with the volume-flow. This heat is measured by means of a thermopile placed in the course of a stream of water exposed to the radiation of heat from the blood. The volume-flow (E. M. F.) is recorded potentiometrically on smoked paper with the method described by Gesell and Hertzman.[1]

The accompanying figure shows the effects of hemorrhage (50 cc.) on the volume-flow of blood through the carotid artery of a dog, followed by reinjection of the blood plus 10 cc. of 6 per cent dextrose solution.

2929

The effect of digitalis upon the refractory period of the ventricular muscle.

FRANK N. WILSON, GEORGE R. HERRMANN and SHELBY W. WISHART.

[*From the Heart Station, University of Michigan Hospital, and the Department of Medicine, Tulane University, New Orleans, La.*]

By a method similar to that used by Lewis and Drury we have tested the effect of digitalis upon the refractory period of the ventricular muscle of the dog. Lewis and Drury found that strophanthin increased the refractory period of the auricular muscle. We were somewhat surprised when we were unable to demonstrate that digitalis had a similar effect upon the refractory period of the ventricle, the more so, because digitalis has been shown by Cohn and Jameson to produce striking changes in the *T*-wave of the electrocardiogram.

The drug was given intravenously. After control tests of the refractory period were made, one and five-tenths to two cubic centimeters of the tincture diluted ten times with physiological saline solution were given. Ten to fifteen minutes later the refractory period was redetermined. A second dose was then given and this procedure was repeated until the experiment was ended by ventricular fibrillation, which usually occurred upon stimula-

[1] Gesell, Robert, and Hertzman, Alrick B., PROC. SOC. EXP. BIOL. AND MED., 1925, xxii, 298.

tion after three to four doses. In no experiment did a conspicuous increase in the refractory period occur.

Since the length of the refractory period is greatly influenced by the heart rate, it was, of course, necessary while the tests were being made to maintain artificially a constant rate considerably above the natural level. Between tests the heart was allowed to beat naturally. It was found that when the heart rate was suddenly raised, the refractory period did not at once drop to the level that it afterwards reached and maintained. In our first experiments the influence of the previous rate of beating upon the determination made immediately after a change in heart rate, was not realized. Confusing variations in the refractory period were, therefore, encountered.

In these experiments the possibility of variation in the threshold of excitability was eliminated by determining the value of the threshold stimulus from time to time.

2930

Effect of pilocarpin upon the cardiac mechanism in circus rhythm with ventricular tachycardia.

FRANK N. WILSON, SHELBY W. WISHART and GEORGE R. HERRMANN.

[*From the Heart Station, University of Michigan Hospital, and the Department of Medicine, Tulane University.*]

Pilocarpine is known to stimulate the cardiac fibers of the vagus. The site of its action is in the neighborhood of the myoneural junction. Since vagus stimulation tends to increase the rate of the circus rhythm in auricular flutter and fibrillation and also to reduce the ventricular rate, pilocarpin might be expected to produce these effects.

We have given pilocarpin hydrochloride intravenously, in doses of one-sixteenth to one-eighth grain, to a number of patients with auricular fibrillation or flutter. In the majority of cases no definite effect was produced either upon the ventricular rate or upon the auricular mechanism. In one instance short attacks of auricular flutter were immediately abolished. In two cases of extreme ventricular tachycardia which followed the administration