many copolymers consist of long segments of homopolymer, and their infrared spectra are often superpositions of the two homopolymers.

Some highly significant contributions have been made in the field of infrared spectroscopy of high polymers in the last couple of years; unfortunately this book only covers the subject effectively through 1961. However, its coverage up to that point is excellent.

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Mathematics for Teachers

Elementary Contemporary Mathematics. Merlin M. Ohmer, Clayton V. Aucoin, and Marion J. Cortez. Blaisdell (Ginn), New York, 1964. xiv + 382 pp. Illus. $7.50.

In 1960 a committee of the Mathematical Association of America published recommendations on the undergraduate training of teachers of mathematics. Part of the suggested program for prospective elementary teachers was a two-course sequence on the structure of the real number system and its subsystems. At that time little text material was available for such a sequence. *Elementary Contemporary Mathematics*, based on courses at the University of Southwestern Louisiana, tries to meet this need, and its contents closely mirror the outline given by the committee. The topics included are elementary logic, set theory, the counting numbers, numeration systems, the integers, elementary number theory, the rationals, decimals and the reals, and finite number systems.

Since approximately these same elements can be found in texts designed for one-term courses, the authors might have explored related topics as well. But they have instead chosen to treat the same items with greater attention to detail than is customary. The book abounds in carefully analyzed examples. This feature combined with the extensive lists of exercises, many with answers, and with the clear proofs of most theorems should make large portions of the book accessible to the general reader. The authors' efforts to achieve clarity are, indeed, sometimes almost self-defeating. In places the exposition is highly repetitious, and, at times, unusual symbolism is introduced only to be discarded a few pages later. However, the interrelationships of the various topics are well developed. The logical symbolism of the first chapter, for instance, is used effectively but not to excess throughout the book.

Unfortunately, the chapter on decimals and the reals falls short of the standards set in the rest of the book. The proofs of two of the theorems contain flaws. Furthermore, the sequence concept and the idea of convergence are used without definition or even the acknowledgement that new ideas are being introduced. A lack of rigor in dealing with the reals is inevitable in a book at this level, but it is inappropriate to give the impression that no new problems exist. Finally, even the misprints in this chapter seem more likely to cause confusion than do those found in other chapters.

No serious attempt is made in this book to clarify the relation between the mathematics under discussion and the "real" world. A few gestures are made in this direction, but the reader will have to look elsewhere for any systematic treatment.

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Lecture Notes

Strong Interactions and High Energy Physics. Scottish Universities' Summer School, held at Edinburgh in July and August 1963. R. G. Moorhouse, Ed. Plenum Press, New York, 1964. xvi + 475 pp. Illus. $22.50.

The number of summer schools in physics has increased to the point where there are almost as many schools as there are physicists. One of the effects of these schools is the production of an unbelievable quantity of lecture notes. The quality of the notes is naturally not uniform; in too many cases they consist of material that would otherwise, and for good reason, be thrown directly into the waste basket. It is consequently gratifying to see this volume, which consists of lectures given at the 1963 Scottish Universities Summer School. One reason why the book is, on the whole, good is that the lecturers are all very active physicists who are enthusiastic about their subject.

The lead-off article in *Strong Interactions and High Energy Physics* is an introduction to relativistic S-matrix theory, by Euan Squires (University of Edinburgh) who curiously is not listed among the lecturers. After reviewing the Mandelstam representation for potential scattering and the general properties of partial wave amplitudes in nonrelativistic theory, Squires invites the reader to consider, in seven pages, the following topics in what is called relativistic S-matrix theory: Lorentz invariance, crossing symmetry, CPT and the connection between spin and statistics, maximal analyticity, and extended unitarity. These rather difficult ideas are not discussed with religious zeal, and Squires is quite frank about the tentative and uncertain aspects of the "axiomatization" of S-matrix theory. The remainder of his article is devoted to the singularities of the S-matrix and their relation to the unitarity condition and to attempts at dynamical calculations for two-particle scattering processes based on the Mandelstam representation.

A. O. Barut (University of Colorado) discusses the application of group theoretical methods to study the structure of S-matrix elements for reactions involving arbitrary numbers of particles with arbitrary spins. It is a rather highbrow treatment, and it is frequently difficult to tell what is being proved and what has been assumed about the analytic properties of the S-matrix. The methods introduced seem very general and powerful, but in one of the few parts that I could understand they lead to wrong results: The number of scalar amplitudes in photon-spin zero scattering is 2, not 4, and in photon-spin one-half scattering the number is 6, not 12.

In a rather short article, A. Martin (CERN) shows how, by extremely clever use of unitarity and analyticity, one can deduce interesting statements about high-energy scattering amplitudes and the extent to which a knowledge of the scattering amplitude in the elastic region determines it everywhere.

The relation between the singularities of scattering amplitudes regarded as functions of complex angular momenta and high-energy scattering processes is discussed exhaustively by R. Oehme (University of Chicago). This is a very complete and careful treatment of Regge poles in the relativistic