nonnegative integer is a sum of four integral squares and that three integral squares will not suffice. If every nonnegative integer can be written as a sum of h elements from A we call A a *basis of order h*. An important problem is to determine whether a sequence is a basis, and, if so, to find its minimal order.

2) Fix $h \geqq 2$ and let $r_h(n)$ be the number of ways of writing the nonnegative integer n as a sum of h elements from A. What can we say about the values of $r_h(n)$ as a function of n? A closely related problem is the determination of the rate of growth of $r_h(0) + \ldots + r_h(N)$ as a function of N. Both of these questions are, in turn, related to those in problem 1. For to say that A is a basis of order h is to say that $r_h(n) > 0$ for all nonnegative integers n.

3) If A and B are sequences, we form the new sequence $A + B$ consisting of all distinct integers which are the sum of an element of A and an element of B. If we know something about the density of A (where "density" is a measure of the abundance of A in the sequence of all nonnegative integers) and the density of B, what can be said about the density of $A + B$? Is a sequence of large density necessarily a basis?

To a large extent the book is organized around the methods used in investigating such questions. Thus we find a chapter dealing with number theoretic methods, another with probability methods, and a third with sieve methods. The chapter on sieve methods differs from the rest of the book in that no applications of these methods are carried out in detail. However, the various applications are discussed in the chapter's excellent introduction, which also includes an interesting and highly readable historical account of the sieve technique from Eratosthenes to Atle Selberg. This account is noteworthy also for its discussion of the relationships between the various sieve methods now available.

The chapter on probability methods (whose applicability to problems of this kind was first observed and exploited by Paul Erdös) is self-contained, for it has an introduction to probability theory which suffices for the applications presented. In fact, the authors have succeeded in making each of the five chapters a self-contained unit, and there is justice in their claim "that any single chapter can conveniently be read by itself."

The authors have given us the first connected account of this important branch of the theory of numbers to appear in print and have done so in a masterly way. Not only have they performed the very difficult job of collecting results from many sources, relating them, and presenting them in a unified manner, but they have also, in some cases, corrected errors and obscurities in the original sources. There are numerous references to the literature, and for the specialist the bibliography alone will be worth the price of the book.

Halberstam and Roth have made an outstanding contribution to the mathematical literature. We are promised a second volume, but unfortunately not very soon.

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A Practical Aid

The Structure of Polymers. M. L. MILLER. Reinhold, New York, 1966. 720 pp., illus. $27.

The Structure of Polymers is directed, as a practical aid, toward industrial scientists who are not necessarily specialists in polymer chemistry but who must come to grips with one aspect or another of the relationship between molecular structure and the mechanical and chemical properties of high polymers.

Considered broadly, as it is in the present work, the subject matter pertinent to this relationship comprises a substantial part of polymer science. Miller has dealt with the problem of organization first of all by subdividing the book into chapters which are as nearly as possible independent entities, and second, by a selectivity of material of which I shall speak later. The character of his book is epitomized by two chapters, one on the stiffness of molecules as related particularly to mechanical properties and the glassy state, and another, dominated by a discussion of stereoregularity, on molecular isomerism. Also treated are molecular weight and molecular weight distribution, branching, molecular interactions, hydrodynamic volume of molecules, networks, copolymers, crystallinity, orientation, polyelectrolytes, and electrical properties.

Miller frames his discussions almost exclusively around selected experimental results. It is through his acuity in the choice of illustrative data and in their modes of presentation that the book acquires its individuality and, in my opinion, its measure of success. From his treatment of topics most familiar to me, I would judge that his survey of the literature of the last 15 years has been remarkably thorough and that he has been perceptive in its distillation.

Not everyone will agree with the author in matters of emphasis. His dismissal of the Weissenberg effect as an annoyance to operators of viscometers could mislead workers who may have to deal with extrusion of polymers. Again, older data seemingly apt for purpose of illustration may now prove to be less definitive, as in a table relating crystallite size to melting point for polyethylenes with varying degrees of branching. A plague of works of this type, the imperfect generalization, induced by a reluctance to devote space to finer distinctions, is also encountered. I find these defects to be minor.

Accessibility of information is excellent as a result of the use of about 250 carefully labeled and readily readable graphs and tables. The subject index stands up well to test and the conventional author index has been eschewed in favor of a helpful polymer index. Practical polymer scientists will find this a useful book.

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Mutagenic Chemicals

The Actions of Chemicals on Dividing Cells. BENGT A. KIHLMAN. Prentice-Hall, Englewood Cliffs, N.J., 1966. 272 pp., illus. $10.

In 1956, at the Fifth International Conference on Radiobiology, an eminent biologist, who was concerned by the public's apathy regarding the mutagenic effects of radiation, made a plea that the assembled group not publicize the potential dangers from mutagenic chemicals. The reason for this stand was the fear that if geneticists made shotgun attacks against a large number of mutagens they would weaken their warnings against the indiscriminate use of radiation, which presented a clear-cut genetic hazard. Any arguments about whether or not geneticists should heed this advice have become