## CHLORAL AMMONIUM—TRICHLORAMIDO-ETHYLIC ALCOHOL.

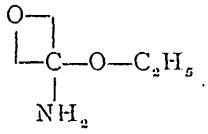
BY W. B. NESBITT, B.A., M.D., TORONTO, CANADA.

Read before the Canadian Institute, February 4th, 1888.

THE above compound is of interest to us, inasmuch as it promises to be an example of the modification of physiological action derived from a definite modification in chemical constitution. The discoveries of Crum-Brown, Fraser, and Schroff have shown that by modifying artificially the chemical constitution of a compound it is possible to definitely modify its physiological action.

Thus the introduction of the same radical—viz.: methyl—into various compounds always gives rise to similar modifications in physiological action, as when they introduced methyl into strychnine, brucine, and thebaine, and formed methylstrychnine, methylbrucine, etc. Instead of the usual convulsive action on the cord of the unmodified substances, the methyl derivatives had a paralyzing effect on motor nerve terminations, while other drugs which have no convulsive action, yet exert a paralyzing action on the introduction of the methyl radicle into their constitution. Thus we have methylcodeine, methylmorphine, ditoluyldiethyl, etc.

Still more recently Schmiedeberg has given us urethan ethylcarbamate,



as he considered that from the chemical constitution there should be a combination of physiological actions, a sedative effect being exercised by the ethyl radicle $C_2H_5$ on the cerebrum, and a stimulating one on the medulla and cord by the amidogen $NH_2$. In this, therefore, there should be, as in chloral, a soporific action, without the concomitant danger of paralyzing the respiratory centre and heart.

It was on reading Schmiedeberg's work and the inferences drawn as to the superiority of urethan over chloral, and also, from a consideration of the instances in which chloral would be superior to urethan, that it occurred to me that chloral might be so modified in chemical constitution as to obviate some of its dangers. The next point was to modify it, and at the same time affect as little as possible its normal action. Knowing that ordinary aldehyde (ethaldhyde), combined with ammonia to form aldehyde ammonia, or, more correctly, from its reactions, *amidoethylic alcohol*, $CH_3.CH(NH_2)OH.$, the inference was that trichlorethaldehyde, chloral, would act in the same way. On consulting the literature of the subject I found that the compound chloral ammonia, or, more correctly, *trichloramidoethylic alcohol*, $CCl_3.CH(NH_2)OH.$, was a definite crystalline one, and had been made so long ago that the original worker's name was not mentioned, but what was of more practical importance to me was the description by Schiff of the best method of preparing it. This consists in dissolving *dry* chloral, $CCl_3CHO$ (not the hydrate), in one and a half times its bulk of *dry* chloroform, and passing cooled *dry* ammonia gas rapidly through the solution until the whole suddenly solidifies. The italics are mine, and the whole does not suddenly solidify. In preparing it we place the solution in an ordinary *wide-mouthed* bottle, fitted with a cork and two bent tubes, one of which, the afferent, passes just below the liquid at about the centre of the bottle, the other, the efferent, passing just through the cork. This bottle is then placed in a beaker of ice-water, and the cooled gas passed into it. It is necessary to keep the whole quite cool, otherwise the heat of reaction would decompose the compound. The ammonia is absorbed very rapidly. First that portion of the bottle above the contained liquid becomes filled with dense white fumes. These speedily disappear leaving the upper portion quite clear, and the liquid becomes dull, owing to commencing crystalization. If the gas-supply is now properly regulated, the ammonia will be absorbed as fast as it passes in, and no odor of it can be detected at the efferent tube. The bottle now gradually becomes filled with white crystals, closely packed from the bottom up, and from the sides towards the centre, until only a small portion of the solution is left, and the ammonia may be perceived to be passing over without being absorbed. As soon as this occurs the reaction must be stopped. The superabundant chloroform is now poured off (and preserved for future use). The resulting mass, which consists of fine crystals, must be pressed in filter-paper and dried in vacuo. The odor of the compound is peculiar but not unpleasant. The taste, when a very small portion is taken, was compared by a friend to that of butter-