

the hand-book of the future. In the matter of terminology, one notes with satisfaction the author's precision in the use of such terms as "slate," for instance, as characteristic of argillaceous rocks possessing slaty cleavage. The microscopic structure of the clastic rocks is fully up to date. The igneous rocks are treated in the light of the studies of the most advanced petrographers. Prof. Geikie, we think, rightly adheres to a simple classification of the igneous rocks into an acidic, intermediate and basic series, since he deems it inexpedient to divide them as does Rosenbusch into an ancient and modern series. Zirkel's error in mistaking plagioclase for sanidine in the andesites of the 40th Parallel Survey, made known by the work of Hague and Iddings, is noted.

Prof. Geikie thinks the geological evidence demands "an amount of time not far short of the hundred millions of years originally granted by Lord Kelvin," and he has evidently read Mr. King's admirable paper published this year (see p. 60).

In the section on Denudation, the competency of meteoric agencies to reduce lands toward a base-level is ably discussed, but the American student who has followed the advanced studies in geographic evolution published by Davis and others within the past five years will be somewhat disappointed in the retention of the phrase "plain of marine denudation" for the term "peneplain" adopted by G. M. Dawson and other writers on the great base-level of erosion in North America. Prof. Geikie maintains that the finishing touches in these table-lands of erosion are given by the horizontal planing action of the sea.

The action of bacteria in producing decay and soils is not mentioned, but this recently discovered geological agent is scarcely missed in the interesting discussion of the geological action of plants and animals. The work accomplished by cryptogamous plants is carefully reviewed and fully presented. In the discussion of coral-reefs, the views of Darwin, Murray and A. Agassiz are thoroughly presented. Prof. Geikie completes his review of the subject with the statement "that the wide-spread oceanic subsidence demanded by Darwin's theory cannot

be demonstrated by coral-reefs must now, I think, be conceded."

The concise use of terms which characterizes the larger part of the work is further illustrated in the case of "laccolite" proposed by Gilbert for igneous intrusions which "have spread out laterally and pushed up the overlying strata into a dome-shaped elevation." The laccolites are thus contrasted with the simple "intrusive sheets" or "sills" which have the appearance of interbedded masses. This last term for the first time appears as a convenient designation for the numerous thin, interbedded rocks which are sometimes erroneously called laccolites. Prof. Geikie also carefully adheres to the generally accepted use of the term "*monocline*" as used by the geologists of our western surveys. The part dealing with metamorphism ought to be read by every student of geology. The section on Regional Metamorphism has been much expanded so as to embrace the advances recently made in this important branch of geological science. It is clearly pointed out that igneous rocks as well as clastic beds have been altered into gneisses and schists; and the effects of great pressure are carefully discriminated.

The chart of geological periods naturally differs in its main divisions from the plan recently proposed by the U. S. Geological Survey. The pre-Cambrian, including the Algonkian and the Fundamental complex, or all that has up to within a few years been called Archæan, is placed under the head of Primary or Palæozoic, a position which is still an undecided matter at least in this country. It seems clear that the Algonkian as now constituted is Palæozoic, as Dana has urged; but the "Fundamental complex" may yet be proved Archæan in the sense in which the word was originally intended. The Quebec group has been dropped, as it should be. The North American Pleistocene glacial periods are described under the head of Champlain, as in the previous edition, a summary which seems strange to the student of glacial geology in this country.

The book on Stratigraphic Geology is particularly enriched by abstracts setting forth the recent accessions to our knowledge of the ancient and usually metamorphic

## FOSSIL RESINS.

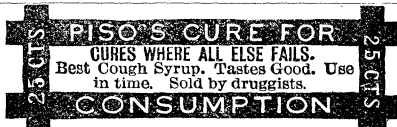
This book is the result of an attempt to collect the scattered notices of fossil resins, exclusive of those on amber. The work is of interest also on account of descriptions given of the insects found embedded in these long-preserved exudations from early vegetation.

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