

to be affixed. Prof. Zirkel now introduces these provisional and useful terms to English readers. "Opacite" includes all the black opaque amorphous grains, scales, and streaks which have resulted from the decomposition of different minerals, and which, no doubt, vary widely in chemical constitution. They probably in most cases consist largely of metallic oxides. "Ferrite" embraces those yellowish, brownish, or reddish specks, grains, veinings, or pseudomorphous crystals which occur in so many rocks where oxides of iron have decomposed. "Viridite" is the term applied to greenish transparent or translucent scales, fibres, or veins, frequently seen where hornblende, augite, or olivine have been altered. They must vary much in composition, sometimes approaching chlorite, sometimes delessite or serpentine.

These scientific terms may be usefully transplanted into English text-books. The only one which, though the great need of such a word cannot be denied, seems open to considerable objection, is "macroscopic." It is too like "microscopic," whether as written, printed, or spoken. "Gymnoscopic" would be better. But there occur throughout the Report many nouns and adjectives which the reader will in vain look for in any dictionary, and the meaning of some of which he will not readily appreciate if he does not happen to be familiar with the German petrographical terms for which they are intended. Such are "fibration," "lamellation," "inclusion," "zonally," "lineated," "fluidal," "interwedged," and many more. Even ordinary words are used in a way which is apt to puzzle the uninitiated. For example, "some occurrences are poor in augite," "poorly-shaped crystals," "drop-like or crippled minerals." The English language is not quite so meagre as to be unable to furnish expression in already familiar words and phrases to the ideas sought to be conveyed by these novel and sometimes rather uncouth terms.

After a brief chapter devoted to the crystalline schists and their related rocks, the author proceeds to what are commonly known as the igneous rocks, beginning with granite and the early intrusive porphyries and felsites, passing thence through the diorite, diabase, gabbro, and other groups, into the wide series of tertiary volcanic products. V. Richthofen's name propylite is retained for the oldest eruptive rock of the tertiary series—a mixture of plagioclase felspar with hornblende, having most of the characters of the old diorites and dioritic porphyries. The petrographical differences between this rock and andesite are carefully summed up by Prof. Zirkel; but at the most they appear to be rather fine-drawn. He insists that rocks of different geological date can be distinguished petrographically, and that this may be done even among the different members of the tertiary series. Undoubtedly the most important chapter of the Report is that devoted to the trachytic and rhyolitic rocks. Among the trachytes some have been found containing augite instead of hornblende—a curious and novel fact which establishes an analogy between these tertiary masses and some old syenites of Tyrol and Norway, in which G. von Rath has lately shown that augite replaces hornblende. The author partly following von Richthofen divides the rhyolites into (1) Nevadite or granitic rhyolite; (2) Rhyolite proper, including the felsitic and porphyritic varieties, of which he has found among

the rocks of the Fortieth Parallel no fewer than sixteen well-defined types; and (3) Hyaline rhyolite, including the glassy and half-glassy varieties, obsidian, pitchstone, pumice, &c. With the exception of some varieties in the eastern part of the region, all the basalts met with in the course of this survey prove to be felspar-basalts. Though repeating in Western America the familiar characters of the basalts of Western Europe they contain some varieties which merit a special subdivision. These are marked by (1) the invariable presence, though in small quantity, of sanidine, (2) the general absence of olivine, (3) the abundance of the glassy microlitic base, (4) the occasional presence of hornblende, (5) a high proportion of silica, (6) the dusty character of the included apatite. A petrographer who admits such wide departures from the normal type of a species must not be surprised at those who would further seek to unite some of his species which hardly differ from each other so much as these varieties of basalt do.

The Report is illustrated by twelve quarto coloured plates. For beauty of execution nothing has appeared like them since those of the lamented Vogelsang. They have been executed at Leipzig, under the author's own eye, and are evidently as faithful as they are vivid and artistic.

ARCHIBALD GEIKIE

#### OUR BOOK SHELF

*Results of the Aralo-Caspian Expedition.* Fascicule iv., 383 pp., with seven lithographed plates; and Fascicule v., sixty-eight pages. (St. Petersburg, 1877.) [Russian.]

THE fourth fascicule of this publication contains an important paper by the well-known Russian ichthyologist, Prof. Kessler, on "The Fishes of the Aralo-Caspian Pontic Ichthyological Region." After an introduction, in which the author briefly sketches the geography of the region, and makes a few objections to some statements of Mr. A. R. Wallace as to the geographical distribution of fishes, Prof. Kessler describes forty-three new species and varieties of fishes of the region, and twenty-four other species, the previous descriptions of which were incomplete. These descriptions, being the result of very elaborate researches, are based on extensive collections obtained by the members of the expedition, and by previous explorers. The new species are illustrated by seven plates. The second part of the work is a systematic catalogue of all fishes known to inhabit the region, with notes as to their geographical distribution.

The third part deals with the general conclusions arrived at by the author as to the geographical distribution of species, the relations of the Aralo-Caspian ichthyological fauna to the faunas of the neighbouring basins, the distribution of species in different waters of the region, the zoological characteristics of the fishes inhabiting it, and their genealogical relations, their mode of life, and some remarks on the geological history of the region. These conclusions (some of which have already been noticed in NATURE) will certainly be of great interest to the zoo-geographer, and their importance is much enhanced by the usual caution of M. Kessler's statements. The work is altogether an important acquisition to ichthyological literature in general, all the more that it deals with countries very imperfectly known until now.

The fifth fascicule of the work contains two papers by M. Alénitzin: "On the Sweet Water Springs on the Shores of Lake Aral," and a "Sketch of the History of the Islands of that Lake," the former containing some interesting information as to the distribution of water in sandy steppes.