

It is seen that compression of the abdomen and putting the animal in the feet-up position have just about the same effect on the carotid blood pressure.

This tracing confirms what MacWilliam stated in the *British Medical Journal* of 1890, Vol. II. He wrote as follows : " The fall of blood pressure caused by chloroform is due primarily to a depressing influence of the drug on the vaso-motor centre. Later on the heart is weakened. When a great fall of blood pressure has been produced by the inhalation of chloroform, inversion of the animal exerts a slight effect in raising it. But by far the most powerful means of influencing the carotid pressure under chloroform is by applying continual firm pressure over the intact abdomen."

So much for the effect of gravity in lower animals, which normally assume the horizontal position. To summarize, it is found that in them :

(1) Gravity *acts* on the circulation, producing, in the vertical feet-down position, a lowering of the carotid blood pressure and a rise in the portal and lower part of the systemic systems.

(2) If the great vaso-motor nerves, *i.e.*, the splanchnics, be cut or paralyzed by drugs, the effects of gravity are very much more marked, thus showing that this force chiefly acts on the portal circulation.

(3) Any artificial support, such as bandaging, neutralizes the effect of gravity on the contents of such paralyzed vessels.

(4) Version to the head-down position acts in the same way, emptying the engorged abdominal circulation.

Turning next to the effect of gravity on normally upright animals, in monkeys it is found that inversion of the body does not alter the general blood pressure, and probably in normal man the same state of things exists. Dr. Oliver, of London, by an ingenious instrument called the arterio-meter, has investigated the effects of different positions on the diameter of the radial pulse in man, and finds that in health the pressure here is actually greater when he is vertical than when recumbent. In other words, the human vaso-motor centre compensates fully, or even over-compensates, for the force of gravity—this being effected by a quickened heart-beat and probably an increased constriction of the abdominal blood-vessels. If, however, the person be weakly, then gravity acts and the blood-pressure becomes less in the radial artery in the vertical than in the horizontal posture.

In animals, as we have seen, the vertical head-down position has very little effect upon the blood pressure, raising it, however, a little