correct acidity where it now exists or where it may develop. The phosphorus is needed solely for its plant food value. The supply of organic matter must be renewed to provide nitrogen from its decomposition and to make available the potassium and other essential elements contained in the soil in abundance, as well as to liberate phosphorus from the raw mineral phosphate naturally contained in or applied to the soil.

It should be said here that throughout the work Professor Hopkins is concerned only with general farming, not with intensive agriculture where other fertilizers can be used with profit and must be if largest results are secured.

Chapters are given to the discussion of limestone, of phosphorus and of organic matter and nitrogen, as to their function, quantitative needs and maintenance. Then follow chapters on rotation systems for grain farming, live stock farming, the use of phosphorus in different forms and finally theories concerning soil fertility. The subject-matter of these chapters is of the greatest importance; the views presented are in the main fundamentally sound; they are well presented, and must have a very important influence in advancing agriculture in the United States.

Part III. contains an admirable digest of the more important field experiments bearing upon permanent agriculture, conducted at Rothamsted, England; in Pennsylvania, Ohio, Illinois, Minnesota, in the south and in Canada, pointing out their bearing upon the views expressed in the preceding sections.

Professor Hopkins has succeeded in producing a worthy companion volume to Hilgard's great work "Soils."

F. H. KING

MADISON, WIS.,
May 16, 1911

The Ice Age in North America and its Bearing upon the Antiquity of Man. By G. FREDERICK WRIGHT. Fifth edition, revised and enlarged. Pp. 800. 200 illustrations. 8vo, cloth.

The popularity of Wright's "Ice Age" is sufficiently attested by the fact that the fifth edition is now published under date of December 22, 1910, enlarged and embellished with many new and interesting illustrations.

The value of Professor Wright's work consists principally in the illustrations and descriptions he gives of glacial phenomena not only in North America, but in other portions of the world. The main criticism of this work, which has many good features, is that its author is too credulous, and has thus permitted many exploded "chestnuts" like the "Calaveras Skull," the "Lansing Skeleton" and the "Nampa Image" to find in him a defender of their antiquity. This tendency of Professor Wright is unfortunate, since it of itself throws doubt upon his power of critical discrimination in analyzing evidence pro and con in matters of geologic controversy. It is possible that Professor Wright's theological beliefs have unconsciously biased his judgment in matters pertaining to the age of the earth, and to the date of the glacial epoch. In spite of these defects, however, Professor Wright's "Ice Age in North America" will prove a useful work in enlisting popular attention, and study of these most interesting phenomena connected with the Pleistocene glaciation.

I. C. WHITE

SPECIAL ARTICLES

A SCALE FOR MEASURING THE MERIT OF ENGLISH WRITING

ONE inch may be said to be equal to another inch from any one of three lines of evidence. If the two are compared by a hundred experts, (1) the experts will all report the two as indistinguishable; or (2) if some of them do, by microscope, micrometer or the like, find a difference of a trifle plus or minus, the number finding the first inch plus will equal the number finding it minus; or (3) if each man is forced to report a difference, half will find the first inch plus and half minus.

One specimen of English writing may be said to be equal to another from the second or third lines of argument, the only logical difference between equating the two lengths and equating the two specimens of writing being that the variability of expert judges in the