

condition has also been experimentally brought about and observed in animals, and the same result has been seen, namely, that in sleep the surface of the brain and its membranes became pale, the veins ceased to be distended, and only a few small vessels containing arterial blood were discernable. When the animal was roused, a blush spread over the brain, which rose through the opening of the bone. The surface became bright red; innumerable vessels, unseen before, were now everywhere discernable, and the blood seemed to be coursing through them very rapidly. The veins, like the arteries, were full and distended, but their difference of color rendered them clearly distinguishable. When the animal was fed and again allowed to sink into repose, the blood-vessels gradually resumed their former dimensions and appearance, and the surface of the brain became pale as before. The contrast between the appearances of the brain during its period of functional activity and during its state of repose or sleep was most remarkable." Anything, then, that emptied the capillaries would help to produce sleep, and a false theory being out of the way, the facts were seen to bear out the new conclusion. Excitement, particularly the excitement of great mental toil or of an active exercise of the imagination, fills the arteries, and is, we all know, fatal to sleep. Let anybody work hard immediately after dinner, & very frequent practice with the literary class, and unless he works for hours, unless, that is, he fairly fatigues himself, or after working gives his brain an hour's rest in chat, or silence, or that reading which is not reading, but the most soothing of all mental occupations, an equivalent with many men for day-dreaming, he will toss for an hour before he sleeps. So he will also if he has become really in-

terested at a theatre, though we admit that possibility is at present so rare as to be almost beyond the range of scientific experiment. His head, he says, "feels hot," or his "temples throb," or his eyes are dull and full of blood. Ice, again, applied to the head, has in many cases produced deep and apparently dreamless sleep, and a spirit like eau-de-cologne rubbed on the head has in a minor degree the same effect. But alcohol? Well, alcohol does not, people's eyes notwithstanding, fill the arteries of the brain. Practical physiologists are inclined to say that on the contrary it empties them, irritating the sympathetic nerves till they contract the large arteries, and the capillaries or little ones get no supply worth mentioning. We do not say—we are quite incompetent to say—that the question is settled, but we are entitled to say that a balance of scientific opinion and a larger balance of circumstantial evidence suggests the belief that the cardinal condition of natural sleep is a reduction of the arterial activity in the brain. There are other conditions dependent originally on the nervous system of which far less is known. Morphia, for example, must act first of all on the nerves, but the main condition is this; and if this be it, then it must be within the range of possibility for science to discover modes of inducing sleep without resort to drugs, none of which act precisely alike upon all constitutions.

People have been trying to discover this secret empirically for ages, with wonderful little success, there being perhaps no subject on which the evidence of individual experimenters differ so greatly or is comparatively so useless. Nine-tenths of mankind believe that fatigue yields sleep as a sort of inevitable consequence, and so to most men it does, but there are