A. L., male. 23.10.24. Satrose, 50 grams, at 10.38 A. M.

Time	R. Q.	B. M. R. per cent	Blood sugar per cent
10:18	0.80	+12	0.132
10:58	0.77	+11	0.148
11:40	0.81	+11	0.194
12:35	0.82	+18	0.194

No glucose was excreted in the urine during this experiment.

The same. 28.10.24. Glucose, 50 grams, at 10.07 A. M.

Time	R. Q.	B. M. R. per cent	Blood sugar per cent	Glucose excreted grams
9:45	0.80	—12	0.118	
10:30	0.81	+ 1	0.146	
11:20	0.79	+ 5	0.240	0.4
12:00	0.78	+ 1	0.298	
12:35	0.82	— 4	0.260	0.8

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On the R-T interval in experimental coronary occlusion.

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In 1918 Smith[1] published electrocardiographic tracings following ligation of coronary vessels in the dog. In one tracing, five minutes after tying the circumflex branch of the left coronary artery, there occurred, among other changes, marked elevation of the T-wave, with the T-wave originating on the down stroke of the R-wave, when the latter had reached about one-half the distance to the base line.

In 1920 Pardee[2] published a similar electrocardiogram obtained from a patient four hours after an obstruction of a coronary vessel.

[1] Smith, Fred M., *Arch. Int. Med.*, 1918, xxii, 8.

[2] Pardee, H. E. B., *Arch. Int. Med.*, 1920, xxvi, 245.

More recently, Rothschild, Mann, and Oppenheimer[3] renewed the interest in the peculiar change of the R-T interval as an early diagnostic sign of coronary obstruction. They reported observations on four patients shortly after acute coronary occlusions in which among the first changes in the electrocardiogram there was the characteristic elevation of the R-T interval above the base line.

In 1909 Eppinger and Rothberger[4] observed in dogs that partial or complete absence of the desecending limb of the R-wave was a relatively frequent and characteristic occurrence following the injection of silver nitrate solution into the muscle of the left ventricle whether at the base or apex. The T-wave became high and broad and originated either at the peak of the ascending limb of the R-wave or from the lower end of the descending limb which failed to reach the base line. They explained this effect on the basis of impaired contraction of the mass of circular muscle fibres in the structure of the left ventricle.

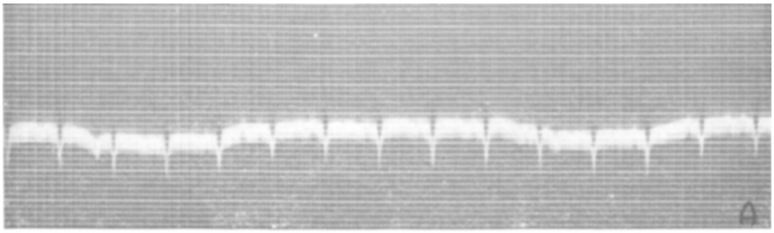
In a study of the action of digitalis in experimental coronary obstruction, one of us[5] made the observation that when the left coronary artery was ligated at the aorta in the cat, there occurred immobilization of the left ventricle, which also failed frequently to go into fibrillation, while the right side of the heart continued to beat after the ligature was applied and, as a terminal event, usually went into fibrillation. If the partial or the complete absence of the descending limb of the R-wave is caused by interference with contractility of the left ventricle, it seemed that the electrocardiographic change above described should result frequently from tying the left coronary artery at the aorta in the cat. This change was found in three of five experiments within two to five minutes after ligation of the entire left coronary artery at the aorta. Electrocardiograms were taken beginning before the ligation and continuing until death. The characteristic change in the R-T interval was absent in one instance in which a severe hemmorhage occurred and in another instance in which the heart went into ventricular fibrillation within one minute after the ligature was tied. In the course of another experiment only the anterior branch of the left coronary artery was tied.

[3] Rothschild, M. A., Mann, H., and Oppenheimer, B. S., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 253.

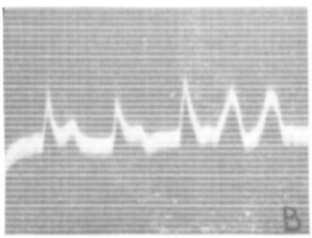
[4] Eppinger, H., and Rothberger, C. J., *Wien. klin. Wchnschr.*, 1909, No. 2, 1091.

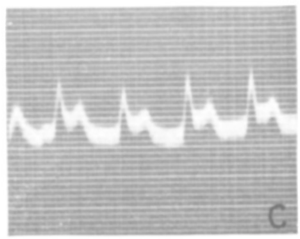
[5] Gold, H., *Arch. Int. Med.*, 1925, xxxv, 482.

This also resulted in the characteristic change in the R-T interval. These experiments tend to confirm the view of Eppinger and Rothberger[4] that the failure of the R-wave to descend to the base line is due to impaired contractility of the left ventricle. The immobilization of the left ventricle is almost certainly greater within minutes to hours after the ligation than subse-



A





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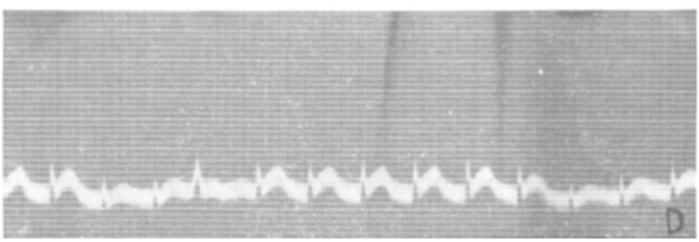

D

FIG. 1.
Showing electrocardiograms of experiment 3. Lead 1 only was taken. Section A is tracing before ligation of left coronary artery at the aorta. Section B is tracing 4 minutes after ligature was tied. Section C is tracing 6 minutes after ligation. After the heart went into ventricular fibrillation the ligature was removed. After slight massage the heart resumed its beat. Section D shows partial recovery after removal of the ligature.

quently and the reappearance of the normal descending limb of the R-wave may indicate the establishment of compensatory circulation.

As already indicated, the elevation of the R-T interval above the base line is not specific for coronary obstruction. De Boer[6] and others have recorded similar electrocardiograms obtained from the frog's heart under various experimental conditions. Similar electrocardiograms have been obtained in animals under diminished oxygen supply, also after the injection of various drugs.

[6] de Boer, S., *Am. J. Physiol.*, 1925, lxxiv, 158.