of the spectrum of nebula. If the book be taken into a nearly dark room, so that at first glance nothing is seen but the dark oblong shapes of the whole spectra of that plate, the figure in question will "serve to give some idea of the peculiar beauty of the phenomenon in question." The lines in the spectrum of Sirius, on the same plate, are made much too distinct, both absolutely and relatively to the other stars.

The practical spectroscopists will find here an exceedingly convenient repertoire of facts. Kirchhoff's chart of the solar spectrum, with the extension of Angström and Thalen, is very beautifully reproduced in miniature. Huggins' maps of the metal lines are given in a form far more convenient for use at the spectroscope than the two folding sheets in a huge quarto in which alone they have hitherto been published. The numerical tables in full accompany both sets of maps. It is much to be regretted that Dr. Gibb's important tables for the comparison of Kirchhoff's, Huggins', and the Normal scales have not been given. We should also have been glad to have Thalen's metallic spectra. At the end of the book there is a "List of Memoirs, etc., upon Spectrum Analysis." This is certainly valuable, and appears to be full. We observe, however, the omission of Stokes' paper upon the absorption-bands as a reagent, and also of Secchi's catalogue of the spectra of the stars. As the work contains little about the spectra of particular celestial objects, the last-named paper might well have been translated and inserted in full, with notes.

Professor Roscoe's book may truly be said to be popular and scientific at the same time. And we call it scientific, not only because it is a thorough account of the facts, but also because it contains long extracts from the original memoirs of the serious workers in this branch of science. There is, doubtless, a vast difference between that knowledge of scientific research which comes of actual practice and that which recommends this book to general readers. No one need be scared by a fear that it is mathematical, for everything which borders upon that subject is omitted. There is nothing about the angles of prisms, the theory of exchanges, or the theory of the displacement of lines owing to the motion of the source of light.

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THE ENGLISH DOCTRINE OF IDEAS

Analysis of the Phenomena of the Human Mind.

CSP. identification: Haskell, Index to the Nation. See also: Burks, Bibliography; Finch and Haskell, Additions to Cohen's Bibliography. The title by Wundt that Peirce mentions in his note is more fully described as: Wilhelm Wundt, Vorlesungen über die Menschen und Tierwesen, Leipzig. 1863. 1st ed.

James Mill (1773-1836) entered the University of Edinburgh in 1870. There he was influenced by the Scottish philosophy as presented by Dugald Stewart, who was lecturing in...
KETNER AND COOK—CHARLES SANDERS PEIRCE

That every idea is the copy of a sensation has always been recognized as the chief point of English psychology. Hume expresses it in the clearest language, saying that the difference between an idea and a sensation is, that the former is faint and the latter lively. This involves the opinion that all our ideas are singular, or devoid of generality; that is, that just as every existing thing either has or has not each conceivable quality, so every idea is an idea of the presence or absence of every quality. As Berkeley says, my idea of a man "must be either of a white or a black or a tawny, a straight or a crooked, a tall or a short or a middle-sized man." Accordingly, it is obvious that one of the difficulties in the way of these philosophers is to explain our seeming to attach a general meaning to words; for if we have nothing in our minds but sensations and ideas, both of which are singular, we cannot really take a word in a general sense. So, if I compare a red book and a red cushion, there is, according to them, no general sensation red which enters into both these images, nor is there any idea of a general respect, color, in which they agree; and their similarity cannot consist in nothing whatsoever, except that they have the same general name attached to them; and there is no possible reason for their being associated together under one name (which these philosophers can consistently give) than one at which James Mill hints, and which follows from his principles—namely, that the corresponding sensations have been frequently associated together in experience. This was perfectly appreciated in the days when nominalism was actively discussed, but now the nominalists do not seem to look it in the face. We will, therefore, put some passages from the present work in juxtaposition, to show that James Mill did feel, obscurely perhaps, this difficulty. "Every color is an individual color, every size an individual size, every shape an individual shape. But things have no individual color in common, no individual shape in common, no individual size in common; that is to say, they have neither shape, color, nor size in common" (vol. I., p. 249). He here speaks of things, but as things are only sensations or ideas with him, all this holds good of ideas. "It is easy to see, among the principles of association, what particular principle it is which is mainly concerned in classification.—That principle is resemblance." "Having the sensation...what happens in recognizing that it is similar to a former sensation? Besides the sensation, in this case, there is an idea. The idea of the former sensation is called up by, that is, is associated with, the new sensation. As having a sensation, and a sensation, and knowing them, is, distinguishing them, are the same thing; and having an idea, and an idea, is knowing them; so, having an idea and a sensation, and distinguishing the one from the other, are the same thing. But to know that I have the idea and the sensation, in this case, is not all. I observe that the sensation is like the idea. What is this observation of likeness? Is it anything but that distinguishing of one feeling from another which we have recognized to be the same thing as having two feelings? As change of sensation is sensation; as change of a sensation to an idea differs from change to a sensation in nothing but this, that the second feeling in the latter change is an idea, not a sensation; and as the passing from one feeling to another is distinguishing, the whole difficulty seems to be resolved, for undoubtedly the distinguishing differences and similarities are the
same thing—a similarity being nothing but a slight difference” (vol. ii., p. 15). Evidently, if a similarity is a difference, the line of demarcation between the two is to be drawn where our language happens to draw it. But to ascertain why two similar sensations are associated under one name, we must recur to his general law of association, which is given in these words: “Our ideas spring up or exist in the order in which the sensations existed, of which they are the copies. This is the general law of the Association of Ideas” (vol. i., p. 78). “Resemblance only remains as an alleged principle of association, and it is necessary to enquire whether it is included in the laws which have been above expounded. I believe it will be found that we are accustomed to see like things together. When we see a tree, we generally see more trees than one; when we see an ox, we generally see more oxen than one; a sheep, more sheep than one; a man, more men than one. From this observation, I think we may refer resemblance to the law of frequency, of which it seems to form only a particular case” (vol. i., p. 111). This is what he says upon the subject of similarity. As an attempt at analyzing that idea, it is a complete failure, and with it the whole system falls. Stuart Mill is gravely mistaken in supposing that his father’s rejection of resemblance as a guiding principle of association was an unimportant part of his theory. Association by resemblance stood in the way of his doctrine that the order of ideas is nothing but the order of sensations, and to grant the mind a power of giving an inwardly determined order to its ideas would be to grant that there is something in the mind besides sensations and their copies. Moreover, upon nominalistic principles similarity can consist in nothing but the association of two ideas with one name, and therefore James Mill must say, with Ockham, that such association is without any reason or cause, or must explain it as he attempts to do. The doctrine that an idea is the copy of a sensation has obviously not been derived from exact observation. It has been adopted because it has been thought that it must be so; in fact, because it was a corollary from the notion (which its authors could not free themselves from) that ideas were in consciousness just as things are in existence. It thus forms a striking illustration of Wundt’s remark that the chief difference between modern attempts to pit psychology upon a basis like that of the physical sciences and earlier speculative systems, is that speculations are now put forth as results of scientific research, while formerly facts of observation were frequently represented as deductions of pure thought.

The same thing may be said of the doctrine that to feel and to be aware of the feeling are the same thing. James Mill plainly cannot conceive of the opposite supposition. With him, therefore, it is a mere result of defective reading. It is not only not supported by exact observation, but it is directly refuted in that way. The English school are accustomed to claim the doctrine of the association of ideas as their own discovery, but Hamilton has proved that it is not only given by Aristotle, but that, as to its main features, the knowledge of it by the English was derived from him. This, therefore, does not constitute a valid claim to the scientific character; yet it is the only claim they have. At present, the doctrine has received a transformation at the hands of Wundt of the most fundamental description. He has solved the perplexing questions concerning the principles of associa-

*This idea is fully explained in his very important and agreeably written "Vorlesungen über die Mensehen-
und Tierwelt."