

"In assuming responsibility for the Index the Council of the Library Association was actuated by the following considerations:

"(1) That, in view of the rapid growth of the periodical press, the analytical indexing of periodicals could be carried out with due regard to efficiency and economy only by co-operative effort.

"(2) That such co-operative publication should be controlled by a British professional body rather than be left to the enterprise of a foreign publisher.

"(3) That the Index should be compiled by trained library workers on a voluntary basis, and that the price should be fixed as nearly as possible to the cost of production, and without any idea of profit."

Every effort will now be made to bring the Subject Index up to date. We hope to complete the 1920 Class Lists this summer and commence the publication of the 1921 Lists in the autumn. For further particulars application should be made to the Hon. Secretary of the Library Association, Westminster Public Libraries, Buckingham Palace Road, S. W.

E. W. HULME,
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to Periodicals."

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February 23.

Time Relations in a Dream.

I HAVE read with much interest Dr. Atkin's letter in NATURE of January 27, and also Mr. Barcroft's letter in the issue of October 23, 1919 (vol. 104, p. 154) to which he refers. My own observations, made in various degrees of semi-consciousness, appear to show that there is no such thing as a definite time relation, as it depends entirely on the degree of consciousness, the time scale being enormously shortened in the semi-conscious state most remote from wakefulness, so that the images produced by the mind must succeed one another with extraordinary rapidity when in that state. As wakefulness increases, the time scale seems to expand, and the succession of events proceeds more and more slowly, until it practically stops or becomes normal as wakefulness resumes absolute control. I have been led to believe that the mind is *always* active—just like the heart always pulsates—whether we are asleep or awake, and that control and memory are the features of our waking condition, so that we do not remember the images it calls forth, except when we are beginning to awaken, and the degree of activity of our memory in our dreams and the extent of the dream memorised merely depend on the rapidity with which we reach wakefulness.

I have made a number of observations of hypnopompic pictures, or optical illusions, which occur while sinking into slumber or during gradual awakening. I described my first observations in the Journal of the Society for Psychical Research for April 22, 1921; but since then I made several curious observations, some of which concern the case in point.

The hypnopompic pictures which I have observed are generally landscapes passing *slowly* before one's closed eyes, when in an *almost awake* condition, one being fully aware of one's wakefulness, and having one's full reasoning powers *while the illusion proceeds*, so that one can make precise observations and experiments as to the effect of volition, etc. The pictures, which are extraordinarily sharp and full of detail, appear as an endless panoramic band or film passing *slowly* before one's mind's eye, so to speak. The film may pass in any direction, right to left, or the reverse, or vertically downwards, or obliquely. A film may snap, but it invariably slows down as

consciousness increases, till it becomes motionless and *then* gradually fades.

It seems as if several such bands or films could exist at the same time, passing one in front of the other, and sometimes in different directions, the uppermost alone being visible of course, and its sudden ending by snapping allowing the one underneath to be visible. This would explain the sudden changes which are often noticed in dreams. The fact that the film is panoramic (and not cinematographic, that is, without perception of translation) is remarkable, as one would have expected it to be cinematographic in character. Once, attaining consciousness very rapidly, I glimpsed, for a couple of seconds, a blurred mass of lines such as one sees from an express train on a wall quite close to the track—lines caused by the persistence of vision of the details on the wall, combined with their motion relatively to the train. I have no doubt whatever that I had witnessed the hypnopompic "film" nearly at its normal speed, but with a mind already "slowed down" by the return to consciousness, and unable to cope with its speed and see the details which otherwise I am persuaded—by the agreement of all my observations—would have been visible.

The latter observation bears directly on the question of duration. At such a high translation speed, hundreds of times faster than the usual speeds I had hitherto observed, a whole panoramic view must pass in an extraordinarily short time. Moreover, at such a speed, cinematographic effects are possible, but I fail altogether to imagine by what mechanism they could take place, and so far my observations have given me no clue, although I have once or twice witnessed variations in the process which prevent me from despairing of getting further insight into this mysterious working of our minds. It seems as if control and memory slowed down the working of the mind so that the speed of succession of the images is an inverse function of the degree of wakefulness.

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February 10.

The Social Influence of Science.

IN his article in NATURE of February 17, p. 209, Mr. F. S. Marvin says: "When in the sixteenth century the mind of Ancient Greece awoke again . . ." The advent of modern science is here considered as a revival and continuation of Greek knowledge; an opinion very commonly held, but entailing some difficulty—a millenary period of stagnation and even retrogression. This is inconceivable; the very essence of science is progress, continuous but not steady, because the rate is increasing. This characteristic of science was pointed out in the Harveian Oration for 1897 by Sir William Roberts ("Science and Modern Civilisation," NATURE, October 28, 1897, vol. 56, p. 621).

Antiquity has been artistic, literary, philosophical with deductive reasoning; but is markedly deficient in the objective study of Nature and the inductive mentality. The philosophers' knowledge of things was part of their system, based on *a priori* principles. Their opinions were many and conflicting, with various degrees of credulity, a few of them by chance right. The influence, if any, on the birth and growth of modern science has been very limited; the method of working, by patient observation and experimenting, is exactly the reverse. The rise of the experimental inductive method was like a botanical mutation and inaugurated a new era in the evolution of mankind.

AD. K.

Antwerp, February 17.