evolution, novae, and galactic formations and distances, all presented within a lively context of some original explanation or illuminating conception; the reader is also treated to many historical anecdotes of genuine interest and relevance. Essays such as these constitute a worthy and vitalizing element of the current literature of science, a kind of Third Program that serves as a supplement to original scientific papers, on the one hand, and to textbooks or monographs, on the other. At present, men of Asimov's scientific erudition and literary skill are far too rare. One can only hope that the growing literature of science will bring forth more like him.

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Instruments and Techniques

Analysis Instrumentation, 1963. Proceedings of a symposium. L. Fowler, R. D. Eanes, and T. J. Kehoe, Eds. Plenum Press, New York, 1963. x + 261 pp. Illus. $12.50.

According to the introduction, this book contains only the significant papers that were presented at the symposium held by the Analysis Instrumentation Division of the Instrument Society of America, at Houston, Texas, 29 April–1 May 1963. The 30 contributions are divided, somewhat arbitrarily, into six sections: Keynote Session, Dynamics of Analysis, Instrument Problems of Analyzer Applications, Laboratory Instrumentation, Electrochemical and Chemical Methods, and Radiation Methods of Analysis.

Those who are interested in the broad aspects of instrumentation will find that the keynote session is primarily of general, though passing, interest. The remaining 26 papers, with few exceptions, are often lengthy presentations of applications and design considerations for specific instruments. That most of the instruments are manufactured by the firms which the authors represent is not surprising. However, the information given does go well beyond that available in the literature supplied by the manufacturer, and it will be of value to users with similar problems.

While the average technical level of the book is good, there are wide variations in the levels of the individual papers, as the audience at this symposium are probably well aware. It is very likely that these papers were published as they were written for oral presentation. In this instance, elimination of the excess and elementary verbiage that seems to creep into lecture manuscripts would have saved a considerable amount of space and also the readers' time. Such editing was specifically avoided in the interest of rapid publication. Several papers, a number of cartoons, and many passport-type photographs of instruments may well owe their inclusion to the editors' haste.

Modified or new methodology and techniques in gas chromatography and a few other methods of instrumental analysis are presented in several papers. These will interest analysts and some engineers who like to mentally catalog new wrinkles.

The use of instrumental analysis in direct process control via feedback is covered from several viewpoints. This subject would seem to warrant more emphasis by the Analysis Instrument Division.

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Organic Chemistry

Organic Syntheses: Collective Volume IV (a revised edition of annual volumes 30–39). Norman Rabjohn, Ed. Wiley, New York, 1963. xiv + 1036 pp. Illus. $16.50.

Synthetic Methods of Organic Chemistry. William Theilheimer. Karger, Basel, Switzerland, 1963. xvi + 507 pp. Illus. $38.50.

These newest members of two long-established and highly regarded series that deal with experimental methods of organic chemistry are sure to receive as warm a welcome as their predecessors. For over 40 years the volumes entitled *Organic Syntheses* have been supplying detailed directions for the preparation of organic compounds; *Collective Volume IV* comprises 368 tried and true "recipes" selected from volumes 30 to 39, which covered the years 1950 to 1959. Careful determination of optimum conditions for each preparation by its submitters and testing by independent checkers have given the series a trusted reputation for dependability which hardly requires elaboration. *Synthetic Methods* represents, on the other hand, William Theilheimer's heroic efforts to cull, from the wilderness of chemical literature, laboratory procedures that exemplify new synthetic methods or improvements in older methods. Most of the nearly 1000 procedures cited in volume 17 are taken from journals published in the period 1960 to 1962.

Both series have maintained such a high level of excellence that it is difficult to find anything to criticize. Both are well-organized, cross-referenced, and thoroughly indexed, all of which makes them easy to use. At one point Theilheimer describes the same preparation on consecutive pages, but on the whole his work is carefully and admirably done. One might carp that this collective volume of *Organic Syntheses* includes a relatively large number of either pedestrian or overly specialized preparations, but a recent change in policy, which requires a statement indicating demonstrable merit to accompany each compound or procedure submitted, has answered this objection in subsequent volumes.

Nevertheless, the genuinely new and general methods in *Collective Volume IV* make a delectable assortment: a benzene reaction, an amine oxide pyrolysis, tetracyanoethylene and its relatives, cyclodecane derivatives, formylation with dimethylformamide, and improved syntheses of aliphatic iodo and nitro compounds, to mention only a few. Theilheimer's selections, particularly, serve as a yardstick with which we can measure progress in synthetic methods, and one notes the almost incredible specificity and variety in reagents and procedures, which are available today. Especially noteworthy in this volume are the continued development of specific reducing agents, the new syntheses of heterocycles and organometallics, and the surprising effectiveness of photochemical methods of synthesis.

Both of these collections make enjoyable and rewarding browsing. Organic chemists who depend on the success of laboratory work will want both volumes on their shelves, so that they can turn to them again and again.

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