loams, it does not seem so incredible that the loess and clayey loam are the delta-like accumulation of great streams, fed from the glaciers on the north and the Tertiary silts on the west.

I am surprised to learn from Mr. Hershey's letter that in northwestern Illinois the 'upland loess' 'is present over the thick terrace-like deposits of true loess down along the streams.' Chamberlin and Salisbury, as I understand, make the terraces *subsequent* to the former, and however that may be in that region, there is clear evidence from fossils and rearranged material that such is the case along the Missouri. It is a common thing for all terraces to be capped by a finer loam, the last deposition of the flood which laid down the coarser material below, or of some subsequent flood which barely submerged them.

Mr. Hershey assumes without question the preglacial age of the troughs of the Missouri and Mississippi through this region. This has not yet been proved. The evidence to the contrary is given at some length in my report which he reviewed, and I need not repeat here. I would add only a few words. The rock bottom of the Missouri through the State of Missouri, and of the Mississippi below the mouth of the Des Moines, is nowhere known to be lower than is known to be sometimes reached by 'the scour' in floods of the present day, viz., 80 or 90 feet.

The interesting preglacial channel west of Keokuk, first reported by General Warren, is interesting, but instead of proving that most of the present Mississippi channel is preglacial, rather shows the contrary, for its course at Quincy and below corresponds in depth and size with the new channel at Keokuk rather than the old one, and that has evidently been cut since the glacial epoch. We may as reasonably search for the continuation of the old channel toward the east as toward the south, for bed rock opposite Quincy is 45 feet below low water.

Before closing I would state that I am not over-confident concerning the Osage-Gasconade divide, and am only sorry that circumstances have not permitted my further study of the problems involved. But as far as our present knowledge goes, it still seems to me much more tenable than the theory which I understand Mr. Hershey to propose.

J. E. Todd.

State University, Vermilion, S. D.,
May 31, 1897.

A MONUMENT TO THE LATE BUYS-BALLOT.

To the Editor of Science: The Royal Dutch Meteorological Institute is about to remove from the old buildings at Utrecht, where, during forty years Professor C. H. D. Buys-Ballot labored so indefatigably for meteorology, to the new establishment at de Bilt, near Utrecht. Buys-Ballot, who may be called the founder of meteorological science in the Netherlands, is known to students of that science the world over from the law bearing his name, which connects the direction of the wind with the position of the storm center. His noble character, combined with a charming personality, endeared him to his colleagues, and won the respect and affection of a wide circle of acquaintances, which included the writer. A provisional committee, composed of his former associates, believing that the memory of such a man is honored outside of his own country, has invited an international committee to aid in obtaining funds for the erection at Utrecht of a monumental bust of the great meteorologist. The American members of this committee are Professor Willis L. Moore, Chief of the United States Weather Bureau at Washington, and the undersigned. Subscriptions sent to either one of us will be acknowledged and forwarded to the Dutch committee.

A. Lawrence Rotch,
Director of the Blue Hill Meteorological Observatory, Readville, Mass.

ORGANIC SELECTION.

I am unable to agree with Mr. Robert M. Pierce that the passage he quotes from Mr. Herbert Spencer's 'Principles of Biology' sets forth the same conception that Professor Mark Baldwin dealt with in Science for April 33d. Mr. Spencer's position, I take it, is this: Acquired characters are inherited; there is a natural selection of acquirers, the fittest of whom survive to transmit their acquired characters; hence evolution is rendered more rapid than it would otherwise be. This is primarily

Lamarckism, with natural selection as 'a secondary agent,' and as such it differs widely from the hypothesis with which Professor Mark Baldwin is concerned.

C. LLOYD MORGAN.

UNIVERSITY COLLEGE, BRISTOL, ENG.

SCIENTIFIC LITERATURE.

A Treatise on Rocks, Rock-Weathering and Soils. By GEORGE P. MERRILL. New York, The Macmillan Company. 1897. Pp. 411. 25 pls., 42 figs. in text. $4.00.

Professor Merrill is already known to the public as the author of 'Stones for Building and Decoration,' of a guide to the geological collections of the United States National Museum, and to geologists as well by his valuable contributions to the subject of rock-weathering. The present work is a résumé of his own investigations of rock disintegration and decomposition rounded out by an abstract of the literature of the subject. The book is a welcome addition to the already numerous aids to the study of rocks. It is particularly important in its bearing upon the sedimentary rocks and the soils which have not as yet received the careful examination which has been bestowed upon the igneous rocks.

The author's plan is in its outlines simple and logical. The igneous rocks are treated as what may be termed original rocks, from which all others are derived. Following them is a description of the metamorphic, vein and clastic rocks. After this is given the manner of disintegration and decomposition of these rocks. In general, the text follows a natural cycle of change in those rocks which are exposed to the direct action of the atmosphere and surface processes.

Unfortunately, the details of the plan have led to much repetition of subject-matter, which might have been avoided by a little attention. This duplication is particularly brought to mind by the similarity of the phrase when it appears. Thus we read in regard to slaty cleavage:

P. 155. In such cases the bedding is not infrequently indicated by the dark bands or 'ribbons' which are so evident on a split surface.

Again:

P. 171. In such cases the true bedding plane is often determined only by the dark bands, or ribbons, by which the split slates are traversed.

Eskers and kames are described on p. 290 and again on p. 356 in essentially the same words.

Some terms are used before they are explained, as, *e. g.*, metamorphism, in the introductory chapter. This is particularly noticeable in the notes upon the occurrence of minerals and from the pedagogical standpoint is a defect in the book. Furthermore, it is redundant and unnecessary, since the information is given again in its proper place in the chapter on rocks.

A few passages in the text are so clearly ambiguous as to be explained only on the ground of careless proof-reading. Thus, on p. 108, there is the meaningless statement concerning the manganese oxides, "which, though wide in in their distribution, are found in such abundance as to constitute rock masses in comparative rarity."

Again, on p. 36, we read of concretions "which may not so closely simulate animal forms as to be very misleading." *Often* for *not* in this sentence would bring the statement into the realm of the understanding. More blind yet is the statement on p. 236 that "oligoclase always gave way before the oligoclase."

There are several other slips which one may expect to find in a first edition, as, on p. 64, the phrase 'apparently evident,' and on p. 292, "where the included débris is deposited on melting," the context shows that we should read 'on the melting of the ice;' on page 163 we find *Eozoon Canadenses* for *Eozoon Canadense*, elsewhere correctly given.

On p. 393 the reference to the 'common earthworm' is sufficiently clear without the parenthetical phrase, 'the angleworm of the New England disciples of Izaak Walton,' ten words of undisguised padding.

The statement on p. 356 regarding the Rhone would lead a student unfamiliar with the course of that river to suppose it was a subglacial stream, like the Yahtse in Alaska perhaps, whereas only its uppermost torrential portion occupies this relation to the ice. But the English of a scientific book is perhaps something aside from its real self. Happily there is less