other oxidation reactions by Criegee, Waters, and others has spurred an increased activity in this field in recent years. A few reviews that deal with a single aspect of the field have appeared, but until this year no comprehensive coverage of most common oxidation reactions had been published.

Ross Stewart is well qualified to write a monograph on oxidation reactions, because he has worked in this field for a number of years and has published a number of important papers dealing with permanganate and chromic acid oxidation. On reading his book, one is impressed with the insight that he has brought to the many unresolved problems and by his clear discussion of the present state of each reaction treated.

Stewart begins with a general discussion of the mechanisms by which oxidation may occur and the methods by which the reactions may be studied and then considers the versatile oxidants, chromic acid and permanganate, in considerable detail. The second half of the book is concerned with other transition metal oxidants, glycol cleaving reagents, nonmetal oxides and acids, and peroxy compounds. A final chapter is devoted to mechanisms of some biologically important oxidation reactions.

The material treated should prove valuable to most organic chemists regardless of whether their primary interest is in synthesis or in mechanisms of reaction. Although the volume is largely devoted to the mechanisms of reactions, a large body of information that should be useful in devising synthetic schemes is included. This small, inexpensive, and very useful book will be a valuable addition to any chemist's library.

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Classification of Aurora

International Auroral Atlas. Published for the International Union of Geodesy and Geophysics by Edinburgh University Press, 1963 (order from Aldine, Chicago, Ill.). 18 pp. Plates. $8.75.

Description of a phenomenon as transient and as variable as the aurora is much easier if it can be done with the help of an accepted scheme of classification. Responsibility for providing such a scheme has been accepted by the International Association of Geomagnetism and Aeronomy, part of the International Union of Geodesy and Geophysics. The first atlas and classification were produced by a committee under Carl Störmer about 30 years ago and have been in use since that time. The atlas has been out of print for many years, and the association decided that, instead of reprinting the atlas, the question of a revision should be considered. The present atlas is the result of the deliberations of a committee chaired by James Paton.

It is clear that the revision of an accepted classification system should be undertaken with caution, because, when a few years have elapsed, the understanding of a large body of literature may be hampered. In this case, if the two systems are simply compared, there is no doubt that the new is superior; confusion due to the changeover will certainly exist but should not be serious, for the most important terms of the old system have been taken over with nearly the same meanings. These can be qualified by the addition of as many as five symbols, some of them with subscripts. In my opinion, this full panoply of qualifiers will practically never be used by most observers, but they do no harm and are always available if needed. Here is an example from the text: a rayed band is called RB in both the old and the new systems. For a more detailed description, the symbol RB3c would be used, giving the intensity and the color. The intensity scale is essentially the same as the old International Brightness Coefficients, increasing by one unit for each factor of ten in the physical intensity. The complete symbol would be a_3fR_3B3c, in which a_3 specifies a certain kind of activity, with rays moving rapidly along the form, and f tells us that the form is fragmentary. The subscript on R_3 refers to a very long ray, at least several hundred kilometers high.

A useful innovation is the form called *veil* (V), a rather extensive, uniform luminosity which frequently covers a large fraction of the sky. Unwary observers have often reported that no aurora was present when in actual fact a bright veil was covering the whole sky. *Patch* (P) replaces the old diffuse surface; this may lead to some confusion, because in the old system P meant "pulsating," now replaced by the qualifier *pulsing* (p_1–p_4).

The main body of the atlas is a collection of excellent photographs that illustrate the classification. There are 32 in black and white and 4 in color; the latter are outstanding in that they show truer colors than any others I have seen. Because all-sky photographs may distort some forms and make classification difficult, a collection of these is given also. To give an idea of the rapid motions in an auroral display, a sequence of 1-minute exposures covering 24 minutes is included. Study of all these pictures will give one as good an impression of an auroral display as can be had without being on the spot.

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Chemical Kinetics

Catalysis and Inhibition of Chemical Reactions. P. G. Ashmore. Butterworth, Washington, D.C., 1963. xii + 375 pp. Illus. $14.95.

Almost everyone who works in chemistry comes into regular contact with problems relating to the mechanisms of processes influenced by catalysts and inhibitors. For this reason it is particularly valuable to have an up-to-date review of the status of this subject. The field of catalysis and inhibition is a very wide one which embraces surface reactions, gas reactions, and enzyme-catalyzed processes. Despite this there are many general principles that relate to all of these topics, and a unified treatment of these principles, with applications to the various branches of kinetics, is therefore very welcome.

Ashmore, an original and careful research worker in chemical kinetics, is admirably qualified for the difficult task he has undertaken. The result of his labors is an authoritative, scholarly, and lucid review of the field of catalysis and inhibition. He places the subject sharply in perspective as an important branch of kinetics and brings out the fundamental principles very clearly. The subject is developed in a logical fashion, with an introductory chapter in which catalysis is carefully defined and the general mechanisms of catalytic action discussed. The next three chapters are on homogeneous catalysis; the first and largest deals with acid and base catalyzed reactions, and