

rect experimentation, to have been derived by the condensation of two-carbon units. The acetate hypothesis, by no means a new one, has frequently been criticized on the grounds that it is too vague and that by condensation of two-carbon units one may, formally at least, produce almost any desired organic compound. Yet, one of the great achievements of modern biochemistry has been the recognition of the central role of acetyl coenzyme A in the synthesis of many classes of carbon compounds. The authors address themselves to the classification of such compounds and then to the details, where known, of the chemical pathways for their formation. The book is, therefore, broad in scope since it considers compounds as structurally diverse as fatty acids, oxygen heterocycles, phenolic compounds, macrolide antibiotics, some alkaloids, and those compounds broadly categorized as terpenoid.

From a general discussion of the acetate hypothesis, the authors proceed to a statistical survey of more than 20 classes of naturally occurring compounds that can be considered to be formed by the condensation of acetate units. The correlation of known structures with the acetate hypothesis is exceptionally good for most of these compounds. There follows a detailed survey of the synthesis of fatty acids, of aromatic substances, and finally, in the latter half of the book, of those compounds derived from the isoprenoid carbon skeleton. Included is a thorough discussion of the biosynthesis of the plant terpenes, of squalene, the triterpenoid compounds derived from it by various modes of cyclization, and the steroids derived from lanosterol. A lucid account is given of the biogenesis of bile acids and steroid hormones, and even of some steroidal alkaloids. It is, therefore, somewhat disappointing to find no mention of the steroidal saponinins, the cardiac aglycones of plant and animal origin, or the D vitamins.

The great strength of the book is in the utilization of modern organic chemical mechanisms to clarify and rationalize biosynthetic reaction pathways. Emphasis is correctly placed on the concept that enzymatic reactions must eventually be explicable in terms of organic chemical theory. Less stress is placed on the more biochemical aspects of the problem and, indeed, one senses more emphasis on the catalytic activity of enzymes than on their characteristic specificities.

Despite its deficiencies, the graduate student in organic or biological chemistry will find in this book much valuable information on known pathways as well as a host of unsolved problems of organic and biological chemistry. He will also find useful the summarizing sections that punctuate the volume.

The book is well documented and well printed. The literature is covered through 1962, and many references are given to work published in 1963. An otherwise excellent work is marred by many typographical errors, misspelled names (Chaikoff, I. L.; Charkoff, I. L.; and Clarkoff, J. L.), and occasional incorrect structural formulas. These should be corrected in future printings.

LEWIS L. ENGEL

*Department of Biological Chemistry,
Harvard Medical School, Boston*

Statistical Terms

Russian-English Dictionary of Statistical Terms and Expressions and Russian Reader in Statistics. Samuel Kotz. University of North Carolina Press, Chapel Hill, 1964. xviii + 115 pp. \$7.50.

This is the latest member of the increasing family of specialized Russian-English dictionaries. The publication of such a volume invites comparison with existing and somewhat similar dictionaries—the two Russian-English dictionaries published by the American Mathematical Society (1950 and 1961), the dictionary published by the University of Wisconsin Press (1962), and the Russian-German, Russian-English dictionary published by the Deutscher Verlag der Wissenschaften (1959).

The present work contains almost exclusively statistical terms and mathematical terms frequently encountered in the statistical literature. In particular, it does not contain prepositions, adverbs, pronouns, or particles, except as they occur in combination with other words. Thus, it is necessary to use this statistical dictionary in conjunction with a general dictionary. The decision to restrict the scope of the dictionary was primarily motivated by the fact that the literature of applied statistics contains practically all scientific terms and many expressions used in everyday life. The decision not to include a grammar was also based on the desire to restrict the size of the volume. Each of the mathematical dictionaries men-

tioned above contain a grammar and include also the important parts of speech, features that, in my experience, enable the user to read mathematical texts without referring to a general dictionary.

The book consists of two parts. The first offers a word list of about 89 pages as well as a very concise introduction that contains the Russian alphabet together with its pronunciation and transliteration and a description of the structure of the dictionary. The second part is primarily a Russian reader in statistics. Passages from recent Soviet publications are selected and reproduced with interlinear translations. In addition, this part contains a Russian-English author index. This will help translators to avoid the pitfalls that one encounters when names of Western authors, used in Russian texts, are transliterated back into English. It may be worthy of mention that this statistical dictionary gives the accents as well as the diaeresis over the letter e and thereby greatly facilitates the correct pronunciation of the Russian words.

The book will be a useful tool to statisticians who want to use or to translate Russian statistical literature.

EUGENE LUKACS

*Statistical Laboratory,
Catholic University, Washington, D.C.*

New Books

Mathematics, Physical Sciences, and Engineering

Physics of Magnetism. Soshin Chikazumi and Stanley H. Charap. Wiley, New York, 1964. 566 pp. Illus. \$15.75.

The Principles and Application of Variational Methods. Martin Becker. M.I.T. Press, Cambridge, Mass., 1964. 128 pp. Illus. \$5.

Principles of Radiation Protection. G. Eaves. Gordon and Breach, New York, 1964. 185 pp. Illus. \$8.25.

Progress in Aeronautical Sciences. vol. 5. D. Küchemann and L. H. G. Sterne. Pergamon, London; Macmillan, New York, 1964. 325 pp. Illus. \$15. Six papers: "The design of low-speed wind tunnels" by P. Bradshaw and R. C. Pankhurst; "Low-speed flows involving bubble separations" by I. Tani; "Ergebnisse der theorie Schallnaher Strömungen" by I. Teipel; "Écoulements transsoniques homogènes" by P. Germain; "Rarefied gas dynamics" by I. Esterman and A. Roshko, and "A correction to 'The theory of sonic bangs'" by C. H. E. Warren.

The Pulsation Theory of Variable Stars. Svein Rosseland. Dover, New York, 1964 (corrected reprint of 1949 edition). 160 pp. Illus. Paper, \$1.65.

(Continued on page 200)

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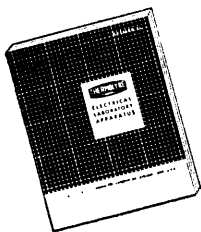
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A Selection of Problems in the Theory of Numbers. Wacław Sierpiński. Translated from the Polish edition by A. Sharma. Pergamon, London; Macmillan, New York, 1964. 126 pp. Illus. \$4.50.

Solar System Astrophysics. John C. Brandt and Paul W. Hodge. McGraw-Hill, New York, 1964. 467 pp. Illus. \$12.50.

The Solubility of Nonelectrolytes. Joel H. Hildebrand and Robert L. Scott. Dover, New York, 1964 (reprint, ed. 3, 1950). 502 pp. Illus. Paper, \$2.50.

Space Physics. Harrie Massey. Cambridge Univ. Press, New York, 1964. 245 pp. Illus. Paper, \$2.95; cloth, \$6.50.

Statistics and Experimental Design in Engineering and the Physical Sciences. vols. 1 and 2. Norman L. Johnson and Fred C. Leone. Wiley, New York, 1964. vol. 1, 539 pp. \$10.95; vol. 2, 409 pp. \$11.50. Illus.

Structure of Molecules and the Chemical Bond. Y. K. Syrkin and M. E. Dyatkina. Translated and revised from the Russian edition (1946) by M. A. Partridge and D. O. Jordan. Dover, New York, 1964 (reprint, 1950 edition). 519 pp. Illus. Paper, \$1.75.

Systematic Classification of Types of Intermetallic Structures. P. I. Kripyakevich. Translated from the Russian edition (1963). Consultants Bureau, New York, 1964. 35 pp. Illus. Paper, \$10.

Tables of the Function $F(z) = \int_0^z e^{x^2} dx$ in the Complex Domain. K. A. Karpov. Translated from the Russian edition (Moscow, 1958) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 523 pp. \$20.

Tables of the Legendre Functions $P_{-1/2}(X)$. pt. 1. M. I. Zhurina and L. N. Karmazina. Translated from the Russian edition (Moscow, 1960) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 324 pp. \$17.50.

Tables of the Velocity of Sound in Sea Water. L. S. Bark, P. P. Ganson, and N. A. Meister. Translated from the Russian edition (Moscow, 1961) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 196 pp. \$21.

Techniques of Process Control. Page S. Buckley. Wiley, New York, 1964. 315 pp. Illus. \$15.

The Technology of Ceramics and Refractories. P. P. Budnikov. Translated from the Russian by Scripta Technica. M.I.T. Press, Cambridge, Mass., 1964. 655 pp. Illus. \$15.

Les Temps Fossilifères. vol. 1, *Paléozoïque Inférieur*. Henri Termier and Geneviève Termier. Masson, Paris, 1964. 695 pp. Illus. F. 270.

A Textbook on Analytical Geometry. Joseph S. Mamelak. Pergamon, London; Macmillan, New York, 1964. 255 pp. Illus. \$6.

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The Theory and Practice of Scintillation Counting. J. B. Birks. Pergamon, London; Macmillan, New York, 1964. 682 pp. Illus. \$17.50.

Thermodynamics of Structure. Jere H. Brophy, Robert M. Rose, and John Wulff. Wiley, New York, 1964. 228 pp. Illus. Paper, \$2.95.

Understanding Physical Chemistry. A set of simple yet difficult examination questions and their methods of solution. pts. 1 and 2. pt. 1, *Properties of Matter, Thermodynamics, Chemical Equilibrium*; pt. 2, *Electrochemistry, Kinetics, Structure and Bonding*. Arthur W. Adamson. Benjamin, New York, 1964. 556 pp. Illus. \$10 (also available in two volumes; paper, \$3.95 each).

The Use of Ferrites at Microwave Frequencies. Translated from the French edition (Paris, 1962) by J. B. Arthur. Pergamon, London; Macmillan, New York, 1964. 108 pp. Illus. \$6.50.

Biological and Medical Sciences

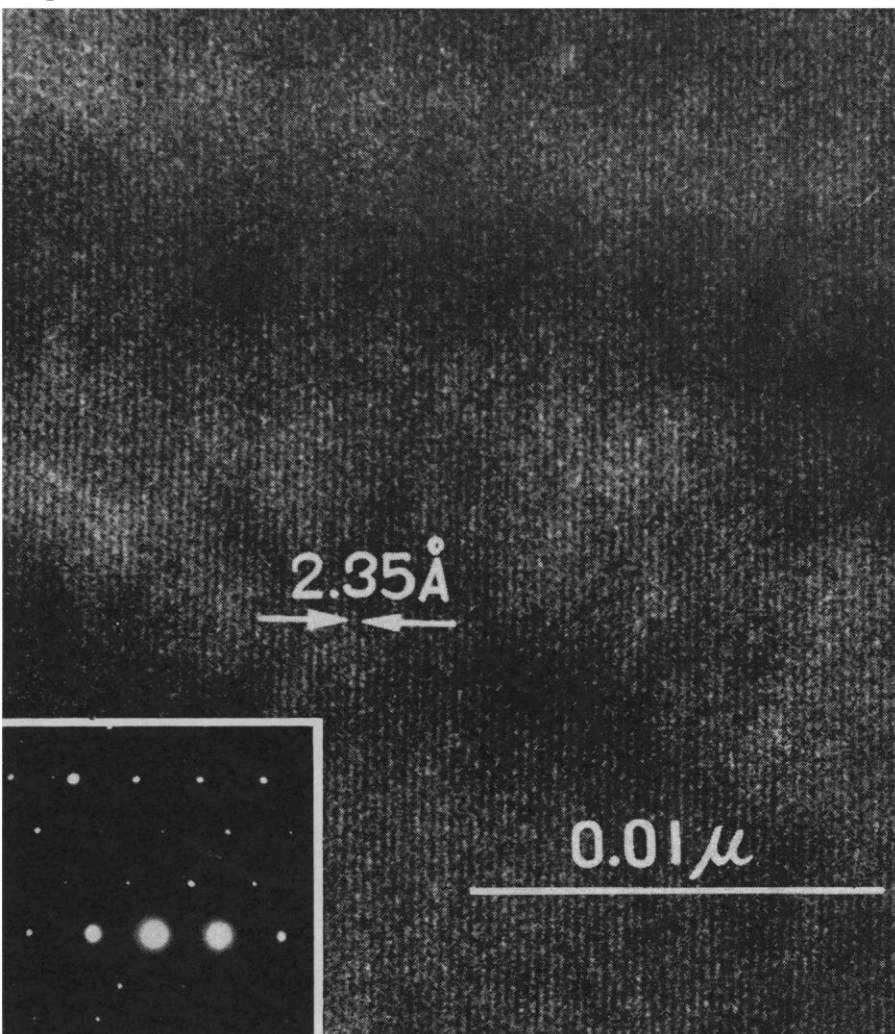
Actions of Hormones on Molecular Processes. Gerald Litwack and David Kritchevsky, Eds. Wiley, New York, 1964. 595 pp. Illus. \$17. 19 papers; contributors: James Ashmore, James A. Buzard, Lucinda Carr, Warren D. Davidson, Robert E. Davies, Ralph I. Dorfman, M. Feigelson, P. Feigelson, Edward H. Frieden, Jean Himms Hagen, Paul B. Hagen, Irwin J. Kopin, David Kritchevsky, Shutsung Liao, Gerald Litwack, W. H. McShan, Charles A. Nichol, J. F. Perdue, Steven Price, Thomas R. Riggs, Fred Rosen, J. R. Tata, Gordon M. Tomkins, H. G. Williams-Ashman, Albert I. Winegrad, Ira G. Wool, and K. Lemone Yielding.

Advances in Cancer Research. vol. 8. Alexander Haddow and Sidney Weinhouse, Eds. Academic Press, New York, 1964. 490 pp. Illus. \$17. Five papers: "The structure of tumor viruses and its bearing on their relation to viruses in general" by A. F. Howatson; "Nuclear proteins of neoplastic cells" by Harris Busch and William J. Steele; "Nucleolar chromosomes: Structures, interactions, and perspectives" by M. J. Kopac and Gladys M. Mateyko; "Carcinogenesis related to foods contaminated by processing and fungal metabolites" by H. F. Kraybill and M. B. Shimkin; and "Experimental tobacco carcinogenesis" by Ernest L. Wynder and Dietrich Hoffmann.

Advances in Protein Chemistry. vol. 19. C. B. Anfinsen, Jr., M. L. Anson, John T. Edsall, and Frederic M. Richards, Eds. Academic Press, New York, 1964. 416 pp. Illus. \$14.50. Four papers: "The hemoglobins" by G. Braunitzer, K. Hilse, V. Rudloff, and N. Hilschmann; "Hemoglobin and myoglobin" by Alessandro Rossi Fanelli, Eraldo Antonini, and Antonio Caputo; "Linked functions and reciprocal effects in hemoglobin: A second look" by Jeffries Wyman, Jr.; and "Thermodynamic analysis of multicomponent solutions" by Edward F. Casassa and Henryk Eisenberg.

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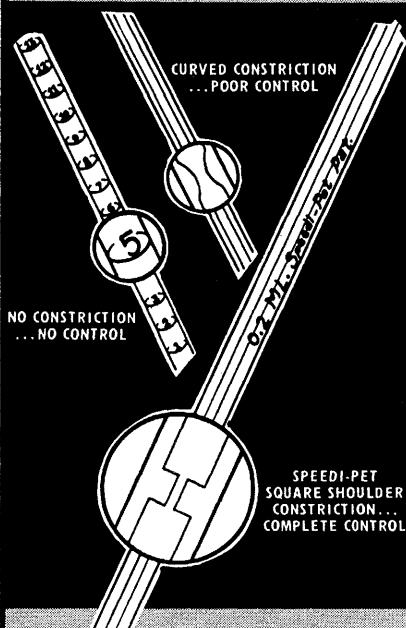
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nacées. Robert Goutarel. Hermann, Paris, 1964. 289 pp. Illus. Paper, F. 48.

Aldosterone. A symposium (Prague), August 1963. E. E. Baulieu and P. Robel, Eds. Davis, Philadelphia, Pa., 1964. 543 pp. Illus. \$19.50. 26 papers presented at a symposium organized by the Council for International Organizations of Medical Sciences, established under the joint auspices of UNESCO and WHO, in conjunction with the Second International Pharmacological Congress and the Second International Congress of Nephrology.

Algae and Man. Based on lectures presented at the NATO Advanced Study Institute. Daniel F. Jackson, Ed. Plenum Press, New York, 1964. 446 pp. Illus. \$14.50. 19 papers: "Contributions of current research to algal systematics" by G. W. Prescott; "Criteria and procedures in present-day algal taxonomy" by C. van den Hoek; "The gross classification of algae" by Tyge Christensen; "The cytology of the phaeophyta—A review of recent developments, current problems, and techniques" by Margaret Roberts; "Environmental conditions and the pattern of metabolism in algae" by G. E. Fogg; "Micronutrient requirements for green plants, especially algae" by Clyde Eyster; "Some problems remaining in algae culturing" by A. G. Wurtz; "The ecology of benthic algae" by F. E. Round; "A discussion of natural and abnormal diatom communities" by Ruth Patrick; "The ecology of plankton algae" by James B. Lackey; "Principles of primary productivity: Photosynthesis under completely natural conditions" by Jacob Verduin; "Algae in water supplies of the United States" by C. Mervin Palmer; "Algal problems related to the eutrophication of European water supplies, and a bio-assay method to assess fertilizing influences of pollution on inland waters" by Olav Skulberg; "The biotic relations with water brooms" by George P. Fitzgerald; "Toxic algae" by Paul R. Gorham; "Extracellular products of algae" by Marcel Lefèvre; "Algae and medicine" by David Schwimmer and Morton Schwimmer; "Mass culture of microalgae for photosynthetic gas exchange" by Richard J. Benoit; and "The future of phycology" by F. Evens.

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Anatomy of the Chordates. Charles K. Weichert. McGraw-Hill, New York, ed. 3, 1965. 768 pp. Illus. \$11.

Annual Review of Phytopathology. vol. 2. James G. Horsfall and Kenneth F. Baker, Eds. Annual Reviews, Palo Alto, Calif., 1964. 431 pp. Illus. \$8.50. 18 papers divided into the following sections: Pathogens (3 papers); Morphology and anatomy (1 paper); Physiology of host-pathogen interaction (6 papers); Influence of environment (2 papers); Action of toxicants (2 papers); Biological and cultural control (2 papers); Organ affected (1 paper).

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Biological Effects of Magnetic Fields. Madeleine F. Barnothy, Ed. Plenum Press, New York, 1964. 334 pp. Illus. \$16. Twenty-eight papers on Theoretical considerations (7 papers); Effects of strong magnetic fields on specimens *in vivo* (11 papers); Effects of strong magnetic fields on specimens *in vitro* (6 papers); Effects of very weak magnetic fields (3 papers). Indexes and a bibliography are included.

Blood and Bone Marrow Cell Culture. H. Jackson Woodliff. Lippincott, Philadelphia, 1964. 155 pp. Illus. \$6.

Blood Coagulation, Hemorrhage, and Thrombosis. Methods of study. Leandro M. Tocantins and Louis A. Kazal, Eds. Grune and Stratton, New York, ed. 2, 1964. 560 pp. Illus. \$17.50. 130 papers.

Body Fluids and the Acid-Base Balance. A learning program for students of the biological and medical sciences. Halvor N. Christensen. Saunders, Philadelphia, Pa., 1964. 518 pp. Illus. Paper, \$6.50.

Bone Biodynamics. A symposium (Detroit, Mich.), March 1963. Harold M. Frost, Ed. Little, Brown, Boston, 1964. 703 pp. Illus. \$18. The symposium was intended to stimulate a greater diversity and volume of research in the basic orthopaedic sciences, in part by bringing together representatives of a number of disciplines who, in composite, had a broad biological interest. The papers were contributed by: Charles H. Bachman, C. Andrew Bassett, Göran C. H. Bauer, Robert D. Becker, David A. Cameron, D. Harold Copp, James F. Danielli, Honor B. Fell, Sylvia Fitton-Jackson, Boy Frame, Harold M. Frost, C. Howard Hatcher, Webster S. S. Jee, Lent C. Johnson, Jenifer Jowsey, J. Lee Kavanau, James MacGregor, Franklin C. McLean, C. Leslie Mitchell, William F. Neuman, B. E. Christopher Nordin, Homer A. Paschall, Robert D. Ray, John M. Reiner, Robert A. Robinson, Alfred S. Romer, Robert E. Rowland, Tawfik Y. Sabet, Elias D. Sedlin, Richmond Smith, Joseph Trueta, Marshall R. Urist, Charles L. Wadkins, Mackenzie Walser, Paul Weiss, Ira G. Wool, and Richard W. Young.

Can Psychopathology Be Measured? *Ann. N.Y. Acad. Sciences* 105, art. 15. Harold E. Whipple, Ed. New York Academy of Sciences, New York, 1964. 114 pp. Illus. Paper, \$4.

Cellules Vivantes et Populations Cellulaires. Dynamique et structure moléculaire. A. Policard. Masson, Paris, 1964. 196 pp. Illus. F. 26.

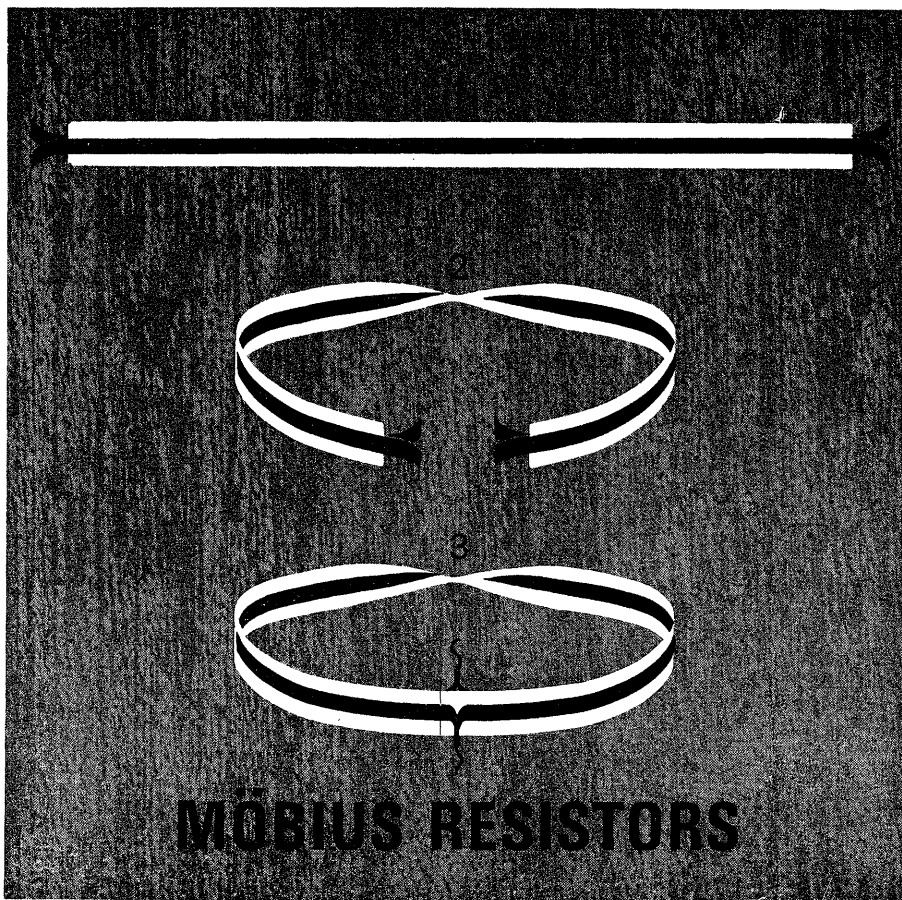
Cerebral Infarction. Alan Barham Carter. Pergamon, London; Macmillan, New York, 1964. 225 pp. Illus. \$9.50.

Clinical Aspects of Adrenal Function. Ivor H. Mills. Davis, Philadelphia, Pa., 1964. 256 pp. Illus. \$9.50.

Clinical Endocrinology and its Physiologic Basis. Arthur Grollman. Lippincott, Philadelphia, Pa., 1964. 454 pp. Illus. \$18.50.

Diagnostic Classification in Child Psychiatry (*Psychiat. Res. Rep.* No. 18). Richard L. Jenkins and Jonathan O. Cole,

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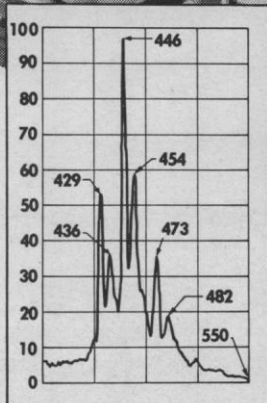


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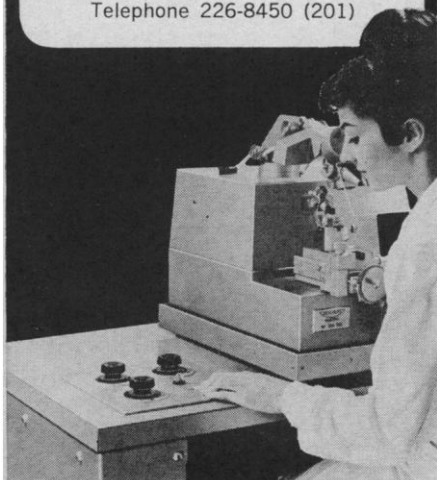
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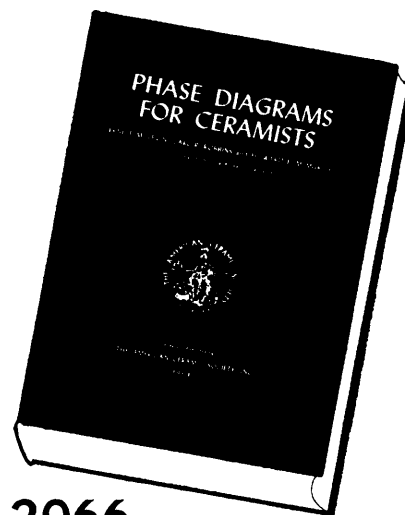
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