

allied conditions similar monotonous or indifferent sounds frequently stimulate the production of subjective voices, from which, however, they are recognised as quite distinct, and thus no illusion can properly be said to be present.

These phenomena are undoubtedly morbid. At the same time Dr. Zürcher holds that when we consider them in relation to Jeanne's time they lose something of their morbidity. She also points out the extraordinary extent to which auto-suggestion may be carried in a man of genius without rendering him liable to the charge of insanity; a few pathological traits have even been helpful to men of genius. She remarks, further, that recent researches in hypnotism have greatly reduced the gravity attaching to an aptitude for hallucination; and had she been acquainted with the latest volume of the *Yale Psychological Studies* she might have added that Dr. Seashore's remarkable experiments have now shown that even the normal scientific worker in the laboratory is exposed to hallucinations due to auto-suggestion. The conclusion reached by the authoress is, therefore, that although Jeanne distinctly passed beyond the bounds of the healthy and normal, she was not insane in the ordinary sense of the word; her case belongs to the pathology of genius.

Although somewhat vaguely and imperfectly worked out, this little study is not without interest.

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*On the Temperature of the Brain.* By A. Mosso. *Die Temperatur des Gehirns, Untersuchungen, mit einem Titelbilde und zahlreichen Abbildungen im Text und 5 Tafeln.* Leipzig: Veit and Co. 1894, 191s. (Investigations on the Temperature of the Brain, with numerous Woodcuts in the Text and five Tables, by A. Mosso).

We avail ourselves of the abstract of this work, given by Dr. F. Kiesow in the *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Heft ii., Band 9, 1895.

Mosso's investigations were made on marmots, dogs, monkeys, and human beings. The temperature was ascertained by means of a delicate thermometer which gave to the naked eye a reading of 0.01°. In the experiments on animals the thermometer was included in a steel tube which was pushed through the trephined opening in the skull. In the human subject the temperature of the rectum was noted at the same time as that of the brain. The temperature of

the arterial and venous blood in the carotids and jugular veins was also ascertained in the experiments on animals. In these cases the position of the thermometer was verified after death.

In man and dogs there was found to be a greater difference between the temperature in the brain and in the rectum in winter than in summer. In curarised dogs it was ascertained that the brain lost heat by radiation sooner than the rectum. In asphyxia a rise of temperature in the brain was observed. The irritation of the brain caused by the introduction of the thermometer was attended by a rise of heat of short duration both in the human subjects and in animals. In some cases the brain was found to be colder than the arterial blood. Mosso thinks that the quantity of blood flowing into the brain is not sufficient to raise the temperature to blood heat. As the venous stream carries away heat, the arterial blood would always be warmer than the brain, were the temperature of this organ not raised by a chemical process in the ganglia. The author attaches great importance to the independence of the thermic processes in the brain. Sensations, tetanus, and convulsions can take their course unaccompanied by any rise in the cerebral temperature. He assumes that there is a store of chemical energy in the brain whose transition into heat does not run parallel with the psychical and motor functions. There is in the brain both a nutritive and a functional chemical process. Mosso considers it possible that the substances which generate heat do not serve the trophical processes of the nerve cells, but that they are consumed without helping the psychical and motor functions. The induced current, after section of the spinal cord, caused a rise of temperature in the brain which was sometimes followed by a lesser rise within the rectum. In the same way the electrical stimulus acts upon the zone of Albertoni. Although epileptic fits are thus excited in the dog, Mosso holds with Brown-Séguard (*Comptes Rendus*, 1892, September 12th) that the centre for epilepsy does not lie in the brain cortex, but that the irritation is propagated from the brain to other centres which bring on the epileptic attack. Narcotics diminish the facility of exciting epileptic fits.

Experiments were made upon the effects of cocaine, atropine, alcohol, strychnine, coffee, and absinthe upon the temperature of the brain. The animals were curarised to exclude muscular contractions. Curare and chloroform were

found to neutralise the thermic action of cocaine. The return of consciousness after chloroform caused the brain temperature to rise. Again and again does Mosso insist upon the independence of the temperature in each organ of the body. The author gives the name of organic conflagration to the thermic activity which is separable from the periods of motor and psychical activity.

This organic conflagration represents the heat evolved in the metabolic phenomena which follow the specific functions of the different organs. This production of heat is facilitated when the excitability of the brain is increased. Mosso thinks that the basis of psychical activity consists in a molecular movement in the brain cells, and should this energy pass into motion a certain quantity of heat is set free. Anæmia, ischæmia, and asphyxia also arouse heat in the brain. There is no increase of temperature after voluntary motions, and even weak electrical currents applied to the motor region of the cortex do not raise the heat of the brain.

Mosso made observations upon the cerebral temperature in an idiot of two years of age in whom trephining of the skull had been practised; on Delphina Paradi, a girl of twelve years who had a wound in the skull on the right side; and also on Cane Luigi, a mason aged forty-five, who suffered from a defect of the cranium over the posterior part of the temporal lobe. In the idiot the thermometer could be introduced in the direction of the fissure of Rolando; in the girl into the fissure of Sylvius; and in the last case the author tested the changes of the brain through a Marey's drum, comparing it with alterations in the circulation of the arm with the plethysmograph. In the idiot it was ascertained that strong motions and cries caused no rise of temperature in the motor region of the brain. In Delphina's case neither mental nor motor exertions had any influence upon the brain temperature, but emotions such as fear for the administration of chloroform caused a rise of temperature of 0.1. The return of consciousness after chloroform was not accompanied by any development of heat in the brain. In the third subject, the mason, it was shown that a pleasant mental excitement brought a larger flow of blood to the brain than simple speaking. The temperature in the rectum did not rise simultaneously with that in the brain. A small degree of apnoea causes a great increase in the volume of the brain. The alterations in the circulation in the brain and the ex-

tremities were not always of an opposite character to one another.

The author does not think that the plethysmographic curves in the brain are always dependent upon alterations of pressure in the arterial system.

Mosso has made some experiments upon normal and artificial sleep in man, dogs, and the winter sleep of marmots. He found that in this hybernating animal the brain had a lower temperature than the chamber in which it lay, nevertheless the temperature in the brain was higher than in the other organs, and chemical processes were more active. On applying mechanical and electrical stimuli to the brain of the marmot in the lethargic state there was a rise of temperature.

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*Paralisi Progressiva e Frenosi Sensoria, Lezioni Cliniche dettate dal Prof. L. BIANCHI. (General Paralysis and Psychoses Originating in Disturbances of Sensation. A Series of Clinical Lectures delivered by Prof. L. BIANCHI.)* Naples, 1895.

In response to the request of his students Prof. Bianchi has published these lectures. The subject of general paralysis of the insane absorbs rather more than one half of the brochure. Lecture I. treats of the etiology of the disease, and we note that, in reference to heredity, whilst recognising that, in the greater number of cases, no history of heredity of nervous and mental disease is forthcoming, the author regards neuropathic heredity as a factor of great importance, which in many cases is the only cause of the disease. Reference is made to the occurrence of general paralysis in families; in one family no less than 11 members were affected (Goldflam). Insolation is regarded as a cause, an instance being described. Some importance is ascribed to sexual excess. The author deals at length with the vexed question of the relationship between syphilis and general paralysis, detailing the views held by various writers, and adducing their statistics. He himself does not ascribe to syphilis the etiological importance claimed for it by certain authors. The following are amongst the considerations which he submits in reference to this question: The anatomical signs of cerebral syphilis are conspicuous by their absence in autopsies of general paralysis: the great increase in the disease of late years is