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Comparison of digitalis doses in auricular flutter on the auricle and A-V conduction.

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Mackenzie,[1] Turnbull,[2] and Lewis[3] showed that auricular flutter passed into fibrillation during the administration of digitalis. Lewis showed that this was due to the action of digitalis upon the auricle. He also pointed out that another useful action of digitalis in auricular flutter, particularly in cases with 2:1 A-V block, was to slow the ventricle by increasing the A-V block.

We have seen 16 cases of auricular flutter with 2:1 A-V block occurring with various etiological and structural types of heart disease. The first 10 of these cases were given digitalis by the body weight method in 4 doses, receiving in the first 24 hours 0.15 cat unit of digitalis per pound. It was noticed that while all except two of these cases responded with a slow ventricular rate, due to increasing A-V block, none of them developed notable changes in the circus movement rates or developed auricular fibrillation until substantially larger doses of digitalis were given.

The last 6 cases have been studied differently. During a control period of one week, it was determined that the flutter was of the permanent type, and that a persistent 2:1 A-V block was present. At least 2 weeks after receiving any digitalis medication a standardized preparation of digitalis leaf (0.1G = 1 cat unit) was given by mouth at intervals never more frequent than every 6 hours. Observations were made before each successive dose, and the amount of the drug was noted which had been taken at the time of the following changes: (a) the first increase of A-V block; (b) the first distinct change in the circus movement rate; (c) the onset of auricular fibrillation; (d) the first sign of any toxic symptoms.

Table I shows the results obtained.

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[1] Mackenzie, James, *Brit. Med. J.*, 1905, i, 759.

[2] Turnbull, H. Hume, *Heart*, 1911-1912, iii, 89.

[3] Lewis, T. L., *Heart*, 1911-1912, iii, 276.

TABLE I.

DIGITALIS NEEDED

No.	Pt.	To Produce A-V Block			To Produce Appreciable Change in Circus Rate			To Produce Auricular Fibrillation			To Produce Nausea		
		In gms. of leaf	In cat units per lb.	Time Days	In gms. of leaf	In cat units per lb.	Time Days	In gms. of leaf	In cat units per lb.	Time Days	In gms. of leaf	In cat units per lb.	Time Days
1	R.	1.3	0.1	1	2.6	0.2	4	2.6	0.2	4	1.9	0.15	2.5
2	H.	1.45	0.11	1	5.2	0.4	12	5.2	0.4	12	5.2	0.4	12.
3	F.	1.65	0.1	1	2.1	0.13	3	2.1	0.13	3	—	—	—
4	N.	2.1	0.1	1	3.3	0.16	5	3.3	0.16	5	—	—	—
5	F.	1.6	0.07	1	2.9	0.15	5	4.1	0.19	9	—	—	—
6	H.	.6	1.046	0.5	3.8	0.28	7	3.8	0.28	7	3.8	0.28	7.

The dose of digitalis necessary to produce auricular fibrillation always exceeded the dose necessary to produce A-V block, and in three of the six cases toxic symptoms appeared before or simultaneous with the onset of fibrillation. In only one of the six cases was there any marked increase in the circus movement rate until the onset of fibrillation. In four of the six cases auricular fibrillation took place only after doses much larger than that usually needed to produce digitalization in other cardiac mechanisms had been given.

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Observations on the isolated pyloric segment.

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The technic of isolating the pyloric segment from the remaining portion of the stomach in the dog was as follows: Anterior gastroenterostomy was performed between the fundus and jejunum 25 cm. aboral of the pyloric sphincter. The stomach was divided through two planes: first, through the sphincter pylori and second, through the pyloro-fundic region. The pyloric end of the intermediary segment thus created was brought into the wound as a fistula, while the other three cut ends were closed. By this means a closed pyloric pouch of stomach was established, communicating only with the skin surface of the animal. By means of the gastrojejunostomy the animal was fed and kept alive. (See diagram of experiment No. 1.)

Five experiments were carried out according to this technic. Each animal lived from 10 days to 4 months, or long enough to determine (1) the acidity of the pyloric segment under the above experimental conditions, (2) the effects of acetylcholin, pilocarpin, and adrenalin respectively, upon the secretion of the pyloric