chalk where the infusorial silica occasionally segregates into cracks instead of into flint nodules.

The breaking-down of the material of the walls of vein-fissures, its alteration, and incorporation, in place, into the gangue, are briefly but well described, and illustrated by drawings made from thin sections under the microscope. Much weight is given to the results of Sandberger's researches, which seem to establish quite firmly lateral secretion as the generally most important method of vein formation and enrichment. Mr. Phillips gives in this connection a very instructive *résumé* of some of Sandberger's results, which show the widespread distribution of both the heavy metals and the elements of the gangue substances in the constituent minerals of the common rocks.

Not less interesting are the instances cited to show the sufficiency of causes acting now and in recent times at the surface of the earth, to cause the concentration and fixation of minerals to form ore-bodies.

Thus the fact shown by Sandberger, that all lithia micas contain tin, taken in connection with the finding, in various Cornish streamworks, of deer's antlers completely replaced by crystallized oxide of tin, points at once to the existence of sufficient sources of tin in surface rocks, and to the possibility of derivation from those sources, and concentration in veins and stock-works, under conditions now prevailing at the surface. So, also, in the instances of metallic gold which have been found deposited on the woodwork of Australian mines, we have similar evidence of metallic deposition now in progress.

While Mr. Phillips considers that the evidence is largely in favor of assigning to lateral secretion the generally most important part in forming fissure-veins, he recognizes the probable action of ascension, and also of sublimation, in many individual cases. The portion of the book — about five hundred pages — devoted to the description of typical forms of deposits throughout the world is full of information desired by the economic geologist and the statistician.

The illustrative instances are well selected, and the latest available statistics of production are given, apparently, in all cases. Aside from the fact that it brings the description of the countries treated by Cotta down to the present time, the book is particularly valuable for its descriptions of practically all countries which, for various reasons, received little or no attention in Von Cotta's work.

THE MICROSCOPE IN BOTANY.

Those students who have been waiting for an English translation of Behrens's book on botanical methods can but be disappointed now that it has appeared. Not that the book does not contain much that is extremely valuable, nor that it is not put in an attractive form by the publishers, but that it has been made cumbersome and expensive by an inordinate amount of 'padding' not found in the German text. Figures and descriptions of American instruments are introduced with such careful discrimination, that doubtless the volume must prove eminently satisfactory to their makers, while the author's remarks on the more useful stands of continental make are entirely suppressed, possibly from a laudable wish to further home protection. The maxim of the author, that "he is the best experimenter who does his work with the simplest possible apparatus," is frequently outraged by the description of gimcracks easily dispensed with, and more properly advertised in an instrument-maker's catalogue than in the pages of an expensive handbook.

Yet, notwithstanding the fact that a two-dollar-and-a-half book has been evolved into a five-dollar book by a process the reverse of natural selection, the translation must prove a boon to the few investigators who have not sufficient command of German to use the original; and it is unquestionably more convenient for college students, who, as a rule, dread manuals in any language but their own. Those who use the book in either form will probably agree with the author that the chapters on reagents and their application in microchemical work constitute its most valuable feature, rendering it, indeed, indispensable in the laboratory where careful work is carried on. A chapter on the preparation of specimens for examination and preservation is also extremely useful, and especially the portion treating of the preparation of fossils and other hard objects.

Though a few more or less deserved slurs on English microscopists, and the author's all but complete forgetfulness that Americans ever look through the instrument, may touch the pride or appeal to the belligerence of an Anglo-American, the book is, in the main, written well and in good taste, and shows a working familiarity both with the subjects handled and the literature pertaining to them.

A guide to the microscopical investigation of vegetable substances. From the German of Dr. Julius Wilhelm Behrens. Translated and edited by Rev. A. B. Hervey, A.M., assisted by R. H. Ward, M.D., F.R.M.S. Boston, *Cassino*, 1885.