SCIENCE:

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MENTAL SCIENCE.

Motor Expression of Ideas.[1]

A GREAT deal of study has lately been given to the phenomena of automatism in their various and perplexing forms. There has been accumulated a large number of the extreme cases in which persons write down quite elaborate sentences and are unconscious of doing so, and the view has been advanced that we have here the minute beginnings out of which develop these peculiar cases of the separation of personality into two or more *egos*. It is, however, the study of the more normal cases, in which the psychological factors are more easily analyzed, that seems to be promising of interesting and practical results. The typical experiment consists in fixing the attention of the subject in one direction, placing in his hand a pencil, and observing what will result if the hand holding the pencil be tempted to move. With some subjects there results a very clearly written word or words reflecting what was uppermost in their thoughts. The subject is often as surprised as any one, having no consciousness of what he had done. M. Gley, who has tried the experiment with a number of persons, offers the suggestion that this motor automatism may be a part of a general mental tendency. It is well known that some persons do their mental representation by visual pictures, others mainly by sounds, and a third variety by motor images. The last class would be represented by those who gesticulate as they speak, who think aloud as it were, who talk to themselves, and, in short, to whom thinking is action. It is likely that with such persons thought expresses itself in action more easily than in others, and hence this automatic writing becomes related to a better understood class of phenomena. The suggestion is capable of an experimental verification, and well deserves it.

[1] Bulletino de la Société de Psychologie Physiologique, 1889.

A New Use of Auto-Suggestion.[1]

The acting-out of a suggestion imposed upon an hypnotic subject by the hypnotizer has been compared to the self-imposing of a task or a vow. In both cases there is more or less possibility of the suggestion failing to be enacted, depending largely on the opposition to the normal habits and powers of the individual that the suggestion arouses. This power is very different in different persons, and we have a good illustration of it in the relative difficulty different persons have of suggesting themselves to sleep at night. It is similarly possible to train a good hypnotic subject to put himself to sleep either by imagining that the operator were doing it or by observing a certain ceremony, and so on. A large part of the wonderful cures so constantly brought before the public may be viewed as instances of auto-suggestion. Dr. Burot has shown that this power may be utilized in cases of crime hypnotically suggested. A patient wishing to be hypnotized oftener than he could be attended to, was taught to hypnotize himself, and with good success. The suggestion was given to him to commit a theft, which he promptly did. Upon awakening, he forgot all about it, and it was impossible to get him to acknowledge the deed. He was then told to hypnotize himself for the purpose of recalling the circumstances of the case. He awoke, and voluntarily told the whole story just as it happened. The same experiment was successfully made upon other subjects; and the conclusion drawn by Dr. Burot is, that auto-suggestion offers a safe and useful method of discovering the hypnotic origin of a crime.

An Interesting Case of Brain Localization.[1]

There is in Paris a mutual autopsy society, each member of which pledges his body to be dissected after his death by the rest. Special attention is given to the brain, and the society is composed of well known scientists. In this way M. Manouvrier made a careful study of the brain of M. Adolphe Bertillon, and in a supplementary note calls attention to a few peculiarities of special interest. It appears that M. Bertillon was deaf in the left ear, and had been so from infancy. The sense of hearing having been localized in the first temporal convolution, this part of the brain on both sides was examined to see whether there was any difference in the development of the two halves of the brain. It was found that while on the left side this convolution was well developed, with a number of slight ridges and furrows in it, on the right side it was smaller and without these characteristics (the centre for each ear is located in the opposite hemisphere of the brain). While, of course, a single observation of this kind is far from conclusive, yet the method is one promising to corroborate generalizations otherwise reached, and to suggest and explain peculiarities based upon the individual capabilities.

Visualized Sounds.

A correspondent of *Nature* sends an interesting account of association of visual images with the sounds of musical instruments. "The sound of an oboe brings before me a white pyramid or obelisk, running into a sharp point; the point becoming more acute if the note is acute, blunter if it is grave. The obelisk appears to be sharply defined and solid if the note is loud, and vague and vaporous if it is faint. All the notes of the 'cello, the high notes of the bassoon, trumpet, and trombone, and the low notes of the clarinet and viola, make me see a flat undulating ribbon of strong white fibres. The tone of the horn brings before me a succession of white circles of regularly gradated sizes, overlapping one another. These circles and the ribbon float past me horizontally, but the point of the obelisk seems to come to me." The writer adds, that, though she has been accustomed to hearing music all her life, these effects have been noticed only for five years, in which time they have become more frequent and clearer. If she is familiar with the score of a piece, these visualizations seem to slightly precede the actual sounds. The images are distinctly

seen floating about half way between the seer and the orchestra. While the explanation of these peculiar associations is as yet very defective, the possibility of their anticipating the sounds and their comparatively recent growth, are interesting features of his case, from which a possible explanation might proceed.

Physical and Mental Powers.

A number of physical measurements have been made upon 2,134 Cambridge students within the past few years, and Dr. Venn has tabulated these for the purpose of comparing mental with physical faculty. The measurements taken were the distance at which "diamond" type could be read; the maximum pull exerted, as in the act of stretching a bow; the maximum squeeze of each hand; the head volume, which is the product of the extreme length, by the extreme breadth, by the height above a given plane; the lung capacity; and the height and weight. The men were further classified according to scholarship in three grades, *A*, *B*, and *C*, and the averages of all the measurements were separately tabulated for the three grades. As comparatively large and homogeneous groups are dealt with, any correlation of superior physical with superior mental capacity should be evident. The tables, however, show that there is no practical difference in any of the physical averages between the three grades, except in one respect, the strength of pull. Here the lowest grade has the largest average, while the highest grade has the lowest. Dr. Venn interprets this to mean that each grade of students has about the same general physical development, but that strength of pull is something that results from special devotion to athletic sports, and that it is the men who do not devote themselves so assiduously to scholarship who have most time and inclination to develop this side of their physical culture. One other distinction is also noteworthy: it is that the head volume of the first grade in scholarship is greater than in the lowest grade. The difference amounts to about one seventh of the size of the head. How important this fact may be must be determined by future statistics. When tabulated according to age (nine-tenths of the men are between nineteen and twenty-four years of age), it seems clear that the heads of university students keep on growing at least until the age of twenty-four, while in the population generally the growth stops at nineteen years. The height of the physical powers seems to be attained at the twenty-second or the twenty-third year. While these results are in agreement with the modern theory of the relation of mind and body, they show the necessity of distinctive measurements and careful interpretation, if sure results are to be obtained.

HEALTH MATTERS.

Nose-Bleed.

OBSTINATE nose-bleeding is frequently one of the most difficult things to check. Several aggravated cases have lately occurred at the Hospital of the University of Pennsylvania. As a last resort, Dr. D. Hayes Agnew tried ham-fat with great success. Two large cylinders of bacon were forced well into the nostrils, and the hemorrhage ceased at once. This is a very simple remedy, and one which should be remembered for cases of emergency in the country.

Ground-Water and Typhus.

It is well known that a connection has been observed (in Munich and other towns) between ground-water and typhus; the disease gaining force as the water goes down, and declining as the water rises. It is thought that certain decompositions are favored by air taking the place of water in the ground. While in former years Hamburg has exemplified this effect, says *Nature*, the last typhus epidemic there, according to Professor Brückner, was quite in discordance with the variations of ground-water. From 1838, it is stated, the typhus mortality in Hamburg steadily fell from 19 to 2 or 3 per 1000; but from 1885 it rose again to 9; and whereas before 1885 the epidemic was a summer one, with its maximum in August, it now became a winter one, with maximum in December. The curve of ground-water continued to have the same course as before. Professor Brückner points out that this epidemic of 1884–87 corresponded in time with certain harbor works being carried out at Hamburg; and he attributes it to the upturning of enormous masses of earth, the abode of numberless bacteria, whose diffusion among the inhabitants was thus facilitated.

The Physiology of Taste.

The localization of the different forms of taste sensations is a subject which is usually cursorily passed over in text-books, with the statements that the posterior third, the tip, and sides of the tongue only are sensitive; that sweet substances are best perceived by the tip, bitter ones at the back; and so on. In a German medical journal is an abstract of interesting observations by Oehrwall, who, by the aid of a lens, stimulated the individual papillæ by means of a fine brush dipped in solutions of sugar, quinine. acetic acid, and salt. He found that, as had before been observed, the circumvallate papillæ were particularly sensitive, but that on the sides and tip the fungiform papillæ only were sensitive. He estimated that in the whole tongue there were 350 to 400 of these papillæ, of which he found 125 only to respond to stimuli. Many of them appeared to be excited by all four of the substances employed, but in other cases papillæ were found to respond to one form of stimulus but not to another. Thus nineteen per cent responded to acetic acid, but not to sugar; twenty-four per cent which were sensitive to acid were unaffected by quinine; while fifteen per cent which recognized sugar did not respond at all to the application of quinine. All of the papillæ were sensitive to touch, pain, heat, and cold. When stimulated by a mild faradic current, an acid taste only was excited. He confirmed the observations of older authors, that most of the anterior two-thirds of the dorsum of the tongue was devoid of gustatory papillæ.

The Pre-Frontal Region of the Brain.

Modern physiologists, says a Berlin correspondent of the *Lancet*, regard the pre-frontal part of the brain as the seat of character and intellect. After the removal of this part in dogs and monkeys, no paralysis of any muscles or loss of sensibility occurs, but singular changes in the behavior, emotions, and character of the animals have been observed. They become livelier, restless, impatient, irritable, quarrelsome, and violent. Their movements seem purposeless, and their attention to what is going on around them, and their intelligence, are diminished. These observations have been confirmed by similar phenomena in the case of human beings. The well-known "Crowbar case," described by the American physician Dr. Harlow, is one in point. A young man was busy tamping a bursting-charge into a rock with a pointed iron rod, when the charge suddenly exploded and the rod entered his head under the angle of the lower jaw, came out in the frontal region, and was found some distance off, covered with blood and brain-substance. He became childish, wilful, fickle, and restless, and suffered loss of intellectual power. Gradually, however, these symptoms disappeared: he recovered, and lived for thirteen years. His skull is preserved in Harvard University.

Gastric Juice and Pathogenic Germs.

Drs. Kurlow and Wagner, in a paper on "The Influence of Gastric Juice on Pathogenic Germs," which they publish in the *Vrach*, describe some interesting experiments which they have made on this subject, from which they are led to the conclusion that constant or specific microbes do not exist in the stomach; and those which enter it, together with sputum, food, or other ingesta, are only accidental and temporary residents, and cannot live in the normally acid contents of the stomach. Gastric juice is, according to the authors' experiments, an exceedingly strong germicidal agent, and when living bacilli get into the intestinal canal it is due to various conditions entirely independent of the gastric juice. When the latter is normal and in full activity, only the most prolific microbes, such as tubercle bacilli, the bacilli of anthrax, and perhaps the staphylococci, escape its destructive action; all others are destroyed in less than half an hour. Similar influences exist in the intestines, as proved by inoculations with the cholera bacilli. On the latter subject the authors intend making further experiments.