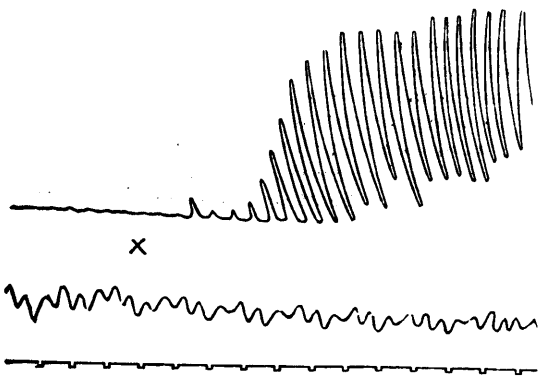
A series of elaborate experiments made upon the effect of the position of the animal on the blood-pressure in the carotid and other arteries, has very clearly proven that the body of the animal whose circulation has been paralyzed by chloroform, acts in a measure like a tube filed with fluid. Thus if the feet of the dog were raised verically above the head, whilst the latter remained upon the table, an immediate rise of pressure occurred, even though the heart had entirely ceased beating; provided that the head of the animal was kept upon a level with the table. If, however,

FIG. 10.



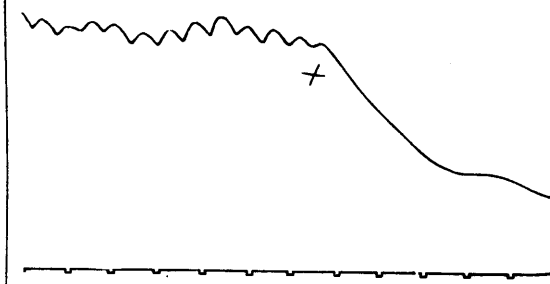
Tracing showing effect of injection of strychnine, after breathing had ceased, in an advanced chloroform anæsthesia. 0.193 grain of sulphate was injected at X.

the head of the animal, was depressed below the level of the table for a distance equal to, or greater than the length of the body of the animal, a decrease of the arterial pressure occured at once, although the animal was in a vertical position. The phenomena observed were precisely such as would have been produced if the canula had been inserted into a tube filled with fluid, instead of into the carotid artery, and the elevation and depression of this tube had registered itself on the recording drum, in obedience to the ordinary laws of hydrostatics. The phenomena were entirely independent of any beat of the heart, and were readily produced when the animal was dead, provided the death had not occurred too long previously. Sometimes, even a very few minutes after the cessation of the heart-beat, it was impossible to produce the changes of pressure upon the drum. This, I believe, to have been due to coagulation of the blood, occurring very early after death to a sufficient extent to interfere with the liquid properties of the fluid. In no case was any effect upon the respiration produced by change in position of the animal. In a number of cases, however, when the feet were elevated the heart, which had entirely ceased beating, recommenced its work, and I have several times seen a pulse entirely disappear when the animal was taken from the vertical to the horizontal position. On the other hand, very frequently it was impossible to affect the cardiac action by changing the position of the animal. Nevertheless, the phenomena spoken of occurred too frequently to be a mere outcome of chance, though I several times noted that the heart was usually more affected by alternately elevatlng and depressing the feet of the animal, than by keeping it in a steadily elevated or horizontal position.

When the circulation has practically ceased, under the depressing influence of an anæsthetic, inverting the body must cause the blood which has naurally collected in the enormonsly relaxed vessels of the abdomen, to flow into the right side of the heart and distend it, and this distention—this increase of pressure—appears at times to have a sufficient momentary influence to stimulate the failing organ.

The theory which has been advocated by some therapeutists, that inversion of the body is of value in the accidents of anæsthesia, because it causes the vital centres of the brain to be supplied with blood, is probably incorrect. The respiration in

FIG. 11.



Tracing showing effect upon the heart of a dog which had been vertical, with his head on level of the table, of bringing him into horizontal position. Feet dropped at X.

anæsthesia fails, not through want of blood in the respiratory centres, but because the blood contains a poison which paralyzes these centres.

The most remarkable results which I have reached in bringing about the recovery of animals, to all ordinary intents and purposes dead, were obtained through the artificial respiration. Thus, I have seen an animal, in which no respiratory movements whatever had taken place for two minutes, and in which, during that time, no movements of blood had occurred in the carotid artery, and in which, therefore, the heart had ceased to beat, rapidly and permanently restored by artificial respiration.

At one time in these researches, it appeared as though after any dose of chloroform by inhalation the animal could be resuscitated by artifical respiration, even though heart and lungs were completely paralyzed by the drug; but finally I did find a case in which artificial respiration failed.

The results of my experiments with the lower animals may be summed up: that nitrite of amyl,