

the anatomic conditions (nerve-plexus and muscle-cells) are similar in both, it seems probable that the tissue concerned with conduction in water-rigor is also the same in both. In the *Limulus* heart it has been demonstrated to be the nerve-plexus and not the muscle. In the vertebrate heart it has not been demonstrated to be the muscle. The recent experiments of Humblet, Hering, and Erlanger, of transecting or compressing the auriculoventricular muscle-bundle in the septum of the mammalian heart, decide nothing relative to the myogenic or neurogenic nature of conduction and coördination, because it has been shown by Tawara that this muscle-bundle is surrounded and accompanied by a nerve-plexus similar to that in the auricles and the ventricles themselves.

16 (108). "**Further observations on the effects of alcohol on the secretion of bile**": **WILLIAM SALANT.**

In a previous communication¹ on the effect of alcohol on the secretion of bile, it was stated that diminution in the rate of secretion of bile was observed after intravenous injection of alcohol. No definite conclusions could be reached at that time, however, as to whether the diminished secretion was due to alcohol, for a steady decline in the flow of bile was very often noticed during the periods before the administration of alcohol. Recent observations in a series of similar experiments on dogs, in which the rate of secretion remained unchanged for several periods or differed slightly, showed some diminution of the flow of bile after intravenous injection of alcohol. There was also a decrease in both the organic and inorganic constituents of the bile after intravenous injection of alcohol, but the relative amounts of solids were only slightly affected. The diminished excretion of solids, however, cannot be attributed to alcohol, for a wide range of variation prevails in the organic and inorganic constituents of the bile of untreated animals.

The effects are entirely different when alcohol is introduced into the gastrointestinal canal. The methods employed in this relation were identical with those of the previous experiments. Anesthesia was induced by ether without the aid of morphin. In every case the neck of the gallbladder was securely ligated to prevent flow of bile from that direction. A cannula was then intro-

¹ *Proceedings of this Society*, 1904, i, p. 43.

duced into the common bile duct and the rate of secretion studied by comparing the quantities collected for periods of 15 minutes each. In one experiment in which secretion proved to be very scanty, the bile was collected for an hour and the quantity obtained during that period was compared with the amounts collected for equal lengths of time after injection of alcohol. Various strengths of alcohol were used: 25 per cent., 30 per cent., 50 per cent., 60 per cent., in quantities ranging from 1 c.c. to 5 c.c. per kilo, administered 1 to $2\frac{1}{4}$ hours after the introduction of the cannula into the common duct.

With the exception of experiment XI in the accompanying table (I), the volume secreted immediately after the injection of alcohol into the stomach or into the intestines showed a marked increase as compared with the period immediately preceding the injection of alcohol. In 11 of the 12 experiments performed on different dogs, the percentage of increase, as shown in the accompanying table (I), ranged from 50 per cent. to 365 per cent. In a large proportion of the experiments, in which the dogs were apparently so exhausted that the secretion of bile reached a minimum, the introduction of alcohol into the stomach or intestine caused a striking improvement. In some experiments alcohol was injected both intravenously and into the intestines. The volume of bile secreted after the intravenous injection indicated a diminished rate of secretion, while in the same animal after the administration of alcohol into the intestines the secreted volume of bile increased 140 per cent. in one experiment and 80 per cent. in another. The solid constituents were likewise markedly increased. In one experiment there was an increase of 130 per cent. in the total solids, 132 per cent. increase of organic matter, and 115 per cent. increase in the ash, the increase in volume in the same experiment being 140 per cent. In another experiment the total solids increased about 100 per cent., organic matter 108 per cent., and ash 60 per cent., the gain in volume being 125 per cent. Of two experiments, the increase in the volume secreted as well as in the amounts of solid constituents was 80 per cent. in one; in the other, the figures showing percentage increases in the secreted volume, total solids, organic matter, and ash were 160, 185, 195, 112, respectively, indicating that, at least in certain cases, some of the

solid constituents may be increased in amount, both absolutely and even relatively, after administration of alcohol. In this instance alcohol was introduced into the stomach. The excretion of inorganic constituents, while showing a well marked increase after the injection of alcohol into the gastrointestinal canal, did not keep pace with the gain in proportion of organic matter.

Further study is in progress.

TABLE I. — EFFECTS OF ALCOHOL, INJECTED INTO THE GASTROINTESTINAL CANAL, ON THE ELIMINATION OF BILE (COLLECTED IN 15-MINUTE PERIODS).

No.	Volume before injection of alcohol into the gastrointestinal canal.	After injection of alcohol into the gastrointestinal canal.	
		Volume.	Percentage increase.
	c. c.	c. c.	
I	0.5	1.2	140
II	0.5	0.9	80
III	0.5 (1 hr.)	1.0 (1 hr.)	100
IV	0.15	0.7	365
V	0.7	1.8	160
VI	0.4	0.9	125
VII	0.1	0.4	300
VIII	0.2	0.6	100
IX	0.3	0.5	66
X	0.3	0.45	50
XI	1.3	1.3	—
XII	0.25	0.5	100

TABLE II. — EFFECTS OF ALCOHOL, INJECTED INTO THE GASTROINTESTINAL CANAL, ON THE ELIMINATION OF SOLIDS IN THE BILE (COLLECTED IN 15-MINUTE PERIODS).

No.	Before injection.			After injection.			Percent. increase after injection.			
	Vol.	Total solids.	Ash.	Vol.	Total solids.	Ash.	Vol.	Total solids.	Organic matter. ¹	Inorganic matter.
	c. c.	mg.	mg.	c. c.	mg.	mg.				
I	0.5	34.2	4.6	1.2	78.8	9.9	140	130	132	115
II	0.5	48.6	1.2 ²	0.9	87.6	11.8	80	80	—	—
III	0.7	74.0	9.3	1.8	211.1	19.7	160	185	195	112
IV	0.4	42.3	6.4	0.9	85.1	10.2	125	100	108	60

17 (109). "Some effects on rabbits of intravenous injections of nicotin," with demonstrations: **I. ADLER** and **O. HENSEL**.

A solution of 1 in 200 of the chemically pure nicotin furnished by Merck was used. Of this solution, $\frac{1}{3}$ of a c. c., equal to $1\frac{1}{2}$

¹ Calculated by difference from the total solids. The weights of organic matter are purposely omitted from the first two sections of the table.

² Probably some analytic error accounts for this anomalous result.