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10. REDLICH, E. Zur Topographie der Sensibilitätsstörungen am Rumpfe bei der zerebralen Hemianästhesie. *Neur. Centbl.*, 1915, 34, 850–856.
11. ROTHMANN, M. Ueber isolierte Thermalgesie eines Beines nach Schussverletzung des obersten Brustmarks. *Neurol. Centbl.*, 1915, 34, 153–157.
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SPECIAL REVIEWS

The Circulation and Sleep. J. F. SHEPARD. New York; Macmillan, 1914. Pp. 83, with atlas of 63 plates.

This painstaking study of sleep and correlated physiological phenomena is the most ambitious work attempted since the well-known studies of Mosso published in 1881. The experiments covered two school years and were performed chiefly upon two subjects, the trephining of whose skulls allowed of direct study of brain pulsations by means of brain plethysmographs. Special apparatus was designed for each subject and conditions so adjusted that accidental factors were either eliminated, controlled or compensated for. Careful introspective reports were tabulated with the kymograph records, and the author is guarded in his generalizations.

Studies were made of the brain volume, of the peripheral circulation, and of the breathing curve, with the subject sleeping in various positions: upright, on his back, side, and so on. Further tests of blood pressure, heart rate, pulse-transmission time, the jugular pulse, the pulse-form, and the influence of certain drugs upon the circulation, are also recorded, the last only briefly.

A separate *atlas* of sixty-three plates accompanies the volume, and the book itself is devoted chiefly to an interpretation and explanation of these charts. The author presupposes a rather technical knowledge of the literature of his topic which will make the investigation effortful reading to any but the student of allied problems versed in its terminology.

Shepard finds the volume of the brain always increased at the inception of sleep, with an accompanying increase of the arterial pulse. Subliminal stimuli and the processes of awakening bring a fall of brain volume. So far as investigated, the physiological effect of dreams was ambiguous. Blood-pressure is lowered during sleep, disturbances of any sort causing a rise. The transmission

of the pulse wave is slower in sleep, although the study of the venous system yielded negative results.

Of more general interest in his conclusion that there is an active, effective vaso-motor control of the brain vessels in man, under normal conditions, and that similar control is exercised over the respiratory wave, contrary to the usual assumption. The author rejects the anæmic theory of sleep (sleep as due to the separation of dendrites and axones by expansion of the cerebral vessels, for instance), first, because there are large increases in brain volume with stimuli while awake; in the second place because it appears demonstrable that circulatory changes so far as recorded in his charts, always lag behind mental processes involved (compare figs. 40 and 41 in the atlas). He therefore regards the relaxation of the brain vessels with sleep (and their constriction with awakening) as an effect rather than as a cause of the sleep process.

As to the psychology of sleep, suggestion and quieting environment effect a usual, but not indispensable, precondition of sleep. The content of sleep is described as a "group of sensations of fatigue or rest"—this from introspective reports—and sleep is therefore characterized as a "more complete rest" in which these sensations assume increasing dominance in attention and so, ultimate control.

The book and its atlas in binding and general appearance are a distinct contribution to monograph studies. The work was done at the University of Michigan, is copyrighted by them, and forms Volume I of the Scientific Series, University of Michigan Studies.

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The Criminal Imbecile. H. H. GODDARD. New York: Macmillan, 1915. Pp. 157.

The following chapter titles appear in this little book: The Case of Jean Gianini, The Case of Roland Pennington, The Case of Fred Tronson, The Criminal Imbecile, Responsibility, The Punishment for Criminal Imbeciles. Following these chapters are three appendices: (a) The hypothetical question propounded by the defense in the Gianini Case; (b) the hypothetical question propounded by the prosecution in the same case; (c) defendant's request to judge in the same case.

Dr. Goddard is using the word "imbecile" in this book in the legal sense. It includes the moron and often the idiot as scientifically classified. The cases which he describes here are the first