

MERRILL'S 'TREATISE ON ROCKS.'

TO THE EDITOR OF SCIENCE: In animadverting on the defective English of Professor Merrill's 'Treatise on Rocks,' etc., in your current number, Mr. Woodworth says: "In the case of other quotations it is sometimes doubtful as to which author the work in a certain district is to be referred" (page 996). Will the author of this sentence kindly express his idea in German or French or Chinook, and thereby oblige half a dozen readers who find themselves unable to grasp his exact meaning?

W J MCGEE.

WASHINGTON, D. C., June 26, 1897.

THE TRIAL OF THE CROSSLEY REFLECTOR OF THE LICK OBSERVATORY.

A MATTER relating to work at the Lick Observatory (with reference to the trial of the three-foot reflecting telescope presented to us by Mr. Crossley, of England, in 1895) has lately been discussed in newspaper press-dispatches in rather a one-sided fashion. I desire to say that the questions involved have been passed upon by the Regents of the University of California, who have, unanimously, approved my action. The decisions of the Regents have not been spoken of in press-dispatches, which is my reason for writing this note.

EDWARD S. HOLDEN.

THE LICK OBSERVATORY, June 21, 1897.

SCIENTIFIC LITERATURE.

Our Native Birds of Song and Beauty. By HENRY NEHRING. Published by George Brumder, Milwaukee. Vol. II., 4°. Pp. 453; 18 colored plates. Complete work in 16 parts, \$16; bound in 2 vols., library binding, \$18; handsome dark leather binding, \$22.

The second complete volume of this admirable work, some of the separate parts of which have been already noticed in these pages, has now been issued to subscribers. The two volumes make a handsome addition to any library and should be in the possession of all lovers of birds. The work contains no technical matter, and little effort has been made to incorporate the latest facts bearing on the geographic distribution of the various species, the aim being to supply trustworthy accounts of

the life histories of the birds in relation to their environment and in their relations to man. Mr. Nehrling has the instincts and sympathies of a naturalist. He is evidently a botanist and musician as well as an ornithologist, and his descriptions of bird life are generally woven in with pictures of shady ravines and forest glades or flowery dells where the birds and plants and landscape are seen together as they are in nature. His residence in widely separated localities—Wisconsin, Missouri, Texas and Florida—has enabled him to become familiar with a large proportion of the birds he treats, and his personal knowledge is supplemented by copious extracts from the writings of others. Special emphasis is given to economic relations and breeding habits.

As stated in notices of the earlier parts, the illustrations, all of which are colored, show the birds in natural surroundings and are of two kinds: plates of single species, mostly by Robert Ridgway; and mixed plates, by Mützel and Göring. Some of Mr. Ridgway's plates of single species are among the most charming bird pictures I have ever seen. Those of special excellence in the present volume are the Black Rosy Finch (*Leucosticte atrata*) and Dickcissel (*Spiza americana*)—the former on a mountain top, the latter in a clover field. Three of the mixed plates by Mützel are worthy of special mention; Plate XXI, a group of showy winter birds—the Pine Bullfinch, White-winged Crossbill, Redpoll, Evening Grosbeak, Nuthatch and Chickadee—in the top of a snow-covered spruce; Plate XXVIII, the Blue Grosbeak and three species of *Passerina*—the Indigo Bird, Painted Bunting and Lazuli Finch; Plate XXXVI, six species of brilliantly colored Woodpeckers.

Even in the mixed plates the attempt has been made to group the species in appropriate surroundings, and much pains has been taken with the landscape and vegetation. Thus, Göring's picture of the Scissor-tailed Flycatcher, Green Jay and Verdin shows these birds (and one or two others) among cactuses, flowering agaves, and aborescent yuccas with a barren range of desert mountains in the background.

Although the plates are of uneven merit, even the poorest are sufficiently good to serve the purpose of identification and will be most

helpful to the student. We take pleasure in commending the work to nature lovers, and particularly to the large and healthful class of out-door students of birds.

C. H. M.

The Present Evolution of Man. By G. ARCHDALL REID. London, Chapman and Hall. 1896. pp. 370.

The work which has appeared with the above title consists in fact of two parts; up to p. 196 it has reference to organic evolution in general, and only the remaining portion, pp. 197-370, treats especially of the evolution of man. In the earlier part of the work there is given a very excellent discussion of the broad principles of evolution, and particularly of the reasons which lead to the conclusion that acquired characters are not inherited by other than the lowest organisms. The argument against the transmission of acquired characters, as ordinarily understood, appears to the writer conclusive, and he would commend it to the neo-Lamarckians for dissection. It is also well shown that under ordinary circumstances natural selection works upon normal variations, and not upon those which occur only at infrequent intervals. Much stress is also laid, very justly, upon the importance of characters which are normally acquired, and of the power of acquiring them.

An interesting argument runs as follows: Inasmuch as progressive or new variations may be in all directions, but atavistic variations are in one direction—towards the ancestry—there will be a tendency, in the long run, *in the absence of selection*, to revert to a more primitive condition, owing to the dominance of the atavistic variations. When the evolution has been very slow, as with certain Brachiopoda, the reversion will be scarcely noticeable, but when it has been very rapid, as with many domesticated animals, the reversion will be rapid and striking. All this appears to accord with the known facts, but to the present writer it seems an inadequate statement of the actual course of events. Mr. Reid says: "In every species natural selection as a cause of evolution, and atavism as a cause of retrogression, are constantly at war." It does not seem to me that this is necessarily the

case, but that, on the other hand, atavistic variations may be themselves selected. The germ, it must be supposed, contains units representing many phases of existence, some of which have been held over, undeveloped, through many generations, while others are new. When one of the latter develops we say the variation is a progressive one; when the former develop we call the result atavism. It is reasonable to suppose that environmental and germinal selection are the factors which determine which of its possible developments the germ shall undergo. That is to say, there are two factors involved, one the relative vitality or growth-force of the several germinal elements, the other the environment favoring one or the other in their struggle. This same struggle, in various phases, goes on through life; for example, many people have two or more talents, which cannot be fully exercised simultaneously; other things being equal, the strongest will prevail, but how often the environment steps in and dictates which of the possible paths of life shall be followed.

This being made clear, it is evident that atavism increases the range of possibilities of any given germ, and thus may be highly advantageous. Especially is this the case when the environment is changeable, as with seasonally dimorphic butterflies, one phase of which is probably in most cases older than the other. My own studies of bees have led me to believe that many of the specific characters had their origin in atavistic variations, because it often happens that a character will appear in two different groups independently, and yet be so striking and definite as to suggest that it must have existed in a common ancestor, though not in the immediate ones.

How, then, as to atavism in the absence of selection? It is perfectly obvious that any given adult individual does not, under existing circumstances, represent the average potential, if one may so express it, of its race. In the first place, the individual is probably a survivor out of many—has been the subject of natural selection. In the second, it represents only one (selected) phase of the many that were possible to the germ. In the total absence of selection (an impossible thing) we should obviously