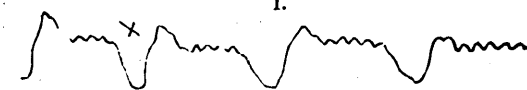


In my own experiments with alcohol an 80-per-cent. fluid was used, diluted with water. The amount injected into the jugular vein varied in the different experiments from 5 to 20 c. c.; and in no case have I been able to detect any increase in the size of the pulse, or in the arterial pressure, produced by alcohol, when the heart was failing during advanced chloroform anæsthesia. On the other hand, on several occasions, the larger amounts of alcohol apparently greatly increased the rapidity of the fall of the arterial pressure, and aided materially in extinguishing the pulse-rate.

FIG. 5.

I.

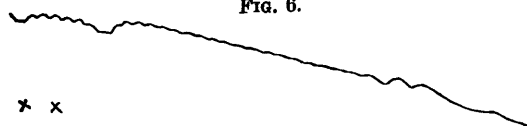


2.



Tracings showing effects of alcohol injection.
No. 1. four cubic centimetres of 80 per cent. at X.
No. 2. five cubic centimeters of 80 per cent. at X.

FIG. 6.



Experiment showing the effect of injecting twenty cubic centimetres of alcohol in advanced chloroform anæsthesia. Injection made at the beginning of tracing between X and X.

The effects of ammonia upon the failing heart of chloroform anæsthesia, has been in my experiments uncertain; sometimes distinct, although very fugacious and sometimes imperceptible. Twenty cubic centimetres of a 10-per-cent. solution of aqua ammoniæ fortior. Injection given just after beginning of tracing.

FIG. 7.



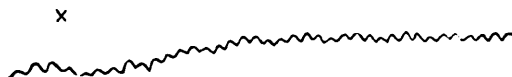
Injection of twenty cubic centimetres of a 10-per-cent. solution of aqua ammoniæ fortior. Injection given just after beginning of tracing.

cious and sometimes imperceptible. Twenty cubic centimetres of a 10-per-cent. solution of aqua am-

moniæ fortior (U. S. Pharmacopœia), in some case produced an immediate rise in the arterial pressure, and even fugaciously registered itself in the respiratory rate, but perhaps more frequently it failed in its influence.

The influence of injections of digitalis has been in a number of experiments, very pronounced in producing a persistent gradual rise of the arterial pressure with an increase in the size of the individual pulse-rate. In several instances, death was apparently averted by its injection and I saw in one or two cases where large amounts of the digitalis had been employed, sudden systolic cardiac arrest, indicating that digitalis, if in sufficient amount, is able to arrest itself victoriously in opposition to chloroform. Moreover, when I have given chloroform to dogs whose hearts were already under the influence of digitalis, there has seemed to be a peculiar steadying or sustaining power combating the circulatory depression naturally produced by the anæsthetic, and I believe that in all cases of weak heart in man a full dose of digitalis before the administration of chloroform would greatly lessen the danger of cardiac collapse.

FIG. 8.



Tracing showing effect of five cubic centimetres of tincture of digitalis in advanced chloroform anæsthesia. Injection given at X.

With the nitrite of amyl four experiments were made; in some of these from 4 to 10 drops of the nitrite of amyl were injected in the jugular vein; in others the nitrite was used by inhalation. No distinct effect upon the arterial pressure was in any instance produced, and usually no alteration in the size of the pulse-waves, although sometimes the pulse did appear to be a little fuller.

FIG. 9.



Tracing showing effect of nitrite of amyl, given freely by inhalation, upon the circulation. Inhalation begun at X.

Of all my experimental results, those which have been reached with strychnine have been the most surprising. The injection of strychnine into the jugular vein usually produced a gradual rise of the arterial pressure, and always caused an extraordinary and rapid increase in the rate and extent of the respiration. Thus I have seen the respiration, which had practically ceased for ten seconds, suddenly, under the influence of an injection of two-tenths of a grain of strychnine, become at once very large and full, and reach a rate of 130 a minute.