as well as methods of numerical modeling of explosions and results obtained in large-scale explosion tests. The many reports on current research activities will be especially valuable to the specialist. The aims expressed by the authors range from the very basic (e.g., to ascertain the relation of detonation cell sizes to detonability limits) to the highly practical (e.g., to develop means for reducing costs associated with agricultural dust explosions). A noteworthy theme that emerges from a reading of the volume is the remarkable extent to which efforts are being made to apply fundamental concepts in seeking solutions to real-world problems.—*Freeman A. Williams, Aeronautics and Astronautics, Princeton University*

The Combustion of Organic Polymers. C. F. Cullis and M. M. Hirschler. 420 pp. Oxford University Press, 1981. $59.

Polymer combustion is an important practical problem because household fires which kill people often involve polymers (or plastics, as they are known to the lay public). Mankind has had thousands of years of experience with natural polymers—cellulose, lignin, leather, wool, and the like—but the flood of man-made polymers, each with different properties, has complicated the problem. Beginning as a trickle at the beginning of this century, the flood has produced a staggering variety and amount of synthetic polymers, which now overshadow natural polymers in their range of properties. The combustibility of man-made or modified polymers can be as great as that of the cellulose nitrate of early movies or as little as that of the fluorinated polymers. Low flammability is not an unmixed blessing, since the fire resistance is often accompanied by toxic pyrolysis products, with the result that in a fire dominated by other materials, it may make a serious addition to the hazard of the smoke. (Even though carbon monoxide kills over 75% of fire victims, smoke is responsible for trapping many victims and can act as a carrier of toxic and irritant gases into the lungs.) For this reason, toxic hazards and testing are discussed in some detail.

This is a well-written, descriptive book covering polymer combustion together with the related topics of fire hazards, toxicity, and fire testing. An elementary discussion of polymer chemistry is included to refresh the memory of nonchemists. The heart of the book is devoted to thermal decomposition, combustion, and combustion inhibition studies of polymeric materials. It would be useful as a reference text or as an introduction for the nonspecialist. The depth of discussion and integration of the material is less than I could wish, but with such a diverse empirical subject this treatment may be necessary to keep the book within reasonable bounds.—*R. M. Fristrom, Applied Physics, Johns Hopkins University*

An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements. John R. Taylor. 270 pp. Mill Valley, CA: University Science Books, 1982. $9.50 paper.

Error analysis, or an appreciation of the errors involved in any physical measurement, is an integral part of scientific investigation. Consequently, the subject lends itself to a rather broad discussion, and there are several books covering its general nature, each differing from the others in emphasis as well as sophistication. The book under review, written with college freshmen and sophomores in mind, is intended as an introduction to error analysis, and covers basics of error propagation, elements of statistics, normal distribution, least squares, binomial and Poisson distributions, χ^2-test, etc. No specific reference is made to digital analysis, now common almost everywhere, or to special problems arising therefrom. The author handles well the topics he chooses to include: his description is clear, the examples are interesting, the pace is leisurely, and the general arrangement of the material, including the organization of the principal formulas, is splendid. Besides the many useful problems listed at the end of each chapter, one thing the student will find very helpful is the inclusion, at the end of the book, of the answers to many of them. The book serves its purpose quite well.

My fascination extends also to the beautiful photograph of a locomotive dangling from a window of the Gare de l'Ouest, which adorns the front cover of the book; will the author be kind enough to share with us its original source?—*K. R. Sreenivasan, Mechanical Engineering, Yale University*

Chemical Feedstocks from Coal. Jürgen Falbe, ed. Trans. Alexander Mullen. 647 pp. Wiley-Interscience, 1982. $85.

As is well known, Germany has been for many years a leader in coal technology, and the 28 contributors to this volume are knowledgeable on developments in that country, plus those in the United States and the USSR. Despite the limited focus suggested by its title, the book covers a wide range of subjects related to the processing of coal to produce chemicals. It will serve as a reference for scientists starting coal-oriented projects, business executives who want a broad overview, and government planners, although the fact that the German edition was published in 1977, with references dating only through 1976, means that the book is already outdated in certain areas.

Chapter 1 provides a fine introduction to the overall subject, followed by a chapter on low-temperature carbonization and coke. It is disappointing that more discussion was not given to the choice of coals suitable for coking. Clearly the maceral content of coal is a subject of major importance in choosing coals. Chapter 3 describes the production of acetylene from calcium carbide, but does not, unfortunately, include a comparison of the economics of producing acetylene from coal and from petroleum feedstocks.

Chapter 4 offers over 70 pages on the hydrogenation of coal. Chapter 5 describes briefly several gasification processes, and the use of synthesis gas for production of methane or synthetic natural gas is treated in chapter 6. Later chapters consider the production of chemicals using Fischer-Tropsch processes and polymethylene, although there is little likelihood that the latter process will ever be commercialized. Chapter 7 discusses technology that may be utilized in the future; heat generated in nuclear plants is suggested, for example, for production of synthesis gas and methane. Chapter 12 addresses the economics of the production of numerous chemicals from coal. In general, it must be concluded, the production of most chemicals from coal is still more expensive than from petroleum or natural gas. Coal appears to be only marginally competitive, even when it is plentiful and cheap.—*Lyle F. Albright, Chemical Engineering, Purdue University*

Aerosol Technology: Properties, Behavior, and Measurement of Airborne Particles. William C. Hinds. 424 pp. Wiley-Interscience, 1982. $37.50.

Aerosols consist of particles suspended in gases. Particles of interest typically range in size from smaller than 0.01 μm to larger than 100 μm, and the phenomena associated with such systems are quite diverse, varying in importance by orders of magnitude over the size range. The population of workers dealing with aerosols is also quite diverse and growing. Researchers in environmental sciences, climatology, geophysics, and medical sciences increasingly confront problems associated with airborne particles. Aerosol technology is applied in tasks such as contamination control, inhalation therapy, emissions control, air-quality monitoring, spraying, and printing.

Hinds's book is intended as a reference and text for people from diverse fields who need to understand aerosol behavior and technology. The book treats basic notions of gases and fluid flow, and the physics of aerosol particles. These ideas