hydroxy derivatives (documented with an extensive table) and a classic treatment, by S. F. Mason, of the ultraviolet and infrared spectra of pyrimidines.

The production of this volume equals that of the others in the series, the Chemistry of Heterocyclic Compounds, which is edited by Arnold Weissberger. This volume fills a need not met by the older, or by the more recent, less comprehensive, reviews, and I recommend it for all chemistry libraries that maintain a basic collection in organic chemistry and for all individuals and groups working in this specific research area.

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Cloud Physics for Amateurs

Clouds, Rain and Rainmaking. B. J. Mason. Cambridge University Press, New York, 1962. 145 pp. Illus. Paper, $1.95; cloth, $4.50.

This book is popular science in the best meaning of the term. The author, perhaps more than any other individual, has been responsible for making cloud physics a coherent branch of science, with identifiable problems and reliable techniques of investigation. He has also the talent for making his subject clear and for transmitting his own excitement to his audience. In this book Mason summarizes much of the content of his technical monograph, *Physics of Clouds*, but the summary is somewhat superior to the full account in organization and clarity. The summary also incorporates recent discoveries that add understanding to the problems of rainmaking and of cloud electrification.

Clouds, Rain and Rainmaking is an edited account of lectures given at the University of London to physics students who have little background in atmospheric physics. The treatment is largely qualitative, and one might even say that it is written in narrative style. However, the author pulls few punches, many unsolved problems are presented, and mathematics is used where appropriate. The subjects discussed include cloud forms, condensation nuclei, droplet growth, crystal growth, precipitation, rainmaking, and electrical charging of clouds. Simple experiments are suggested, which illustrate some of the phenomena discussed, and there are 46 excellent photographs (selected from many sources) of clouds, ice crystals, the results of rainmaking experiments, lightning, and the like.

A few of the book's less successful aspects are: figure 10, which gives the incorrect impression that droplets grow from very small size to a radius of 20 to 30 microns by condensation or by coalescence in equal times (this carries over an ambiguity from *Physics of Clouds*); the review of inadequate theories of charge generation before the presentation of the only satisfactory theory is somewhat tedious and does not make for clarity; and there is little valid reason for isolating in the appendix the material on droplet growth by condensation and on collision efficiency.

After reading *Clouds, Rain and Rainmaking* there remains a haunting question: what is the audience for this book and who should be encouraged to read it? The answer may lie in the fact that the book is in the English tradition of the tough-minded amateur; it is neither a textbook, nor a specialized technical monograph, nor a painless interpretation of science—types of science books which are familiar in the United States. The tradition of the amateur in science is one we well might emulate; it rewards diligence with enjoyment, the satisfying enjoyment of following a stimulating mind in exploring an exciting area.

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Russian Translation

Beryllium. Evaluation of deposits during prospecting and exploratory work. A. A. Beus. Translated by F. Lachman. Lincoln R. Page and R. K. Harrison, Eds. Freeman, San Francisco, Calif., 1962. x + 161 pp. Illus. $5.

In this book one of Russia's most distinguished students of beryllium deposits, A. A. Beus, accomplishes his objectives—to provide a generalization of Soviet and foreign experience gained in studies of beryllium desposits and to establish the most efficient methods of prospecting and evaluation—by the use of examples drawn from his own extensive experience in Russia and from foreign literature. In part 1, Beus discusses beryllium outside Russia, beryllium minerals, the geochemistry of beryllium, and types of deposits. Although the chapter on geochemistry has been up-dated to 1956, other chapters include only the information available to 1953; thus later noteworthy publications, such as *Professional Paper No. 318* (U.S. Geological Survey), as well as several recent major discoveries, are not discussed.

In the chapter on geochemistry, Beus gives excellent information on diadochic substitution of beryllium in minerals. The chapter on types of deposits is heavily weighted toward pegmatites; unfortunately, locations are not given for the Russian deposits discussed, and as one of the editors (L.R.P.) notes, Beus ignores conflicting ideas, which are held by American geologists, concerning the genesis of the pegmatite deposits in America. Nonpegmatic deposits are grouped as hydrothermal-pneumatolytic, including greisens and various veins, and as beryllium-bearing skarns. Because their discovery postdates the writing of the original Russian volume, the following are not mentioned: beryllium-bearing tuffs (such as those at Spor Mountain, Utah) and the recent major discoveries at Seal Lake, Labrador (barylite in paragneiss) and at Coahuila, Mexico (bertrandite in fluorite pipes).

In part 2, on prospecting for and evaluation of deposits, Beus relies chiefly on geologic mapping to locate deposits in areas previously selected as favorable by referring to geologic and geochemical factors. No reference is made either to geochemical reconnaissance methods or to the use of the neutron detector, although both have proved invaluable in recent American exploration and evaluation and are, in conjunction with geologic mapping, probably the best exploration tools available. Techniques of mapping, drilling, and sampling are outlined in the chapters on physical exploration and the evaluation of deposits; these techniques are also standard practice in the United States.

Specialists will note some discrepancies. For example, the variation in refractive indices of beryl is shown (in Fig. 1) as a function of Na_2O and K_2O (oxides which seldom constitute significant percentages of some beryls) rather than as total alkalies (thus including the oxides of cesium and rubidium which are more common constituents). Grouping the vein-type deposits of fluorite,