unfrozen water, followed the same laws, actual freezing causing only a slightly greater reduction than a temperature just above the freezing point. Finally, a few experiments on the formation of ice on a free surface showed that 90 per cent. of the germs present were excluded from the ice by physical processes. The authors conclude that the danger of typhoid infection from the small fraction of weakened germs remaining in natural ice is probably not a serious one, and that the results of their experiments are in harmony with the facts of experience.

H. W. CONN,
Secretary.

SCIENTIFIC BOOKS.

Psychology and Life. By HUGO MÜNSTERBERG. Boston, Houghton, Mifflin & Co. Pp. xi+286.

Professor Münsterberg has here gathered together a number of essays, and has given to the collection the title of the first of the papers. The others are discussions of the relation of Psychology to Physiology, Education, Art, History and 'Psychical Research,' respectively. The chapters thus have a common starting point in Psychology from which they veer off in different directions. The author's special comments in these many fields it is impossible to reproduce here even in outline; we must confine ourselves to the more general doctrine presented in the work.

The book is in many ways an exposition, or at least the hint, of a philosophy; and to deal with it adequately would take one inevitably into deep water. With his main contention that Psychology is but a partial way of dealing with the mind, the present writer feels entire sympathy. It is important to have it put strongly by a psychologist that when we shall have catalogued all the facts of our mental life and have discovered their causal order—which is the purpose of psychology—there still remain the larger questions which have to do with the value and meaning of these occurrences. Psychology, like any natural science, is concerned merely with the facts; its aim is to describe and explain things; and to this end leaves out of account the all-important problem of what our consciousness signifies or what its ideals should be. The things we perceive, he is fond of saying, merely 'exist' but are not 'real'. For this reason the real mental life—the life of will, of action, of valuation, of ideals—lies outside the province of psychology, which is ever busy with the beggarly elements of the mental life and never takes up the problems that interest us as active and moral beings—questions of deeper truth, of beauty, of conscience and religion. The scientific spirit is consequently something which stands in contrast with real life; it is no substitute for the moral and religious spirit.

At the same time Professor Münsterberg somewhat clouds this correct perception of his by putting the antithesis between facts and values too strongly. At times it looks almost as if each could get along without the other; as if a great gulf were fixed between them, so that the realm of ideas appears in almost Platonic isolation from the world of sense-perception. The 'world of values' and the 'world of facts' are of course not two worlds, but rather different ways of considering the self-same world. In Kantian phrase, we might say that facts without values are blind, while values without facts are empty. Professor Münsterberg shows, at least in one passage, that he himself takes this view; but a certain love of contrast and antithesis, too often makes him put the matter otherwise.

And in his endeavor to show the insufficiency of the psychological standpoint, the author really does injustice to psychology. He holds that psychology does, and must 'transform' the facts for purposes of explanation; and explanation, he believes, is possible only when we can restate the facts in terms of atoms or something else equally elementary. In psychology, consequently, everything must, by hook or crook, be analyzed into *sensations*, since these are the mental elements which correspond to the atoms of the physical world. Even when we distinctly know that the real mental process —an idea, an emotion, or act of will—is *not* completely described when we have enumerated the sensations that compose it, nevertheless (according to the author) the psychologist is by the logic of the situation forced to shut his eyes

to anything but these sensations and their laws. He must at least make believe that the act of will, for instance, is composed merely of sensations chiefly from the muscles, because only thereby is 'explanation' possible. In psychology, consequently, the truth is inevitably concealed, and some complex of sensations is substituted for the real mental process which we are to explain.

Few psychologists, I feel sure, would admit that this is a correct account of the psychological method. It sounds almost like a veiled *apologia* for some of the theories of both Professor Münsterberg and Professor James. They have each in their own way attempted to convince the world that certain 'complexes of sensations' were the whole truth in an act of will or an emotion; and the world has in the main steadily refused to be convinced. But now we are, as it were, called into the private office, and are told: "Of course, gentlemen, the complexes of sensations really are *not* the will or the emotion, but that is what we have to say they are if we are to be faithful to psychology."

But if in actually experiencing volition or emotion we clearly see that it is not a mere group of sensations, why should we be called upon gravely to declare in our psychologies the opposite? There is nothing in the rules of psychology to prevent our saying all the while that we are talking about the *sensations* characteristic of will or of emotion or of judgment—a mere part of the full process in consciousness. And if we can see, for instance, that a judgment has features additional to the mere sensations of muscular flexion or extension, I see no reason why, as psychologists, we should say, resignedly, that these other features are indescribable and beyond the pale of science. Quite apart from the question of values or of ideals, the experience itself reveals peculiarities of form that are quite definite and intelligible and communicable—has subject and predicate and the affirmative or negative connection, all of which are absent when the same sensations appear in a merely associative or temporal connection. Professor Münsterberg gives no sufficient reason why psychologists should hold that sensations are the only things in a mental process that are definite and describable and capable of helping to explain the process. As well might the physicist say that in his realm the bare atoms are all that he can take account of; when, in fact, time and distance are most necessary for any explanation that really explains. In other words, physical science has to take account both of the 'elements' and of their relationship or 'form.' And psychologists must do the same, noting not only such relations as are common to psychology and the physical sciences (time, for instance), but searching diligently whether there may not be some that are peculiar to our private mental life.

The general trend of the book, as can be readily seen, is to propose a more moderate estimate of psychology in general and of the laboratory work particularly. The later methods all come in for a drubbing: there is no quantitative work possible by psychological experiments; the brain physiologists can only borrow from psychology but give nothing in return; and child-study, with honorable exceptions, is something of a humbug. So that the general tone is a trifle disheartening to any of us who have faith in psychology and wish it well. As a counter-blast to those writings that magnify the office of psychology it may serve a good purpose. And since it is largely addressed to teachers, its chief benefit will undoubtedly be to remind them that a correct appreciation of the child and of the aims and ideals which are to be aroused in him is quite as important as a knowledge of the mechanism of the child's mind.

George M. Stratton.
University of California.

The Races of Man. An Outline of Anthropology and Ethnography. By J. Deniker, Sc. D. (Paris)–London. 1900. Walter Scott (American publishers, Charles Scribner's Sons). 611 pp., 176 illus., 2 maps.

The author of this handy text-book, forming Volume 37 in the Contemporary Science Series, is librarian of the Musée d'Histoire Naturelle in Paris. Moreover, he is a ripe specialist in human biology. Having, then, his own past experience as a guide, and being in touch with all the literature upon his theme, one is not surprised to find him interesting and instructive