

mental than the relation of individual to its class? Again, we are told that the number *one* is defined, quite without a vicious circle, as that class composed of mutually identical members. But does not the concept of individual member presuppose the idea of unity? In short, the study of logic must be carried much further than it has been carried. We should analyze all the concepts and relations used in thinking. It is only natural that attention should have been centered at first upon the best polished concepts, those of mathematical reasoning. The science of logic, like that of psychology, is in its infancy. Meanwhile the great merit of writers like the above, besides their unquestioned learning and logical power, is that they have taught us the universal applicability of logic and its fundamental philosophical importance.

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Some Observations on Visual Imagery. H. B. ALEXANDER. *Psychological Review*, July–September, 1904, pp. 319–337, Vol. XI., No. 4–5.

Dr. Alexander divides visual imagery into three grades with regard to vividness, and into two classes according to the relation of the images to volition. He says that his images are externalized, sometimes, indeed, so vividly objectified as to overlie and blot out real sensation, and to make difficult, if not impossible, the drawing of a hard and fast line between sensation and image. His images of most things are isolated and, except in his third class, are smaller than reality, though things really small, such as printed letters, are not reduced. The differences in the three classes are slight for outline, greater for definiteness, more still for substantiality, and greatest for color, luminosity and apparent size. Vividness is proportional to the amount of attention given to the image. Like many other observers, he says that his images, as a rule, are fragmentary. According to the belief of the present writer this is, however, no differentia; for images, as sensations themselves, are just as fragmentary when they are as brief.

Dr. Alexander speaks of (1) 'voluntary or memory images,' and (2) 'spontaneous and irrelevant images.' In a section on 'The Influencing of Imagery' he admits, however, that 'even in the most abjectly servile imagery there is always some spontaneity' (p. 333). In a section on 'Imagery and Ratiocination' he says he believes that visual imagery was probably the mode of thought developed in the course of evolution before the origin of language, and suggests that the visual images are 'mere residual mental organisms pursuing a natural course of degeneration' (p. 336).

Dr. Alexander begins by saying that 'theories as to imagery can not be on sure ground until we have fuller detail' (p. 319), and yet I have been able to count in the 18 pages of his article only 17 experiences that have been described in detail. One could have wished that he had given more of his experiences. As his visual images are of a vivid type, he might, I believe, have told us more about them. A collection of descriptions of his images of other sense qualities, if he has such, would be welcome.

In connection with this article I should like to make a recommendation concerning the use of the term 'memory image.' Dr. Alexander speaks of 'voluntary or memory images.' By memory images he means not only 'simple reproductions,' but 'all images consciously constructed from remembered elements.' He observes (p. 324) that 'many times projected images appear sequent to winking.' It seems to me that to the visual images here mentioned, and to these alone, should be restricted the name 'memory images,' and that a distinction should be made between 'memory images' and 'images' of the 'free' or 'fancy' kind. I have made for my own study the following classification of images: First, *after images*, which 'feel coercive' and behave in a peculiar way; they show negative and complementary phases; second, *memory images*, which also feel coercive but show no phases; they are, however, like after images in being traced or usually traceable to a definite stimulus; and third, the *images*, fainter than either of the others (in my own case, though apparently not always so with Dr. Alexander), and neither feeling 'coercive' nor having phases. These memory images are mentioned by James (I., 647) as called phenomena of *Sinnesgedächtniss* by the Germans. Examples of these are the microscopist's haunting visions of his preparations, the chess-board mentioned by Dr. Alexander (p. 325) and a many times-observed experience of my own in seeing, after a swim in the surf, images of breaking waves, as I was rubbing my face with a towel in the diminished light of the bath-house.¹

It is true in a sense that all images are memory images. They are resuscitations, either partial or (possibly) integral, of sensations that we ourselves have had; unless we believe that they are inherited from our ancestors through the germ-plasm, a thought which has been several times suggested, but which is corroborated by no facts known to me. Now, if all images are memory images, let us call by that name only those in which the memory element is so noticeable and strong as to make them a class by themselves.

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JOURNALS AND NEW BOOKS

THE INTERNATIONAL JOURNAL OF ETHICS. July, 1904. Vol. XIV., No. 4. *Moral Instruction in Schools* (pp. 401-418): HERBERT M. THOMPSON. - The author argues that it is possible to give school instruction in morals which shall be free from religious or supernatural dogmas, and consequently acceptable to the various schools of religious belief. Sympathy and truthfulness are, he believes, the virtues most important to teach. *Has the Universe an Intelligent Background and Purpose?* (pp. 419-435): JAMES H. HYSLOP. - Whether or not the world has an intelligent purpose and background depends on whether nature cares as much for consciousness as for matter and energy. Unless consciousness can be shown to be conserved (as matter and energy are conserved)

¹ I have also observed a number of instances of auditory memory images.