into consistent ideas, that shall convert all external reality into spiritual values, and satisfy all the needs of the spirit with the results of knowledge—this great synthesis we still await." All men who study life, and indeed all who live, will contribute to this synthesis. The sociologists have volunteered for a part of the work which is more general than that attempted by either of the older divisions of labor within the group of the positive sciences. It is nothing less than the frank attempt to achieve this synthesis. The most credible clue which they have discovered as yet is that the key to the interpretation of life is not one interest, but all interests. The immediate quest of the most alert sociology is a conspectus and a calculus and a correlation of the interests which actually impel real men. This quest is completely readjusting the sociological perspective. It is making us feel that we have been dealing with the stage-settings instead of the actors. It does not, and it cannot do away with knowledge of the mechanism of social structure and function, from the bodily tissues and mental traits of the units up to the conventions of world-society. It is beginning to enforce the conviction, however, that these are finally to be understood, not as their own interpreters, but as interpreted by the more vital realities, *i. e.*, the interests that produce and use them.

The change that has come over sociology is not unlike the shifting of attention in botany from the making of herbaria to the study of ecology. The change is taking us out of an atmosphere of isolated cases, on the one hand, and of desiccated metaphysics on the other, into the real life of men. We have to find out what men want, why they want it, in what proportions to other things that themselves and others want, how the wants depend upon each other, how association is related to these wants (the real passage from psychology to sociology), and how to appraise the same in settling upon a theory of the conduct of life. With this perception at the fore, our venerable structural and functional sociology begins to look like a treatise upon the instruments of Sousa's band by a man who had not found out what they are all for.

The conclusion of the whole matter is not that appreciation of Professor Giddings' book was promised at the beginning, only to be withdrawn at the end. The sort of work which the method proposes will have to be carried on by somebody until we have the kind of knowledge that it seeks. It requires the prevision and the courage of the seer to advertise a program which is sure at the outset to impress men in the exact sciences as quixotic. My conviction that analysis of interests and determination of interest-groups is more fundamental and more enlightening than classification of types on any less essential basis, makes me insist that Professor Giddings' program is not the most timely. It points, however, toward something which must sooner or later have its time. It is a powerful argument to the effect that the really fruitful work of psychology is virtually not yet undertaken. It should have the effect of a keen spur in promoting the development of both psychology and sociology. ALBION W. SMALL.

The Microscope and its Revelations. By the late WM. B. CARPENTER. Eighth Edition, edited by W. H. DALLINGER. With 23 plates and nearly nine hundred engravings. Philadelphia, P. Blakiston's Son & Co. 1901. Price, $8.00.

This standard work of reference has undergone another revision to keep it abreast the rapid advance in microscopical optics and construction during recent years. Two years ago with the appearance of the seventh edition the work was entirely rewritten, and while the changes now are less extensive they embrace the complete reconstruction of eight chapters, covering about one half of the 1,100 pages of the book. The portion rewritten treats of the principles of microscopical optics and of vision with the compound microscope, the history and evolution of the instrument and its accessories, the manipulation of apparatus, the preparation of objects and the application of the microscope to geological investigations. In this work the author has had the assistance of such well-known authorities as E. M. Nelson, A. B. Lee, E. Crookshank, T. Bonney, W. J. Pope, A. W.

Bennet, F. J. Bell and others, with the result that the volume will remain, as it has been, the most useful and extensive work of reference in this field. The illustrations, always numerous in former editions, have been largely increased and are excellently chosen.

Especial mention should be made of the chapter of 150 pages on the history and development of the microscope, the scientific presentation of which is full of interest; with its extensive illustrations, many of which are new, it forms by all odds the most complete study on the evolution of the present form of the instrument accessible to the student. Here is proposed the following scheme for the classification of instruments which makes their criticism and comparison more intelligible and constitutes the first effort in this direction. This classification is as follows:

Microscopes placed in Class I. possess—
1. Coarse and fine adjustments.
2. Concentric rotation of the stage.
3. Mechanical stage.
4. Mechanical substage.

Class II.
1. Coarse and fine adjustments.
2. Mechanical stage.
3. Mechanical substage.

Class III.
1. Coarse and fine adjustments.
2. Plain stage.
3. Mechanical substage.

Class IV.
1. Coarse and fine adjustments.
2. Plain stage.
3. Substage fitting (no substage).

Class V.
1. Single adjustment (coarse or fine).
2. Plain stage.
3. With or without substage fitting (no substage).

This classification applies also to portable miscroscopes.

Of American instruments Dr. Dallinger speaks very highly more than once, saying in one place, 'The recent microscopes of the best American makers are characterized by the highest quality of workmanship and abundant ingenuity,' and especially commending as an 'admirable feature' that the makers here "avoid sharp angles and knife-like edges on all their instruments. This looks a trifle, but the use of the microscope with saprophytic, pathogenic or other infective material requires the utmost caution that the skin of the hands should be unbroken."

Dr. Dallinger's views on the continental model of stand are so well known that one can not be surprised at the position taken in this work; but the manner in which this opinion is expressed is so catholic and the criticism is so full of truth that the reader, whatever his views, feels himself brought into sympathy with the author. The following excerpt shows the tenor of this discussion:

> Our one purpose in this treatise is to promote what we believe to be the highest interests of the microscope as a mechanical and optical instrument, as well as to further its application to the ever-widening area of physical investigation to which, in research, it may be directed. To this end throughout the volume and especially on the subject of the value and efficiency of apparatus and instruments, we have not hesitated to state definitely our judgment, and, where needed, the basis on which it rests. Incidentally we have expressed more than once our *disapproval*, and, with ourselves, that of many of the leading English and American microscopists, *of the form of microscope known as the Continental model;* we believe it is not needful to say that we have done this after many years of careful thought and varied practice and experience, and, so far as the human mind can analyze, without bias. It is not where a microscope is made that the scientific microscopist inquires first, but where it is made most perfectly. * * * The more recent instruments of Continental model are marvels of ingenuity. * * * There is no fault in the workmanship; it is the best possible. *The design alone is faulty;* there is nothing to command commendation in any part of the model. * * * To all who study carefully the history of the microscope and have used for many years every principal form, it will, we believe, be manifest that the present stand of the best makers is an overburdened instrument. Its multiplex modern appliances were never meant to be carried by it.

The chapters on the microscopic forms of life are extensive and well illustrated, yet they constitute the least satisfactory portion of the work; indeed some of the sections are seriously out of date. It is the lower types the

treatment of which is most evidently insufficient, and among the Protozoa, Cœlenterata and Vermes much recent work of great importance is omitted. Thus it is hard to see why the Flatworms, which are both of general and also of special clinical interest, should have been passed over with merely three pages of text and no illustrations; and the dismissal of malarial organisms by the citation in a brief footnote of a few authorities generally inaccessible, does not conform to the purpose of the work or to the manner in which other topics are handled. These are, however, instances from chapters of which a few have not been revised in either of the recent editions of the book.

In general the work has been carefully and thoroughly revised and brings together in convenient form a mass of valuable material which can hardly be found in any other single volume. It is indispensable to the amateur worker with the microscope who wishes assistance or information on the many problems which arise in his work, while biologists and others to whom the microscope is a professional instrument will find it a reference book of real value.

Henry B. Ward.

PERNTER'S METEOROLOGICAL OPTICS.

An important work on the optical phenomena that occur in meteorology is announced from the press of Wilhelm Braumüller, of Vienna, viz., 'Meteorologische Optik,' by Professor J. M. Pernter. This work is the fruit of the author's studies for twenty years past and represents the lectures that he has delivered to students in the universities at Innsbruck and Vienna. He proposes to thoroughly work over a field in the physics of the atmosphere that is often neglected by meteorologists, although in many respects of importance to those who are studying the dynamics of the atmosphere. Although treatises on meteorological optics have been published by Clausius, Mascart and others, yet, it is to be expected that this volume by Pernter will be the first that has done justice to the subject. The whole work will be divided into four sections, relating respectively to the apparent shape of the celestial vault; the phenomena due to the gaseous components of the atmosphere, such as refraction and scintillation; those due to haze or cloud, such as halos, glories, rainbows and the colors of the clouds; finally, the phenomena due to very small particles of any kind always existing in the air, such as the blue color of the sky, the polarization of skylight, twilight and the absorption of light in the atmosphere. The first section, price 2 Kroners, or 45 cents, has already appeared, covering 54 pages of large quarto, and shows us that the whole work, which will embrace about 480 pages, is eminently worthy of commendation.

C. Abbe.

SCIENTIFIC JOURNALS AND ARTICLES.

Bird Lore for March–April opens with a most interesting article by William Brewster on the 'Voices of New England Marsh,' in which we are given a picture of the cycle of life throughout the year as indicated by the voice of the residents. The second article, on 'Bird Clubs in America,' is by S. N. Rhoads, and tells of the Delaware Valley Club. Edith M. Thomas contributes a poem on the 'English Starling,' and the third paper on 'How to Name the Birds,' by Frank M. Chapman, treats of the orioles and finches. Lawrence F. Love tells of 'My Bluebirds,' and we have reviews, editorials and the Audubon Department to complete the number.

The Osprey for March has 'Notes of some Yellow-throated Vireos' Nests,' by William R. Maxon; 'The Birds of the Marianne Islands and their Vernacular Names,' by W. E. Safford; 'Notes of McCown's Longspur in Montana,' by P. M. Silloway; 'The Carib Grassquit (*Euethia bicolor omissa*),' by B. S. Bowdish and a 'Biographical Notice of John Cassin,' by Theo. Gill, besides shorter articles and reviews. The supplement on 'The General History of Birds' continues the description of the feathers.

The Museums Journal of Great Britain has a brief article on 'Museums and Teaching,' which is rather flattering to American museums, an article by W. H. Edwards on 'An Economical Method of Mounting Shells and