of plants and animals, on the modifications and hereditary distribution, and particularly, perhaps, in the very admirable fifth chapter of the first part which, under the title of 'elements of plant and animal distribution' gives precisely the catholic and panoramic view of geographical distribution that must be regarded as most desirable. Here are included with much wealth of illustration and judgment as to detail, accounts of the distribution of species, both plant and animal, of genera and of families and orders. Statistics of distribution, physiognomic and climatic groups, plant and animal zones, domesticated plants and animals and colonial aggregates are skilfully compiled and made the basis for useful generalization.

The second chapter, that dealing with floral regions, reminds one upon the whole of the Grisebachian discussion, though somewhat tempered by recent research. It is scarcely abreast, however, of the work of Drude and a list of the *Florenreichen* will show that the tone, on the whole, is analytic rather than synthetic. They are as follows: Northern, Mediterranean, Turanian, East Asian, Indian, tropical African, South African, tropical American, extra tropical South American, Australian, New Zealandian, Polynesian, Oceanic, making in all thirteen principal floral divisions of the earth. The omission of an Antarctic region seems scarcely to be justified. The principal regions of faunal distributions are slightly different and are added here for comparison. They are: North-polar, Northern, Eurasian, Mediterranean, Turanian, Indian, Trans-Saharan, Madagascaran, North American, tropical American, Andian-Argentine, West Indian, Australian, Papuan, New Zealandian, Polynesian and Oceanic, making in all seventeen principal faunal regions. That the divisions for plants and animals correspond so generally is impressively indicated by these classifications. Minor differences, however, exist and indicate the rather stronger climatic influence upon the stationary plants and the relatively stronger influence of insular isolation upon the locomotive animals. Thus Papuan, West Indian and Madagascaran divisions are necessary in the classification of animal groups, but not in that of plant societies. Again, North America, exclusive of the polar regions, becomes a single province for animals, while for plants it is divided into two upon a basis of climate.

A quite insufficient index closes the volume, and it is to be regretted that its stores of useful and sometimes elaborate information are not made more easily accessible.

CONWAY MACMILLAN.

Sewage-Analysis. By J. ALFRED WANKLYN and WILLIAM JOHN COOPER. A practical treatise on the examination of sewage and affluents from sewage. Including also a chapter on Utilization and Purification of Sewage. Philadelphia, J. B. Lippincott Company. 1899. Pp. xvi + 220.

The first eighty-two pages are devoted to analytical processes not essentially different from those published in 'Wanklyn's Water Analysis,' and in view of the fact that polluted water and sewage differ but in degree of pollution, it is reasonable to doubt the necessity of repeating information such as this to those already familiar with water methods.

One must always open with respect a book bearing the name of 'Wanklyn,' but in these days of active and accurate water investigation it would seem that the author of the 'Albuminoid Ammonia Process' has hardly kept in touch with what advances have been made by those who would be glad to be accounted his pupils. Thus the old writing paper packing for the retort neck is yet retained in the treatise under consideration; and a confidence is reposed in the 'goodness' of 'good tap-water' for final rinsing, which many water-analysts know to be misplaced. Much space has been given to criticisms of methods of which the authors do not approve, and the style of such criticism suggests the old acrimonious discussion of some years ago.

It is most unfortunate that the authors should have seen fit to refer to the oxidation of organic compounds through the action of germ life as 'a fashionable fad and delusion of the day'; nor is it seemly to announce that "neither is the burning of the kitchen-fire nor the action of the steam-engine a manifestation of bacterial action."

Such remarks strike the reader as unworthy

of men of repute. Under the section dealing with sewage purification, there is no mention whatever of the work done by the Massachusetts Board of Health.

The appendix is voluminous and consists largely of extracts from previous papers published by the authors during the years 1866 to 1891. W. P. Mason.

Laboratory Manual, Experiments to Illustrate the Elementary Principles of Chemistry. By H. W. Hillyer, Ph.D., Assistant Professor of Organic Chemistry in the University of Wisconsin. New York, The Macmillan Company. 1899. Pp. vi+200. Price, 90 cents.

After a short chapter on manipulation, this manual is divided into two parts. Part I. is given to the preparation and properties of the elements and their compounds. The usual illustrative experiments are given, all of these being of a purely qualitative character. A few problems for calculation are, however, inserted. Part II. is devoted to the verification of quantitative laws, especially the laws of constant and multiple proportion, the laws of combination for gases, and vapor densities. Very much, of course, depends on the teacher, but there seems to be some danger that the work of many students with the first part of this book will degenerate into merely playing with chemicals. The old method of preparing stannic chloride given on page 144 might, with advantage, be replaced by that of Lorenz, (Zeit. f. Anorg. Ch. 10, 44.).

Inorganic Chemical Preparations. By Felix Lengfeld, Assistant Professor of Inorganic Chemistry in the University of Chicago. New York, The Macmillan Company. 1899. Pp. xviii+57. Price, 60 cents.

The study of inorganic chemical preparations deserves a much larger place than has usually been assigned to the subject in chemical courses. The selection of topics in Dr. Lengfeld's book is excellent. Some of the directions are, perhaps, a little too concise for the use of students who have not had a good deal of laboratory experience. Without close watching many students would certainly fall into serious mistakes—but, then, a student often learns more from a mistake than by doing a thing right the first time.

W. A. Noyes.

SCIENTIFIC JOURNALS AND ARTICLES.

The *American Journal of Science* for November contains the following articles:

'Types of March Weather in the United States,' by O. L. Fassig.

'Some new Minerals from the Zinc Mines at Franklin, N. J., and Note concerning the Chemical Composition of Ganomalite,' by S. L. Penfield and C. H. Warren.

'Action of Acetylene on the Oxides of Copper,' by F. A. Gooch and DeF. Baldwin.

'Andesites of the Aroostock Volcanic Area of Maine,' by H. E. Gregory.

'New mode of occurrence of Ruby in North Carolina,' by J. W. Judd and W. E. Hidden. With Crystallographic Notes by J. H. Pratt.

The Osprey for October, makes its appearance under new editors and is a particularly good number, being very strong in interesting notes. The first article, 'The Home of a Pair of Wood Thrushes' is by R. W. Johnson; then follow 'The Butcher Bird in Florida,' by Mrs. M. A. Ohlinger; 'Peculiar Nesting of the Hooded Merganser,' by Glen Rinker; 'Robin Recitals and Variations,' by P. M. Silloway, and 'Nesting of the Bald Eagle,' by Wm. H Fisher. The principal article, 'Wild Guinea-Fowl of Barbuda,' by Frederick A. Ober, is in that writer's best vein. L. A. Fuertes notes the occurrence of 'Two Rare Warblers at Ithaca.' In the correspondence Mr. J. Parker Norris replies to his critics in a letter on 'The Utility of Large Series of Eggs.'

Appleton's Popular Science Monthly, for November, contains a portrait and sketch of Dr. George M. Sternberg, Surgeon-General, U. S. A. The number also contains an article on Cambridge University by Mr. Herbert Stotesbury with portraits of Sir Michael Foster, Professors J. J. Thomson, G. H. Darwin, Henry Sidgwick and James Ward, Dr. Donald Macalister and Sir George Stokes. Other articles are on 'Wireless Telegraphy,' by Professor John Trowbridge; 'Emigrant Diamonds in America,' by Dr. Wm. H. Hobbs; 'On Spider Bites' and 'Kissing Bugs,' by Dr. L. O. Howard, and a review of Wallace's 'Wonderful Century,' by Professor W. K. Brooks.