

jection of all these genera by Hart.

A number of illustrations show pollen grains of angiosperms that are irrelevant to a book concerned with Permian palynology. There are errors such as absence of authority and date, incorrect dates, and misspelled taxa; for instance, *Paraspora* should be *Parasporites*, *Hamiaepollenites* should be *Hamiaepollenites*, and *Dulhuntyispora* should be *Dulhuntyispora*. Further, seven figures representing seven genera of monosaccate taxa are extracted from numerical sequence and appear on page 213. The generic names of subsequent species are not in the explanation of these figures, merely the first letter abbreviation of the genus, which could be confusing to anyone not already familiar with Permian spores and pollen grains.

This book provides an important bibliography of Russian literature and descriptions in English of taxa proposed by Russian palynologists. This information is of value to the specialist in Permian palynology. The degree to which the proposed nomenclatural changes are accepted must be based on their conformity with the rules of botanical nomenclature and will have to await the test of time.

ROBERT M. KOSANKE

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## Liquid Ammonia

**Anorganische und allgemeine Chemie in flüssigem Ammoniak.** Vol. 1, part 1, of *Chemie in nichtwässrigen ionisierenden Lösungsmitteln*. JOCHEN JANDER. Vieweg, Braunschweig; Interscience (Wiley), New York, 1966. 585 pp., illus. \$27.50.

Many of my contemporaries will be reminded by Jochen Jander's encyclopedic presentation of *Chemistry in Anhydrous Liquid Ammonia*—part of the (Gerhard) Jander-Spandau-Addison monograph series on Chemistry in Nonaqueous Solvents—of the outstanding scientific contributions made by three great American chemists, E. C. Franklin, C. A. Kraus, and H. P. Cady. The principle of research by analogy, tempered and modified by experiment, employed by these pioneers in establishing the chemistry of a "world" in which ammonia replaces water most certainly stimulated a tremendous amount of experimental and theoretical activity for many years.

There was a time in the '20's and early '30's when the followers of Franklin, Kraus, and Cady constituted a veritable "school" of liquid ammonia chemists. They liked to experiment with liquid ammonia as a solvent, much as the present nuclear magnetic resonance, electron spin resonance, infrared, chromatographic, polarographic, and what-not specialists attempt to use their instrumental devices to solve all manner of chemical problems. This group drew new disciples into its ranks. Many of them extended their research activities to explore chemical and physicochemical phenomena in other nonaqueous solvents. A school of nonaqueous solvent chemists developed in the '40's and early '50's. Yet today there are relatively few who devote themselves to the study of nonaqueous solvents per se. We have reached a stage where we can reasonably predict which of a number of nonaqueous solvents one might use to advantage in carrying out specific chemical reactions. Liquid ammonia has become a widely used reaction medium.

Some of our "modern" younger chemists will look down their sophisticated scientific noses at Jander's adherence to the "solvent system concept," a conceptual picture first promulgated by Franklin; but for systematizing the chemistry of nitrogen compounds in their relationship to ammonia as a parent substance and for elucidating the behavior of substances dissolved in liquid ammonia, it has withstood the onslaught of time. Furthermore, it places the emphasis on good, sound, experimentally demonstrable, *useful* chemistry.

Errors are bound to creep into a compilation which attempts to cover the entire literature of inorganic liquid ammonia chemistry, but these are minor. Jander uses a year/number reference system in his bibliographical citations which does not conform with the two previously published monographs in the series. English versions of the editor's and author's prefaces are included. That of the author's preface is at best a poor literal translation and in some places does not even convey the real meaning of the author's German *Vorwort*.

This monograph, the companion monograph (volume 1, part 2, in the series) by Herchel Smith on *Organic Reactions in Liquid Ammonia* (in English), and volume 4, *Chemistry in the Lower Fatty Acids and Derivatives*,

are the only volumes to have appeared thus far. We can only hope that the remaining monographs projected for the ambitious eight-volume compilation, initiated by the present author's father in 1956, will appear more promptly.

L. F. AUDRIETH

Department of Chemistry and Chemical Engineering, University of Illinois, Urbana

## New Books

**Abstract Algebra.** Chih-Hah Sah. Academic Press, New York, 1966. 358 pp. Illus. \$9.75. Academic Press Textbooks in Mathematics Series.

**Advances in Alicyclic Chemistry.** vol. 1. Harold Hart and G. J. Karabastos, Eds. Academic Press, New York, 1966. 405 pp. Illus. \$16.50. Five papers.

**Advances in Applied Microbiology.** vol. 8. Wayne W. Umbreit, Ed. Academic Press, New York, 1966. 395 pp. Illus. \$14. Ten papers.

**Advances in Atomic and Molecular Physics.** vol. 2. D. R. Bates and Immanuel Estermann, Eds. Academic Press, New York, 1966. 496 pp. Illus. \$16.50. Seven papers.

**Advances in Chemical Engineering.** vol. 6. Thomas B. Drew, John W. Hoopes, Jr., Theodore Vermeulen, and Giles R. Cokelet, Eds. Academic Press, New York, 1966. 469 pp. Illus. \$17.50. Five papers.

**Advances in Communication Systems: Theory and Applications.** vol. 2. A. V. Balakrishnan, Ed. Academic Press, New York, 1966. 342 pp. Illus. \$13.50. Seven papers.

**Advances in Computers.** vol. 7. Franz L. Alt and Morris Rubino, Eds. Academic Press, New York, 1966. 319 pp. Illus. \$14. Six papers.

**Advances in Inorganic Chemistry and Radiochemistry.** vol. 9. H. J. Emeléus and A. G. Sharpe, Eds. Academic Press, New York, 1966. 400 pp. Illus. \$15.50. Six papers.

**Advances in Oral Biology.** vol. 2. Peter H. Staple, Ed. Academic Press, New York, 1966. 237 pp. Illus. \$12. Six papers.

**Alchemy, Medicine, Religion in the China of A.D. 320: The Nei P'ien of Ko Hung (Pao-p'u tzu).** Translated from the Chinese by James R. Ware. M.I.T. Press, Cambridge, Mass., 1966. 404 pp. \$15.

**Algebraic Linguistics: Analytical Models.** Solomon Marcus. Academic Press, New York, 1967. 266 pp. Illus. \$12.

**Applied Ore Microscopy: Theory and Technique.** Hugo Freund, Ed. Translated from the German by Carlo G. I. Friedlaender and George Aletan, Macmillan, New York, 1966. 648 pp. Illus. \$37.50. Eight papers extracted from *Handbuch der Mikroskopie in der Technik* (1954 and 1960).

**Archeological Chemistry.** A symposium (Atlantic City, N.J.), September 1962. Sponsored by the Division of History of Chemistry, American Chemical Society.

(Continued on page 1328)

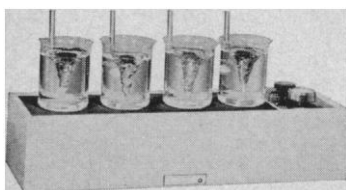
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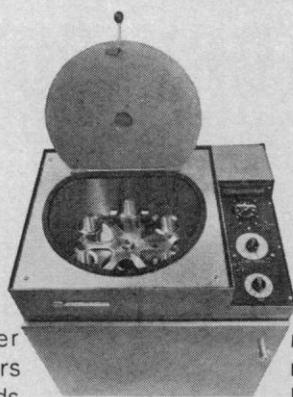


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Martin Levey, Ed. Univ. of Pennsylvania Press, Philadelphia, 1967. 365 pp. Illus. \$8.50. Fifteen papers; most of the papers are in English, others are in German or French.

**The Biochemistry of Copper.** Proceedings of the Symposium on Copper in Biological Systems (Harriman, N.Y.), September 1965. Jack Peisach, Philip Aisen, and William E. Blumberg, Eds. Academic Press, New York, 1966. 606 pp. Illus. \$23.50. Thirty-seven papers.

**The Biology of Human Adaptability.** Based on a Wenner-Gren conference (Burg-Wartenstein), 1964. Paul T. Baker and J. S. Weiner, Eds. Oxford Univ. Press, New York, 1966. 549 pp. Illus. \$16.80. Eighteen papers.

**Calculus with Analytic Geometry and Linear Algebra.** Leopoldo V. Toralballa. Academic Press, New York, 1966. 936 pp. Illus. \$11.95. Academic Press Textbooks in Mathematics Series.

**Canadian Journal of Earth Sciences.** vol. 3, No. 6. Papers presented at a Symposium on Glacier Mapping (Ottawa), September 1965. H. C. Gunning, Ed. Natl. Research Council, Ottawa, Canada, 1966. 179 pp. Illus. Maps. Paper, \$2. Twenty papers.

**Ceramics in Machining Processes.** Alan G. King and W. M. Wheildon. Academic Press, New York, 1966. 329 pp. Illus. \$14.50.

**Clinical Pharmacology.** vol. 1. Pergamon, New York, 1966. 387 pp. Illus. \$12.50. International Encyclopedia of Pharmacology and Therapeutics. Nineteen papers.

**Cognitive Consistency: Motivational Antecedents and Behavioral Consequents.** Shel Feldman, Ed. Academic Press, New York, 1966. 326 pp. Illus. \$8.50. Nine papers.

**The Cold War in Biology.** Carl C. Lindgren. Planarian Press, Ann Arbor, Mich., 1966. 123 pp. Illus. \$6.50.

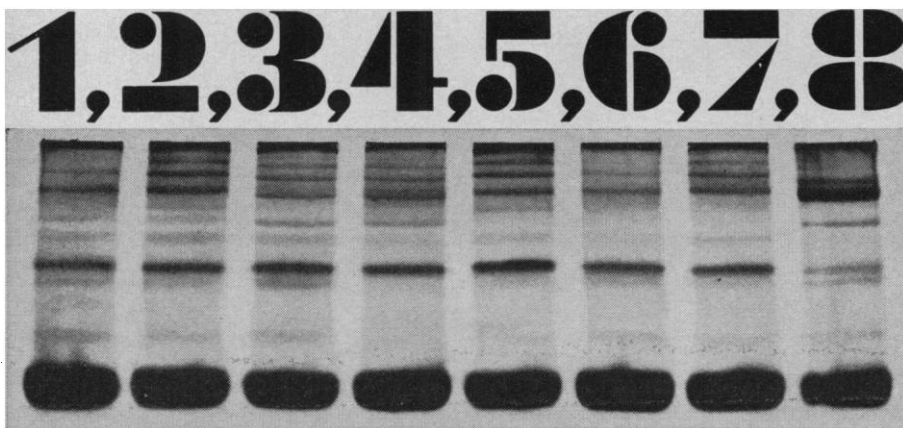
**Communication Satellite Systems Technology.** Based on the AIAA Communications Satellite Systems Conference, May 1966. Richard B. Marsten, Ed. Academic Press, New York, 1966. 1071 pp. Illus. \$12. Fifty papers. Progress in Astronautics and Aeronautics.

**The Conflicted Relationship.** The West and the transformation of Asia, Africa and Latin America. Theodore Geiger. Published for the Council on Foreign Relations. McGraw-Hill, New York, 1967. 319 pp. \$7.95.

**Control Systems Functions and Programming Approaches.** vol. B, *Applications*. Dimitris N. Chorafas. Academic Press, New York, 1966. 300 pp. Illus. \$11. Mathematics in Science and Engineering Series, vol. 27B.

**Coulomb Excitation.** A collection of reprints. K. Alder and A. Winther, Eds. Academic Press, New York, 1966. 382 pp. Illus. \$8.50. Perspectives in Physics: A Series of Reprint Collections. Eighteen papers.

**Current Topics in Bioenergetics.** vol. 1. D. R. Sanadi, Ed. Academic Press, New York, 1966. 304 pp. Illus. \$11.50. Seven papers.



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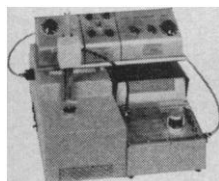
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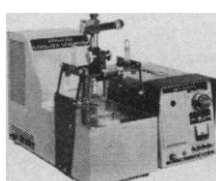
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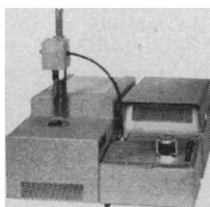
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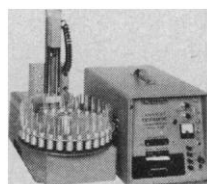
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**Diabetes for Diabetics: A Practical Guide.** George F. Schmitt. Diabetes Press of America, Miami, Fla., 1966. 247 pp. Illus. \$5.95.

**Dynamic Stability of Structures.** Proceedings of an international conference (Evanston, Ill.), October 1965. Sponsored by the Air Force Office of Scientific Research and Northwestern University. George Herrmann, Ed. Pergamon, New York, 1967. 323 pp. Illus. \$16.50. Seventeen papers.

**Exercises in Mathematics.** J. Bass. Translated from the French edition (Paris, 1965) by Scripta Technica. Academic Press, New York, 1966. 471 pp. Illus. \$14.75.

**F-Centers in Alkali Halides.** Jordan J. Markham. Academic Press, New York, 1966. 412 pp. Illus. \$16. Solid State Physics, Suppl. 8.

**Free and Inexpensive Educational Aids.** Thomas J. Pepe. Dover, New York, ed. 3, 1966. 189 pp. Paper, \$1.75.

**Functional Analysis and Numerical Mathematics.** Lothar Collatz. Translated from the German edition (Berlin, 1964) by Hansjörg Oser. Academic Press, New York, 1966. 493 pp. Illus. \$18.50.

**Fundamentals of Immunology.** William C. Boyd. Interscience (Wiley), New York, ed. 4, 1967. 791 pp. Illus. \$14.95.

**Fundamentals of Theoretical Organic Chemistry.** O. A. Reutov. Translated from the second Russian edition by Scripta Technica. Thomas J. Katz, Translation Ed. Appleton-Century-Crofts (Meredith), New York, 1967. 601 pp. Illus. \$21.

**The Fungi: An Advanced Treatise.** vol. 2, *The Fungal Organism*. G. C. Ainsworth and Alfred S. Sussman, Eds. Academic Press, New York, 1966. 823 pp. Illus. \$27. Twenty-three papers.

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**A Guide to the Solar Corona.** Donald E. Billings. Academic Press, New York, 1966. 333 pp. Illus. \$14.

**Heritage from Mendel.** Proceedings of the Mendel Centennial Symposium (Fort Collins, Colo.), September 1965. Sponsored by the Genetics Society of America. R. Alexander Brink and E. Derek Styles, Eds. Univ. of Wisconsin Press, Madison, 1967. 467 pp. Illus. Paper, \$2.95; cloth, \$10. Twenty-one papers.

**A History of the Thermometer and Its Use in Meteorology.** W. E. Knowles Middleton. Johns Hopkins Press, Baltimore, 1966. 263 pp. Illus. \$10.

**The Human Dimension: Experiences in Policy Research.** Hadley Cantril. Rutgers Univ. Press, New Brunswick, N.J., 1967. 216 pp. Illus. \$7.50.

**The Hypnotic Investigation of Dreams.**

C. Scott Moss. Wiley, New York, 1967. 302 pp. Illus. \$7.50.

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**International Marketing: A Comparative Systems Approach.** David Carson. Wiley, New York, 1967. 551 pp. \$9.95. Wiley Marketing Series.

**International Review of Neurobiology.** vol. 9. Carl C. Pfeiffer and John R. Smythies, Eds. Academic Press, New York, 1966. 440 pp. Illus. \$16.50. Seven papers.

**International Review of Research in Mental Retardation.** vol. 2. Norman R. Ellis, Ed. Academic Press, New York, 1966. 382 pp. Illus. \$11.50. Ten papers.

**Introduction to the Theory of Algebraic Numbers and Functions.** Martin Eichler. Translated from the German edition (Basel, Switzerland, 1963) by George Striker. Academic Press, New York, 1966. 340 pp. \$14.50.

**Introductory Descriptive Chemistry: Selected Nonmetals, Their Properties and Behavior.** Ronald C. Johnson. Benjamin, New York, 1966. 154 pp. Illus. Paper, \$2.45; cloth, \$4.95.

**The Kanuri of Bornu.** Ronald Cohen. Holt, Rinehart, and Winston, New York, 1967. 125 pp. Illus. Paper, \$1.75.

**Laboratory Experiments in Biochemistry.** Louise J. Daniel and A. Leslie Neal. Academic Press, New York, 1966. 311 pp. Illus. Paper, \$5.95.

**Lectures on Quantum Field Theory.** P. A. M. Dirac. Belfer Graduate School of Science, Yeshiva Univ., New York; Academic Press, New York, 1966. 159 pp. \$7.50. Belfer Graduate School of Science Monographs Series, vol. 3.

**Macromolecular Reviews.** vol. 1. A. Peterlin, M. Goodman, S. Okamura, B. H. Zimm, and H. F. Mark, Eds. Interscience (Wiley), New York, 1967. 312 pp. Illus. \$12. Six papers.

**Man-Apes or Ape-Men? The Story of Discoveries in Africa.** Sir Wilfrid E. Le Gros Clark. Holt, Rinehart, and Winston, New York, 1967. 160 pp. Illus. \$3.95.

**Mechanistic Organic Photochemistry.** Douglas C. Neckers. Reinhold, New York, 1967. 334 pp. Illus. \$14.75. Reinhold Chemistry Textbook Series.

**The Method of Second Quantization.** F. A. Berezin. Translated from the Russian edition by Nobumichi Mugibayashi and Alan Jeffrey. Academic Press, New York, 1966. 240 pp. \$10. Pure and Applied Physics, A Series of Monographs and Textbooks.

**Methods in Bremsstrahlung Research.** O. V. Bogdankevich and F. A. Nikolaev. Translated from the Russian edition (Moscow, 1964) by Scripta Technica. David E. Alburger, Translation Ed. Academic Press, New York, 1966. 229 pp. Illus. \$9.50.

**Methods in Enzymology.** vol. 8, *Complex Carbohydrates.* Elizabeth F. Neufeld and Victor Ginsburg, Eds. Academic Press, New York, 1966. 785 pp. Illus. \$26. There are 119 papers.

**Microwave Scanning Antennas.** vols. 2 and 3. vol. 2, *Array Theory and Practice* (416 pp. \$15.50); vol. 3, *Array Systems* (438 pp. \$16.50). R. C. Hansen, Ed. Academic Press, New York, 1966. Illus.

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**The New Age in Physics.** Sir Harrie Massey. Basic Books, New York, ed. 2, 1967. 386 pp. Illus. \$10.

**Nuclear Magnetic Resonance for Organic Chemists.** D. W. Mathieson, Ed. Royal Institute of Chemistry, Academic Press, New York, 1967. 297 pp. Illus. \$10.50. Nine lectures delivered at a summer school in 1964.

**Numerical Analysis: An Introduction.** Based on a symposium organized by the Institute of Mathematics and Its Applications (Birmingham, England), July 1965. J. Walsh, Ed. Academic Press, New York, 1966. 226 pp. Illus. \$10. Sixteen papers.

**One Man's Log.** The personal account of a member of Thor Heyerdahl's expedition to Easter Island. Edwin N. Ferdon, Jr. Rand McNally, Chicago, 1966. 198 pp. Illus. \$4.95.

**Optical Interferometry.** M. Françon. Translated from the French by I. Wilmanns. Academic Press, New York, 1966. 319 pp. Illus. \$13.50.

**Personalities and Cultures: Readings in Psychological Anthropology.** Robert Hunt, Ed. Published for the American Museum of Natural History. Natural History Press, Garden City, N.Y., 1967. 456 pp. Paper, \$2.50. American Museum Sourcebooks in Anthropology. Eighteen papers.

**Phenolic Compounds and Metabolic Regulation.** Bernard J. Finkle and Victor C. Runeckles, Eds. Appleton-Century-Crofts (Meredith), New York, 1967. 167 pp. Illus. \$7.50. Five papers.

**Physical Acoustics: Principles and Methods.** vol. 4, pt. A, *Applications to Quantum and Solid State Physics.* Warren P. Mason, Ed. Academic Press, New York, 1966. 410 pp. Illus. \$15.50. Nine papers.

**Physics of Shock Waves and High-Temperature Hydrodynamic Phenomena.** vol. 1. Ya. B. Zel'dovich and Yu. P. Raizer. Translated from the Russian by Scripta Technica. Wallace D. Hayes and Ronald F. Probstein, Translation Eds. Academic Press, New York, 1966. 488 pp. Illus. \$18.

**Physics of Thin Films: Advances in Research and Development.** vol. 3. Georg Hass and Rudolf E. Thun, Eds. Academic Press, New York, 1966. 332 pp. Illus. \$14. Six papers.

**Plane Vector Fields.** M. A. Krasnosel'skiy, A. I. Perov, A. I. Povolotskiy, and P. P. Zabreiko. Translated by Scripta Technica. Academic Press, New York, 1966. 242 pp. Illus. \$8.

**Pleistocene and Post-Pleistocene Climatic Variations in the Pacific Area.** A symposium (Honolulu), August-September 1961. Sponsored by National Academy of Sciences, Bernice Pauahi Bishop Museum, and the University of Hawaii. David I. Blumenstock, Ed. Bishop Museum Press, Honolulu, 1966. 192 pp. Illus. Paper, \$5. Nine papers.

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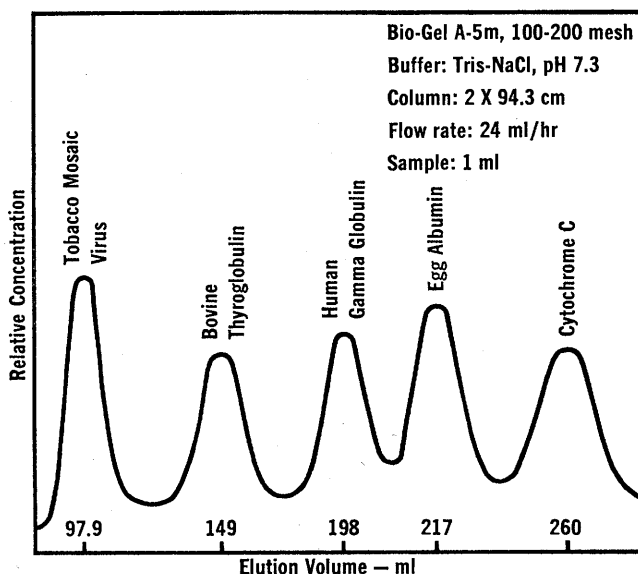
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**Progress in Experimental Personality Research.** vol. 3. Brendan A. Maher, Ed. Academic Press, New York, 1966. 331 pp. Illus. \$9.50. Five papers.

**Progress in Hematology.** vol. 5. Elmer B. Brown and Carl V. Moore, Eds. Grune and Stratton, New York, 1966. 407 pp. Illus. \$16.75. Thirteen papers.

**Psychobiology: The Biological Bases of Behavior.** James L. McGaugh, Norman M. Weinberger, and Richard E. Whalen, Eds. Freeman, San Francisco, 1967. 390 pp. Illus. Paper, \$5.45; cloth, \$10. Forty-five readings from *Scientific American*.

**Psycholinguistics Papers.** Proceedings of a conference (Edinburgh), March 1966. J. Lyons and R. J. Wales, Eds. Edinburgh Univ. Press, Edinburgh; Aldine, Chicago, 1967. 253 pp. \$7.95. Five papers.

**Quantum Theory of Atoms, Molecules, and the Solid State.** A tribute to John C. Slater. Per-Olov Löwdin, Ed. Academic Press, New York, 1966. 659 pp. Illus. \$25. Forty-two papers.

**Readings in the Psychology of Parent-Child Relations.** Gene R. Medinnus, Ed. Wiley, New York, 1967. 387 pp. Illus. Paper, \$4.50. Thirty-three papers.

**Realm of Algebra.** Isaac Asimov. Fawcett, Greenwich, Conn., 1967. 143 pp. Illus. Paper, 60¢. Reprint, 1961 edition.

**Realm of Measure.** Isaac Asimov. Fawcett, Greenwich, Conn., 1967. 144 pp. Illus. Paper, 60¢. Reprint, 1961 edition.

**Realm of Numbers.** Isaac Asimov. Fawcett, Greenwich, Conn., 1967. 144 pp. Illus. Paper, 60¢. Reprint, 1959 edition.

**Recent Progress in Hormone Research.** vol. 22. Proceedings of the Laurentian Hormone Conference (Mont Tremblant, Quebec), August-September 1965. Gregory Pincus, Ed. Academic Press, New York, 1966. 603 pp. Illus. \$25. Fourteen papers.

**A Reference Book of Chemistry.** J. H. White. Philosophical Library, New York, ed. 3, 1967. 310 pp. Illus. \$10.

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