturers of chloral with complete details, so as to keep up a good preparation, and I have especially pointed out that the chloral hydrate in cakes must be purified from benzol by several crystallizations. There are then left dry crystals, very hard, with a slight odour permanently durable, in the place of cakes which contain a mass of impurities. These crystals can be kept for any time; they do not undergo decomposition, and are free from every impurity. As this operation is attended with greater labour, there is a slight increase in the price per pound. The result of this increase of price, however, is that the medicine is in the greatest danger as regards its employment, and the benefit which might be derived from it is almost entirely lost. As has already been observed, in nearly all America cakes are alone used, which, although perhaps good at first, are really decomposed. Of the