Gas Chromatography in Biology and Medicine. *A Ciba Foundation Symposium.* Edited by RUTH PORTER. J. & A. Churchill, 104 Gloucester Place, London, England. 1969. 224 pp. Price $9.00.

This is another excellent monograph published under the auspices of the Ciba Foundation. This foundation is well known to those in the chemical and biological sciences for the numerous and excellent symposia it presents annually at which internationally known scientists participate in presenting papers dealing not only with original research but also in presenting lucid reviews of the "State of the Science" in which they are participating. The proceedings of these symposia are published as monographs in their entirety, thus presenting not only the formal papers but also the usually lively discussions which take place following each presentation. These following discussions are often the more interesting part of the proceedings, which are usually omitted in monographs of most other symposia. Once again the high standards of excellence of this Ciba Foundation Symposium have been preserved, resulting in a publication that makes a substantial contribution to the literature available on the subject.

Gas Chromatography in Biology and Medicine is a very appropriate title because this is the area of scientific endeavor where the technique is put to the ultimate tests of sensitivity, specificity, and usefulness. The formal papers published herein were presented at a symposium of the same title held in London, England, February 1969.

The material covered is divided into four main sections. The *Introduction* contains a survey of the historical background of chromatographic separation by A. J. P. Martin and an account of the many significant developments in gas chromatography, especially when used with ancillary techniques such as mass spectrometry and NMR, by S. R. Lipsky.

The second section is devoted to the *design* of the chromatographic system. J. H. Parnell presents a good argument for the use of the shortest column length possible for achieving the desired separation and also recommends that more emphasis be placed in this regard on improving the selectivity factor of a column rather than the number of theoretical plates generated. The subject of detectors is well covered by D. W. Hill, especially with respect to ionization detectors such as electron-capture detectors which are being extensively used in drug analysis at the nanogram to picogram level of detection from biological specimens. The use of the pulsed D. C. mode of E. C. detection produces greater linearity and reproducibility with these detectors. The effects of water vapor on argon ionization detectors is discussed by B. C. H. Warren and M. G. Dalzell, while the use of the W-value detector in the determination of oxygen and anesthetic vapors in expired air is discussed by B. C. H. Warren and J. E. Lovelock—a pioneer worker in the design of ionization detectors.

The *Biological and Medical Application section* covers the bulk of the monograph with several very interesting and informative chapters—*viz.*,

- H. L. Lowe and K. Hagler—Determination of volatile organic anesthetics in blood, gases, tissues, and lipids using their partition coefficients for differential extraction, and represents an interesting thermodynamic approach to the determination of the tissue to gas partition coefficients.
- M. J. Pumes—Measurement of the gas content of blood samples using gas chromatography.
- A. S. Curry—Recent developments in the use of gas chromatography in forensic toxicology.
- D. J. Blackmore—The use of gas liquid chromatography in aircraft accident toxicology. These two chapters give a very informative account of the problems facing the toxicologist and the pathologist in determining whether the cause of death is accidental or intentional. This is an area which tests the analytical competence of the practicing forensic toxicologist in his ability to come up with the right answer to trace amounts of foreign materials recovered from the subject or the scene of event where the sensitivity and specificity of a gas chromatographic procedure are the only means of obtaining reliable and foolproof evidence.
- S. Garattini, F. Marcucci, and E. Mussini—Gas chromatographic analysis of benzodiazepines. This is an interesting account of the use of GLC with different detectors (flame and electron capture) in the determination of members of a class of drugs (tranquilizers) and their major metabolites in animal species and in man. The significance of the blood and tissue levels of the drug in animal species, its influence on the pharmacological responses obtained, and the interpretation and extrapolation of these findings to clinical observations seen in man are presented. This chapter highlights the results from several other publications by the same authors.

The final section covers future trends in development where the use of complementary techniques in filtering the information obtained from GLC alone is presented.

R. P. W. Scott—Gas chromatographic and spectrometric techniques, covers the problems of interphasing a mass spectrometer with a gas chromatograph with computerized data handling facilities, a technique which is of great use in the isolation and characterization of drugs and their metabolites in biological extracts. The use of complementary techniques such as IR and NMR using micro cells to enhance sensitivity of detection of the fractions trapped from the effluent of a gas chromatographic column is discussed.

- G. B. Marson—Digital computers and the analysis of chromatographic data, presents some of the hardware used in automating the data handling and interpretation of GLC data.

All the papers presented are concise, well illustrated, and documented with up-to-date literature references making this volume as current as such a monograph can possibly be. The discussions following each presentation are very thought-stimulating and make the reader wish he were participating actively in it rather than reading about it second hand.

This monograph is in keeping, with respect to its content and presentation, with the philosophy of the Ciba Foundation: "Consocient Gentes"—let the peoples come together. It is a worthy addition to the library of the practicing chromatographer.

Reviewed by J. A. F. deSilva
Hoffmann-La Roche Inc.
Nutley, NJ 07110 ■

The History of Penicillin Production. Chemical Engineering Progress Symposium Series, No. 100, Vol. 66. Edited by ALBERT L. ELDER. American Institute of Chemical Engineers, 345 East 47th St., New York, NY 10017, 1970. vi + 100 pp. 21.5 × 28 cm.

This volume of the *Chemical Engineering Progress Symposium Series* deals with the history and problems of developing mass-produced penicillin, necessitated by the Second World War. The Institute hopes, by historically documenting particular projects, this knowledge might be used to facilitate and expedite future projects of a similar or related nature.

Staff Review ■