THE UPRIGHT POSITION IN MAN.

DR. GUY HINDSDALE of Philadelphia has carried out a suggestion of Dr. Weir Mitchell's to a very interesting conclusion (*Amer. journ. med. sc.*, April, 1887). The suggestion consisted in the desire to record accurately the swaying to and fro and from side to side which every one feels himself involuntarily making when trying to stand perfectly still. Placing the heels and toes together, with the hands hanging from the sides, the head erect, and the eyes directed to a fixed object, a silk thread was attached to the forehead, passed over a pulley, and was connected with a rod moving vertically and carrying an index. The index recorded on the smoked surface of a revolving drum. A fall of the line on the drum indicated a forward movement of the head, and an upward line a backward movement. The lateral movements of the head were similarly resolved into the downward and upward tracings of a second index. A third curve recorded the respiration, and a fourth marked seconds.

Another method of recording the sway consists in placing a flat piece of cardboard with a smoked surface upon the subject's head, and have him stand under an index free to move up and down in a fixed line. The resulting tracing shows the continuous movements which occurred. This method is coarser than the other, but has practical points of interest for clinical purposes to which it has already been applied.

Without exception, all persons, including the most healthy, swayed both forward and backward and from side to side. The first movement is generally the more extensive, and is, on the average, one inch, while the lateral sway averages about three-quarters of an inch in normal adults. The first movement is almost invariably forward, then a counterbalancing movement backward with a tendency towards the right. The rate of the movement shows a rhythmical tendency of about fourteen per minute, with a respiration of about twenty-two per minute. The significance of this rate has not yet been ascertained, and its constancy suffers many deviations.

An interesting observation is the common tendency of falling forwards and towards the *right*, which at once suggests all the problems of bilateral asymmetry. The suggestion is borne out by further trial; for, while right-handed people almost invariably are inclined to tilt over to the right, of twenty-two left-handed people, twelve inclined towards the left. This agrees well with the observations that the right arm is heavier and larger than the left, and thus brings the centre of gravity on the right side. That this is co-ordinated with an increased development of the left brain is well made out, and receives its final confirmation in the fact recorded by Flechsig, that more fibres cross over in the pyramidal decussation from the left brain to the right side than *vice versa*.

That the eyes are used to correct these swayings is well proved by the fact that, with the eyes closed, the sway is increased by about fifty per cent. So, also, absence of fixation of the eyes, reading aloud, removal of the shoes and stockings, materially increase the sway.

Children sway absolutely more than adults, and there is greater equality in their case between the antero-posterior and the lateral sway. Twenty-five girls showed an average lateral sway of 1.06 inches, and an antero-posterior sway of 1.08 inches, which was increased by about forty per cent when the eyes were closed.

Thirty-nine blind persons gave an average lateral deviation of 1.4 inches, and an antero-posterior deviation of 1.7 inches, which is about the same as that of seeing persons with closed eyes, thus suggesting that the years of experience have been of no avail in making the blind keep a truer equilibrium than seeing persons momentarily deprived of sight. In deaf-mutes the lateral sway was .93 of an inch, and the antero-posterior .85, which averages became 1.18 and 1.31 with closed eyes. All except two of these (all were right-handed) swayed towards the right. (Incidentally the observation of Professor James, that deaf-mutes are less liable to dizziness than normal persons, was confirmed.)

From the clinical side, it was found that ether exaggerates the normal sway considerably without introducing other peculiarities. In locomotor ataxia (characterized by unsteadiness and uncertainty of the gait) the sway with the eyes open in several cases was observed to vary from 2.25 to 3.75 inches on the antero-posterior line, and from 2.50 to 3.25 laterally. Six observations with the eyes shut show a lateral sway of from 3 to 6 inches, and an antero-posterior sway of from 3 to 7 inches. A case of spastic paralysis showed the deviations almost entirely in the antero-posterior line, while in chorea the difference between the deviations in the two directions is marked, and both are exaggerated (lateral, 1.45 inches; antero-posterior, 2.35 inches).

Dr. Hindsdale justly claims for these observations considerable suggestiveness for physiological research and direct clinical utility.

FLORIDA GEOLOGICAL SURVEY.

FOR the first time in the history of the state, Florida has instituted a geological survey of its territory. The survey is not yet fully organized; but a preliminary report of thirty-one pages, on