

THE EFFECT OF GRAVITY ON THE CIRCULATION.*

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THE effect of gravity upon the circulation has long been known, to a certain extent, and made use of in the treatment of disease, somewhat blindly perhaps, both by the laity and the medical profession. Lately, however, the subject has attracted some attention, and an attempt has been made to investigate the effects of this force more in detail, and, perhaps, it may be not altogether waste of time for us to devote a few minutes to a short *resumé* of the matter.

While everyone is aware of the fact that the force of gravity, unless counteracted in some way, must have an effect on the circulation, it is wonderful how little notice is taken of it by most authorities, and Foster, in his otherwise so complete work on physiology, does not even allude to it. Marshall Wall, in a search on the effects of loss of blood, found that after recovery from a severe hæmorrhage, the syncopal condition could be at once reinduced in dogs by placing them in the vertical feet-down position, then the countenance and eye languish, the head droops, the mouth opens, the respiration is panting, and the heart is scarcely to be heard. Immediate relief was given by reversing the position. To Mr. Leonard Hill, of London, belongs, I think, the credit of having placed the subject on a thoroughly scientific basis. And the tracings here given are taken from his book on "The Cerebral Circulation." The Hyderabad Commission also, with Dr. Lauder Brunton at their head, did numerous experiments showing the effect of various postures on animals during the administration of chloroform.

Looking first at the effects of gravity on the circulation in the lower animals, we find that experiments on dogs, cats and rabbits, show that alteration in the position of the body from horizontal to vertical produces a considerable change in the blood pressure; *e.g.* let the blood pressure be measured by a manometer in the carotid artery of a dog when the animal is in the normal; *i.e.*, horizontal

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