Therapeutic Memoranda.

ON THE INCOMPATIBILITY OF CHLORAL HYDRATE IN THE PRESENCE OF POTASSIUM BROMIDE AND ALCOHOL.¹

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In December, 1884, the writer had sent to him a bottle containing a mixture and a prescription, of which the following is an exact copy:—

R	Bromid. Potass.	} aa 3 iij.
	Chloral Hydrat.	
	Tr. Opil et Camph.	
	Syr. Zingiber.	
		} aa 3 iss.

Sig. One or two teaspoonfuls in half a wineglass of water every two to six hours. For sleep.

The claim was made by the physician that the pharmacist who dispensed the mixture had made a mistake, and the matter was put into the writer's hands for investigation. The mixture, as received, consisted of two layers, a clear dark-brown liquid, floating upon a light-colored dense liquid. The dark-colored supernatant liquid had an intensely strong taste in which the characteristic taste of chloral hydrate predominated, but it was modified by the presence of ginger, camphor, and anise, all of which could be recognized. On shaking the two liquids together a somewhat turbid mixture resulted; on standing, the two layers formed again.

The prescription was then made up, with the result that the ingredients separated into two layers, apparently in the same way with the mixture sent for examination. The writer could discover no practical difference in the two samples, and therefore concluded that some decomposition had taken place.

Anhydrous chloral (Trichlor-aldehyde C_2HCl_3O) is a thin oily liquid, which will combine with an equivalent quantity of water to form Chloral Hydrate $C_2HCl_3O \cdot H_2O$. Chloral also combines with an equivalent of alcohol to form chloral alcoholate $C_2HCl_3O \cdot C_2H_5O$. Chloral alcoholate forms white needle-shaped crystals, is much less soluble in water than chloral hydrate, has a more disagreeable taste and is harsher in its action upon the system. When chloral hydrate was introduced into the practice of medicine, the writer was one of the first to make it in this country, and incidentally prepared and studied chloral alcoholate; two or three physician friends made trials of it, but found that, while it acted as a hypnotic, it was more disagreeable to the taste and harsh in its action, leaving unpleasant secondary effects. Knowing that chlorate hydrate is changed into the alcoholate by solution in alcohol, it occurred to the writer that a similar decomposition had taken place in the mixture in question, the alcohol being furnished by the paregoric elixir called for in the prescription.

The following experiments were then made with a view to prove the supposition:—

(1)	Potassium bromide	60 grains
	Chloral hydrate	60 grains
	Water	6 fl. drachms
	Syrup of ginger	6 fl. drachms

¹ Read before the Massachusetts State Pharmaceutical Association, Pittsfield, Mass., June 4, 1885.

These articles formed a perfect solution which did not separate on standing.

(2)	Potassium bromide	60 grains
	Chloral hydrate	60 grains
	Water	3 fl. drachms
	Alcohol	3 fl. drachms
	Syrup of ginger	6 fl. drachms

In this experiment it will be noted that the ingredients differ from the original prescription only in the substitution of diluted alcohol for the paregoric. After standing a short time this mixture separated into two layers, the upper layer being of a light straw color.

(3) This experiment was with the same ingredients used in No. 2, except that the alcohol was not added until after the mixture had been standing for an hour. No separation took place before the addition of the three fluidrachms of alcohol, but the separation occurred promptly after the addition of the alcohol. These experiments prove that the alcohol is the cause of the trouble, and the writer thinks that the chloral hydrate is changed into the less soluble chloral alcoholate.

In addition to the experiments which have been described, numerous other ones were tried which served to confirm the results of those named. The writer found that the addition of potassium bromide, sodium bromide, sodium chloride, and magnesium sulphate to strong solutions of chloral hydrate, together with the presence of alcohol, determined a separation of the liquids into two layers. Ammonium chloride, ammonium bromide, potassium nitrate, and calcium bromide did not disturb the same chloral solutions.

The practical lesson to be learned from this incompatible prescription is that alcoholic preparations should not be prescribed with chloral hydrate, especially not in connection with the bromides of potassium and sodium, because if the solutions used are at all concentrated the chloral will separate as alcoholate, float on the surface, and a great risk will be incurred of giving a large overdose, the patient having received no caution with regard to the necessity of shaking the contents of the bottle before taking a dose.

Reports of Societies.

EIGHTEENTH ANNUAL SESSION OF THE AMERICAN OTOLOGICAL SOCIETY.

THE Eighteenth Annual Session of the American Otological Society was held at the Pequot House, New London, Connecticut, July 14, 1885.

The President, DR. C. H. BURNETT, in the chair.

The Business Committee was announced as follows: Drs. C. J. Blake, Roosa, and E. W. Bartlett.

DR. CHARLES J. KIPP, of Newark, exhibited the work of Gustav Retzja on the Anatomy of the Organ of Hearing of Vertebrate Animals.

The President reported the death of two members: Dr. John H. Dix, of Boston, August 25, 1884, and Dr. Edward T. Ely, of Colorado Springs, April 8, 1885.

The first paper was on