If we take two "breeds" denoted by

$$\{p^2(DD) + 2pq(DR) + q^2(RR)\}^n \qquad (a)$$

and

$$\{P^2(DD) + 2PQ(DR) + Q^2(RR)\}^n \qquad (b)$$

respectively, and cross them at random, it is not difficult to show that the array of the resulting hybrid offspring is given by

$$\{Pp(DD) + (Pp + pQ)(DR) + Qq(RR)\}^n \quad (c)$$

Now, the mean number of recessive elements in these families is

$$(a) \qquad \frac{q^2}{(p+q)^2} \times n$$

$$(b) \qquad \frac{Q^2}{(P+Q)^2} \times n$$

$$(c) \qquad \frac{qQ}{(p+q)(P+Q)} \times n$$

Thus the mean of (c) is the *geometric* mean of (a) and (b).

Since the geometric mean is always less than the arithmetic mean, it follows that the mean number of recessive elements (of the type (RR)) in (c) is less than the collective mean of the families (a) and (b) treated as one population. Moreover, since the recessive elements are fewer, the aggregate elements of the types (DD) and (DR) must be greater.

If, now, it be assumed that dominance is positively correlated with vigor, we have the final result that the crossing of two pure breeds produces a *mean* vigor greater than the collective mean vigor of the parent breeds.

By similar methods it can be shown that the "inbreeding" of a Mendelian population leads to a decrease in the mean number of elements of the types (DD) and (DR).

I am aware that there is no experimental evidence to justify the assumption that dominance is correlated with a "blending" character like vigor; but the hypothesis is not an extravagant one, and may pass until a better takes the field.

A. B. Bruce

The School of Agriculture,
Cambridge, England,
August 27, 1910

The Inheritance of Body Hair

Reading a book on South African stories called "By Veldt and Kopje," by William Charles Scully (London, T. Fisher Unwin, 1907), I was struck by a statement which may be of interest alike to anthropologists and students of "Mendelism," and as the book may not have been seen by either, I will quote the passage.

In a chapter on "Kaffir Music," written jointly by Mr. Scully and his wife and originally published in the *Pall Mall Magazine*, incidental mention is made of Madikanè, once reigning chief of the Baca tribe of Bantus, who was killed in battle on December 19, 1824. The Bacas lived on and about the present site of Pietermaritzburg, Natal, until driven into exile by the Zulus or the Amangwanè.

There is some ground for thinking that Madikanè's mother was an European, possibly a waif from one or other of the vessels which are known to have been wrecked on the east coast of southern Africa toward the end of the last century.

All authorities agree that Madikanè was of great stature, that he was light in color, and that his hair and beard were long. It was his habit to carry his snuff-spoon stuck in the hair of his chest. One of the writers has examined a number of his male descendants, and found about *one in every four* with traces of hair on the chest. It is, it may be stated, very unusual to find any hair on the body of a Bantu. [The italics are mine.]

John Burtt-Davy

The Reformed Calendar and a Universal Sabbath

To the Editor of Science: The reform of the calendar is at present so hopelessly academic, that it may not be amiss to add another thought. The Jewish Sabbath, or seventh day of rest, has been adopted by both Christians and Mohammedans—but with changes of the actual week-day in order to emphasize division.

In the proposed new calendar the old regular recurrence of named-days would be altered by the odd no-day yearly, and the actual Sabbath-succession destroyed, despite the re-

tention of the pagan names "Friday," "Saturday," "Sunday." If, however, names of the week-days were abolished and they were called, as by the Friends and the primitive Christians, as well as by the ancient Hebrews, first day, second day, etc., up to seventh day, perhaps Jew, Christian and Mohammedan might be induced to unite on the new Seventh-day as a universal Sabbath.

S. SOLIS COHEN

SCIENTIFIC BOOKS

HAECKEL'S EVOLUTION OF MAN

SINCE the publication in 1883 of an English translation of the third edition of Haeckel's "Evolution of Man," there has been no English republication of a later edition until now. The third edition was a revision, in 1876, of the first; the second was only a reprinting of the unchanged original. Since 1876 some things have been discovered about the evolution of man, and many things have been said about Haeckel's conception and treatment of the subject. In addition, two more German editions of Haeckel's book, the fourth and fifth, have been published. Of these the fifth is a very thorough revision, involving some enlargement and bringing the matter of the book into line with present-day knowledge.

Perhaps this last sentence is not a very happy one. Haeckel's particular evolutionary interpretation of present-day knowledge of human structure, physiology and development may not be held by all biologists to be a true bringing of this knowledge into line. "Der Haeckelismus in der Zoologie" is a subject that will not down wherever biologists come together. And its discussion usually leads to a going apart.

Biologists are likely to be of two minds concerning the advisability of putting Haeckel's "Evolution of Man" into the hands of the lay reader as a guide and counselor on this most important of evolution subjects. Haeckel is such a proselytizer, such a scoffer and fighter of those who differ with him, that plain, unadorned statement of facts and description of things as they are can not be looked for in his books. Or, if looked for, can not be found. But this very eagerness to convince; this hoisting of a thesis, this fight for Haeckelian phylogeny and Haeckelian monism, all make for interest and life in his writings.

The present new English[1] translation of the fifth German edition of "The Evolution of Man" is by Joseph McCabe, who does it well. He is the same writer who translated into English those two very successful, popular books of Haeckel, "The Riddle of the Universe" and "The Wonders of Life." These two little books have had such an extraordinary circulation (in most of the languages of the civilized earth) that "The Evolution of Man," much larger though it is—it is in two illustrated volumes of about 350 pages each—and more detailed and technical, will nevertheless undoubtedly be welcomed by a considerable public. It will certainly give this public a much better opportunity than do the smaller books to judge for itself of the soundness of the conclusions of biology touching the evolution of man. For despite possible criticism of details, and the dogmatism of the whole, it is a book of facts; a compendium of description of the course of human ontogeny and mammalian phylogeny, and of the evolution of animal structure and functions. It is provided with index and glossary, is generously illustrated, and admirably printed and bound.

V. L. K.

STANFORD UNIVERSITY, CAL.

Catalogue of the Hemiptera (Heteroptera), with biological and anatomical references, lists of food plants and parasites, etc. Prefaced by a discussion on Nomenclature and an analytical table of families. By G. W. KIRKALDY. Vol. 1, Cimicidæ. Berlin, published by Felix L. Dames. 1909.

While primarily a catalogue, this work is something more in that it includes a discussion of the rules of nomenclature and their interpretation as applied to the adoption of

[1] Haeckel, E., "The Evolution of Man," translated by Joseph McCabe, 2 vols., illustrated, 1910, G. P. Putnam's Sons, New York.