

coals of the Lower Coal Measures of the East, including the Morris or Mazon Creek coal of Illinois and the Brookville or Clarion coal of Ohio and Pennsylvania, but previous to the Darlington or Upper Kittatinning coals of the latter States. A comparison with the British coal flora indicates that the flora of the Henry county deposits is represented to a greater extent in the Upper and Middle Coal Measures of Great Britain than in the Lower; probably in age about that of the basal portion of the Upper Coal Measures of that country. Interesting comparisons are also made with the coal floras of Continental Europe. It is to be regretted that in this, as in all similar large works, many of the finer points in comparative biology are necessarily omitted or else are more or less hidden in the mass of the systematic arrangement. There is no doubt that several of the species are capable of even more critical treatment that is given to them, but every one must recognize that the author has performed an immense amount of investigation and has produced a work of permanent scientific and economic value.

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*Analyse microchimique et spectroscopique.* By M. -E. Pozzi-Escot. (Encyclopédie scientifique des aide-mémoire.) Paris, Gauthier-Villars, Masson et Cie. P. 192, figs. 40.

Chemists the world over, have awakened, within the last few years, to the fact that the microscope is a most valuable accessory to every laboratory of chemical analysis. This increasing interest has been remarkably slow considering the almost inestimable value of this instrument as an aid in chemical research. The failure, in the past, to make use of the microscope has been, doubtless, due to two causes: first, the fact that instruction in the use and manipulation of this instrument has not been, heretofore, included in the courses of study offered to students fitting themselves for chemists in the various educational institutions; second, there has been a lack of suitable text-books, manuals, etc. The latter cause has been eliminated by the recent publication of several works. Of these the latest is the little compend of M. Pozzi-Escot published under the title given above. The appearance of this out-

line of the methods of microchemical analysis can be taken as indicating an increasing appreciation of the great value of the microscope to chemists, and friends of the system will, therefore, gladly welcome the little book although it is almost entirely a compilation of methods and reactions already published. It is but fair to the author, to state, however, that the material has been well chosen and due credit has been given to the originators of the different tests and processes.

The author gives a concise review of the rise and development of microchemical analysis. Then follows a description of the requisite apparatus and reagents, the tests for the different elements, and finally a more detailed discussion of the methods to be employed in the systematic analysis of unknown substances.

It is greatly to be regretted that the elements have been arranged in alphabetical order and that no details are given as to the way of applying the tests, nor (save in a few cases) of the causes which may lead to their failure. Any attempt to make microchemical analysis a purely mechanical matter is certain to give the beginner no end of difficulty and, moreover, is apt to mislead him into the idea that a knowledge of chemistry is not an essential in the interpretation of the tests obtained.

Reactions for sixty-three elements are given, most of which are satisfactory and are illustrated by original or copied drawings of the crystals to be obtained.

Chapters III. to V., dealing with the methods to be employed in a systematic analysis, are much better than those preceding. The necessary manipulations being described in detail and cautions as to sources of error are also given. This portion of the work can be consulted with profit by all those interested in the neat and elegant methods of microchemical analysis and renders it worthy of a place in the analytical laboratory.

That part of the book devoted to spectroscopic analysis comprises only nineteen pages. It would have been better had the author omitted this section entirely and devoted the extra space to a more thorough discussion of reactions and to an index.

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