

tracer work, such as isotope effects and radiation damage, are mentioned, and there is a chapter dealing with the various modifications of the isotope dilution method. The last, and best, half of the book describes individual instances of the use of isotopes in the solution of important problems in numerous areas of biology. Famous experiments in such fields as metabolism, protein synthesis, chemical genetics, and the dynamic state of body constituents are discussed; however, the brevity often precludes an appreciation of the fine points of these experiments.

A Tracer Experiment by Martin D. Kamin, is written for the bright high school student or the adult with an interest in modern biology. The approach is very elementary, but the account moves quickly and requires considerable thought in places. Kamin begins with a brief statement of what a research question should be. Definitions of atoms and molecules are followed by a discussion of atomic structure and a short history of the discovery of radiation. The nature of electricity is illustrated with a detailed description of Millikan's "oil drop" experiment. The last part of the book deals with the tracer experiment of the title: The incorporation of labeled carbon dioxide into acetic acid by *Clostridium thermoaceticum*. Readers may feel let-down by the absence of a clear-cut conclusion, but the lack serves to accentuate the moral that "scientific knowledge is a thing of change." This book is well written and serves its purpose admirably.

ALLEN M. GOLD

Department of Biochemistry,
Columbia University

Desert Animals

The Lives of Desert Animals in Joshua Tree National Monument. Alden H. Miller and Robert C. Stebbins. University of California Press, Berkeley, 1964. vi + 452 pp. Illus. \$10.

This is another of the famed faunal reports from the Museum of Vertebrate Zoology of the University of California where Alden Miller is director and Robert Stebbins is curator of herpetology. The authors were attracted to this desert region in south-

ern California by their desire to study, as naturalists, the daily lives of vertebrate animals and to ascertain how they balance their activities with their physiologic requirements. Many laboratory studies, made on different desert species and entailing temperature, water, and metabolism, have served as a basis for interpretation of the field observations.

The initial sections of the book constitute an ecological discussion of the broad problems of desert existence to which the animals must adjust—for example, with respect to water, the shortage, vacillating supply, and thus the need for conservation; temperature extremes; limited concealment from predators; protection from the "elements" owing to the sparseness of vegetation; and respiratory problems caused by dust, sand, and loose substrate. Behavioral ways of solving the problems are discussed. The environment of the Joshua Tree Monument is then treated, largely in terms of plant belts and habitats. A fold-out map (Fig. 6) shows (by the use of different colors) the extent of the Piñon, Yucca, and Creosote bush belts. A faunal analysis shows, in tabular form, the occurrence of the species and races in the plant belts in the Monument and in the faunal areas within the Monument and in surrounding regions. The species composition, racial affinities, endemic races, intergradation, and relation of faunal elements to the vegetation belts receive attention.

The species accounts constitute the greater part of the book. For each kind there is a brief description and a statement of range and occurrence in the Monument, followed by general observations and a discussion of interrelationships, ecology, behavior, and adjustments. A tremendous amount of factual material is presented, but it is not just raw data; interpretations are made in terms of the objects of the study. Thus treated are 166 kinds of birds, 42 mammals, 36 reptiles, and 5 amphibians. Of these, 141 are residents. Literature citations cover six pages. There is a terminal index by subject and kind of animal.

The authors have not been unmindful of the growing popularity of desert regions for recreational uses. The book is superbly illustrated by Gene M. Christman. Of the 149 illustrations, 74 are photographs, 58 are black

and white drawings, 9 are maps and diagrams, and 8 are colored plates. All but one of the last are of paintings.

Thus, this book has information for the specialist and for the layman. There are factual data for the zoogeographer, systematist, and ecologist. Of appeal to the general public is the list of animals that are found in the Monument, along with information on recognition and occurrence and on how the residents survive in the severe desert environment.

WILLIAM H. BEHLE

Department of Zoology and
Entomology, University of Utah

New Books

General

The Ambidextrous Universe. Martin Gardner. Basic Books, New York, 1964. 304 pp. Illus. \$5.95.

Animal Chemistry or Organic Chemistry in Its Application to Physiology and Pathology. Justus Liebig. William Gregory and John W. Webster, Eds. Johnson Reprint Corp., New York, 1964 (a facsimile reprint of the Cambridge edition, 1842). 407 pp. \$14.50.

Archimedes in the Middle Ages. vol. 1, *The Arabo-Latin Tradition.* Marshall Clagett. Univ. of Wisconsin Press, Madison, 1964. 752 pp. Illus. \$12.

Asimov's Biographical Encyclopedia of Science and Technology. The living stories of more than 1000 great scientists from the age of Greece to the space age, chronologically arranged. Isaac Asimov. Doubleday, Garden City, N.Y., 1964. 672 pp. Illus. \$8.95.

John James Audubon. Alice Ford. Univ. of Oklahoma Press, Norman, 1964. 502 pp. Illus. \$7.95.

Audubon's Wildlife. Edwin Way Teale. Viking Press, New York, 1964. 264 pp. Illus. \$15.

The Beginnings of Modern Science. From 1450 to 1800. René Taton, Ed. Translated from the French edition (Paris, 1958) by A. J. Pomerans. Basic Books, New York, 1964. 687 pp. Illus. \$17.50.

Beneficial Insects. Lester A. Swan. Harper and Row, New York, 1964. 447 pp. Illus. \$7.95.

The Beyond Within: The LSD Story. Sidney Cohen. Atheneum, New York, 1964. 284 pp. Illus. \$5.

The Biochemical Approach to Life. F. R. Jevons. Basic Books, New York, 1964. 184 pp. Illus. \$4.50.

The Bountiful Sea. Seabrook Hull. Prentice-Hall, Englewood Cliffs, N.J., 1964. 352 pp. Illus. \$6.95.

Broken Peace Pipes. A 400-year history of the American Indian. Irvin M.

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Peithmann. Thomas, Springfield, Ill., 1964. 320 pp. \$7.50.

The Communication Systems of the Body. David F. Horrobin. Basic Books, New York, 1964. 224 pp. Illus. \$4.95.

Concise Dictionary of Atomics. Alfred del Vecchio. Philosophical Library, New York, 1964. 272 pp. \$6.

Contemporary Physics. David Park. Harcourt, Brace, and World, New York, 1964. 185 pp. Illus. Paper, \$2.45; cloth, \$4.95.

The Cube Made Interesting. Aniela Ehrenfeucht. Translated from the Polish edition (Warsaw, 1960) by Wacław Zawadowski. Pergamon, London; Macmillan, New York, 1964. 91 pp. Illus. \$3.75.

The Deep and the Past. David B. Ericson and Goesta Wollin. Knopf, New York, 1964. 315 pp. Illus. \$6.95.

Descripción Sumaria del Templo Semisubterráneo de Tiwanaku. Carlos Ponce Sanginés. Centro de Investigaciones Arqueológicas en Tiwanaku, Tiwanaku, Bolivia, 1964. 90 pp. Illus. Plates.

Direct Use of the Sun's Energy. Farington Daniels. Yale Univ. Press, New Haven, Conn., 1964. 392 pp. Illus. Paper, \$2.45; cloth, \$7.50.

Documents on Disarmament, 1963. Compiled and annotated by Robert W. Lambert, Ruth Ihara, and Charles R. Gellner. U.S. Arms Control and Disarmament Agency, Washington, D.C., 1964 (order from Superintendent of Documents, Washington, D.C.). 756 pp. Paper, \$2.

Early Electrical Communications. E. A. Marland. Abelard-Schuman, New York, 1964. 220 pp. Illus. \$6.

The Earth Beneath Us. Kirtley F. Mather. Random House, New York, 1964. 320 pp. Illus. \$15.

An Essay Concerning Human Understanding. John Locke. Abridged and edited with an introduction by A. D. Woozley. World, Cleveland, Ohio, 1964. 475 pp. Paper, \$2.65.

Exploring the World of Fossils. William H. Matthews, III. Childrens Press, Chicago, 1964. 157 pp. Illus. \$4.50 (juvenile).

Family and Kinship in East London. Michael Young and Peter Willmott. Penguin Books, Baltimore, Md., 1964 (reprint of 1962 edition). 222 pp. Paper, \$1.25.

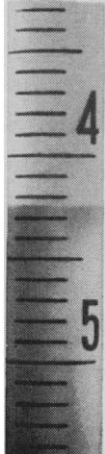
The Flammarion Book of Astronomy. Camille Flammarion. Prepared under the direction of Gabrielle Camille Flammarion and André Danjon. Translated from the French edition (1955-60) by Annabel and Bernard Pagel. Simon and Schuster, New York, 1964. 670 pp. Illus. \$22.95.

The Flying Trapeze: Three Crises for Physicists. J. Robert Oppenheimer. Oxford Univ. Press, New York, 1964. 75 pp. Illus. \$2.75.

The Friendly Stars. Martha Evans Martin. Revised by Donald H. Menzel. Dover, New York, 1964 (revised and enlarged version of the 1907 edition). 159 pp. Illus. Paper, \$1.

Genetics and Man. C. D. Darlington. Macmillan, New York, 1964. 382 pp. Illus. \$7.50. A revised and expanded edition of *The Facts of Life* (1953).

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Indians of Southern Illinois. Irvin M. Peithmann. Thomas, Springfield, Ill., 1964. 141 pp. Illus. \$6.50.

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Inference and Disputed Authorship: The Federalist. Frederick Mosteller and David L. Wallace. Addison-Wesley, Reading, Mass., 1964. 303 pp. Illus. \$12.50.

Insect Pests of Livestock, Poultry, and Pets and Their Control. Rudolph Seiden. Springer, New York, 1964. 174 pp. Illus. Paper, \$4.

Inside the Nucleus. Irving Adler. New American Library, New York, 1964. 157 pp. Illus. Paper, 60¢.

Islands in Space: The Challenge of the Planetoids. Dandridge M. Cole and Donald W. Cox. Chilton, Philadelphia, 1964. 298 pp. Illus. \$6.95.

The Land and Wildlife of Africa. Archie Carr and the Editors of *Life*. Time, New York, 1964. 200 pp. Illus. \$3.95.

Leonardo da Vinci and a Memory of His Childhood. Sigmund Freud. Translated from the German by Alan Tyson. James Strachey, Ed. Norton, New York, 1964. 101 pp. \$3.50.

Life and Death of the Sun. John Rudlowsky. Basic Books, New York, 1964. 176 pp. Illus. \$4.50.

The Life and Times of Emil H. Grubbe. The biography of a pioneering Chicago radiologist. Paul C. Hodges. Univ. of Chicago Press, Chicago, 1964. 151 pp. \$3.95.

Life Histories of North American Cuckoos, Goatsuckers, Hummingbirds, and Their Allies. pts. 1 and 2. Arthur Cleveland Bent. Dover, New York, 1964 (reprint of Smithsonian Institution *Bulletin* 176, 1940). pt. 1, 256 pp.; pt. 2, 270 pp. Plates. Paper, \$2.50 each.

Life Histories of North American Jays, Crows, and Titmice. pts. 1 and 2. Arthur Cleveland Bent. Dover, New York, 1964 (reprint of Smithsonian Institution *Bulletin* 191, 1946). pt. 1, 224 pp.; pt. 2, 287 pp. Plates. Paper, \$2.50 each.

The Living Battery. An introduction to bioelectricity. E. E. Suckling. Macmillan, New York, 1964. 160 pp. Illus. \$3.95.

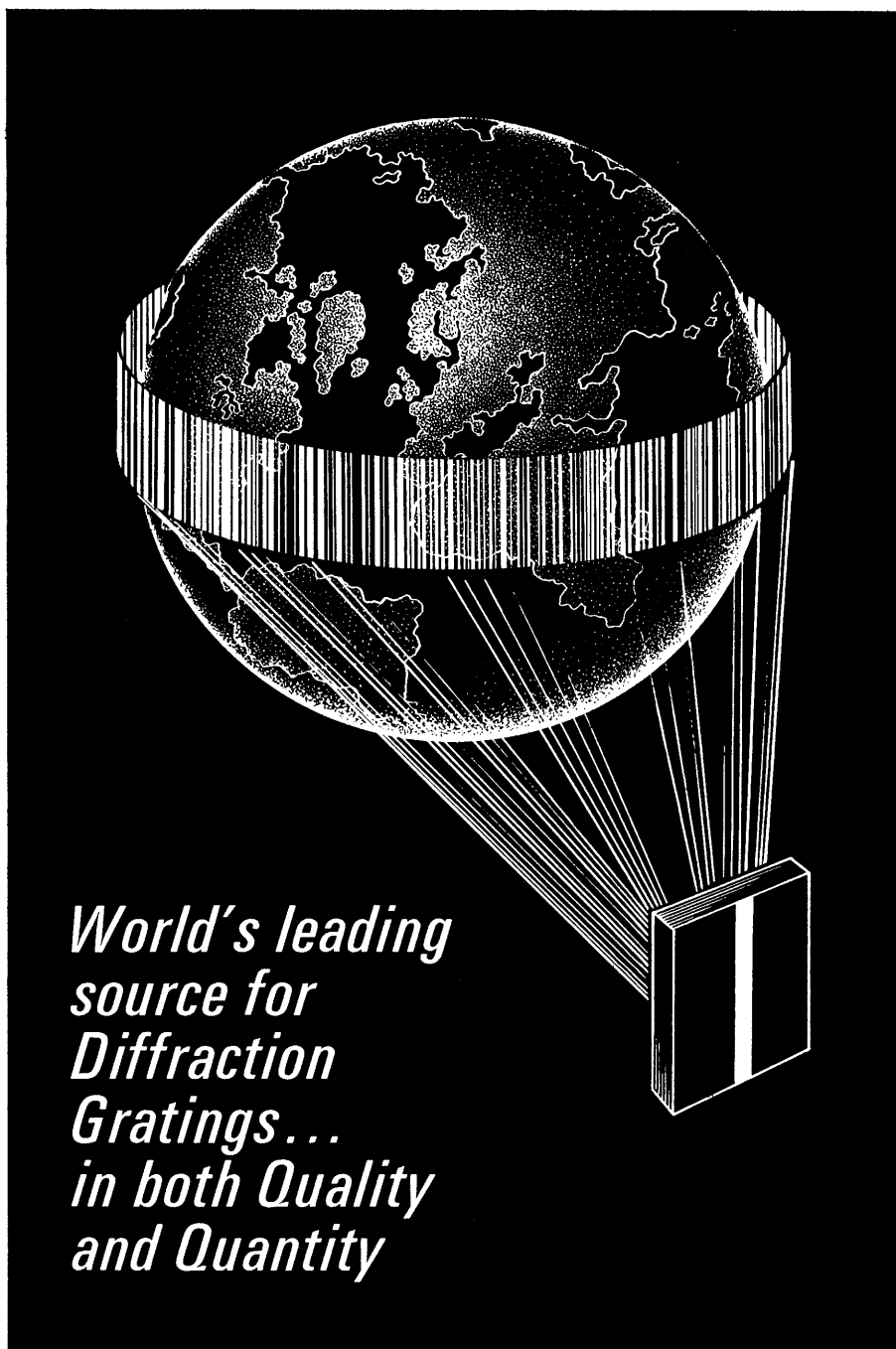
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Man and Space. Arthur C. Clarke and the Editors of *Life*. Time, New York, 1964. 200 pp. Illus. \$3.95.

Management and Mathematics. The practical techniques available. Allan Fletcher and Geoffrey Clarke. Gordon and Breach, New York, 1964. 247 pp. Illus. \$7.50.

The Many Worlds of Man. Jack Conrad. Crowell, New York, 1964. 319 pp. Illus. \$6.95.

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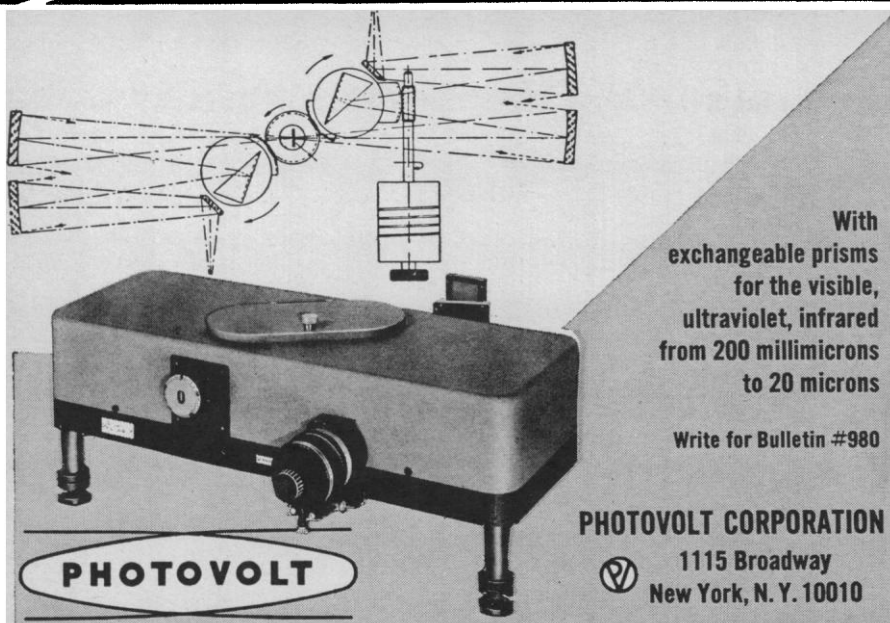
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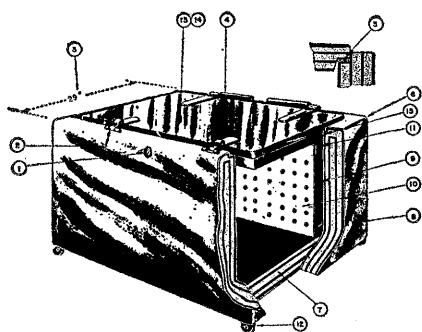
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Medical Illustration. A guide for the doctor-author and exhibitor. William E. Loechel. Thomas, Springfield, Ill., 1964. 355 pp. Illus. \$14.50.

Methods of Forensic Science. vol. 3. A. S. Curry, Ed. Interscience (Wiley), New York, 1964. 356 pp. Illus. Nine papers: "Lead poisoning" by S. L. Tompsett; "Non-biological applications of neutron activation analysis in forensic studies" by Vincent P. Guinn; "Biological applications of activation analysis" by Hamilton Smith and J. M. A. Lenihan; "Forensic chemical analysis of urine for drugs" by Elliott B. Hensel; "The administration of a forensic science laboratory" by Robert F. Borkenstein; "Examination of fiduciary counterfeits and forgeries" by P. Fauconnier, J. Cogniard, and P. F. Ceccaldi; "The toxicology of cyanides" by Manuel A. Guatelli; "The acid phosphates test" by S. S. Kind; and "Erasures" by Wilson R. Harrison.

My View of the World. Erwin Schrödinger. Translated from the German edition (Hamburg, 1961) by Cecily Hastings. Cambridge Univ. Press, New York, 1964. 118 pp. \$3.50.

A New System of Chemical Philosophy. John Dalton. Philosophical Library, New York, 1964. 182 pp. Illus. \$6. A reprint with a brief (2 1/3 pp.) introduction.

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The Origins and Growth of Physical Science. vols. 1 and 2. D. L. Hurd and J. J. Kipling, Eds. Penguin Books, Baltimore, Md., 1964 (reprint of the 1958 edition). vol. 1, 343 pp.; vol. 2, 427 pp. Illus. Paper, \$1.45 each.

Our Work in Space. Willy Ley. Macmillan, New York, 1964. 143 pp. Illus. \$3.95.

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Proceedings of the Royal Institution of Great Britain. S. K. Runcorn and others. Royal Institution, London, 1964. 118 pp. Illus. Paper, 10s. 6d. Nine papers: "How the continents drift" by S. K. Runcorn; "A baby's first breaths" by K. W. Cross; "Noise and hearing" by W. Burns; "The law of disorder" by George Porter; "Infectious heredity and man's future (Woodhull lecture)" by R. Dulbecco; "Minerals" by Sir Lawrence Bragg; "Control and behaviour in the honeybee colony" by C. G. Butler; "Hugh Miller: Geologist and man of letters" by James Lawrie, and "Writers and libraries: The dependence of the scientific writer on library facilities" by J. G. Crowther. Two Royal Institution Notes are included.

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Cairo, Egypt, 1963. 489 pp. Illus. Paper. The purpose of the meeting was to consider the best existing production methods and to motivate research and training activities that would effect low-cost paper production in the Middle East and North Africa. The papers were divided into the sections: Country Statements (10 papers); The Use of Short-Fibred Raw Materials for Pulp and Paper (9 papers); Statements on Waste Paper, Rags, and Cotton Linters as Raw Materials for Paper Making (2 papers); Water Requirements and Pollution Problems (3 papers); Research Needs in Pulp and Paper (3 papers).

San Francisco Port Study. vol. 2, *Tests of Modified Cargo-Loading Methods and the Port as a System*. Natl. Acad. Sciences-Natl. Research Council, Washington, D.C., 1964. 127 pp. Illus. vols. 1 and 2, \$12. Volume 1 was published in the spring. Available only as a set.

The Savage Cell. A report on cancer and cancer research. Pat McGrady. Basic Books, New York, 1964. 448 pp. \$8.50.

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Star Names: Their Lore and Meaning. Richard Hinckley Allen. Dover, New York, 1964 (reprint of the 1899 edition). 577 pp. Paper, \$2.35.

Taiwan—ilha Formosa: A Geography in Perspective. Chiao-min Hsieh. Butterworth, Washington, D.C., 1964. 380 pp. Illus. \$11.50.

Waterfowl Tomorrow. Joseph P. Linduska, Ed. U.S. Department of the Interior, Washington, D.C., 1964 (order from Superintendent of Documents, Washington, D.C.). 784 pp. Illus. \$4.

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Wood Machining Processes. Peter Koch. Ronald, New York, 1964. 540 pp. Illus. \$15.

The World of Probability: Statistics in Science. Solomon Diamond. Basic Books, New York, 1964. 205 pp. Illus. \$4.95.

Worlds Without Ends. A reflection on planets, life, and time. N. J. Berrill. Macmillan, New York, 1964. 250 pp. \$5.95.

Mathematics, Physical Sciences, and Engineering

Advanced Plasma Theory. Course 25, International School of Physics "Enrico Fermi". M. N. Rosenbluth, Ed. Academic Press, New York, 1964. 280 pp. Illus. \$9.75. Eight papers: "Kinetic theory of plasma" by W. B. Thompson; "General stability theory in plasma physics" by Russel Kulsrud; "Gas discharge theory" by G. Ecker; "Topics in microinstabilities" by M. N. Rosenbluth; "Instabilities due to

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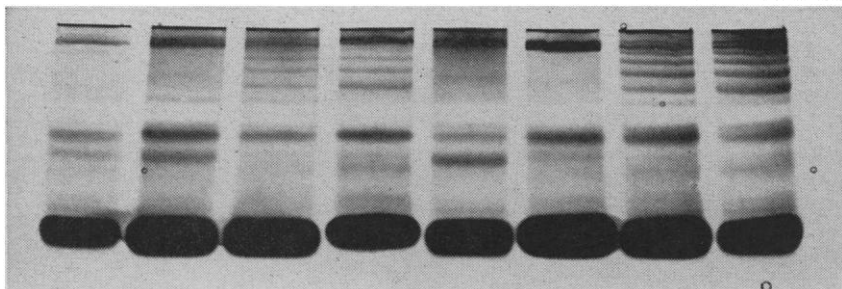
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finite resistivity or finite current-carrier mass" by H. P. Furth; "Nonlinear theory of electrostatic waves in plasmas" by P. A. Sturrock; "Equilibre et stabilité des systèmes toroidaux en magnétohydrodynamique au voisinage d'un axe magnétique" by C. Mercier; and "Boundary layer problems in plasma physics" by B. Bertotti. Three papers presented at a seminar are also included: "Introduction for papers on adiabatic invariance" and "Adiabatic invariant of the harmonic oscillator" by R. M. Kulsrud and "The gyration of a charged particle" by M. Kruskal.

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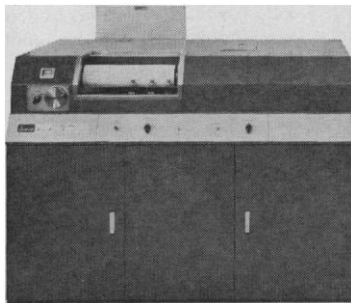
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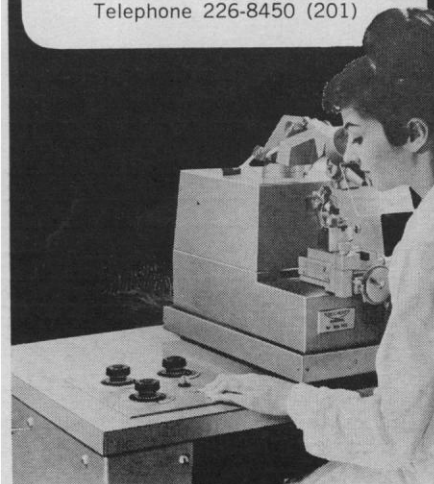
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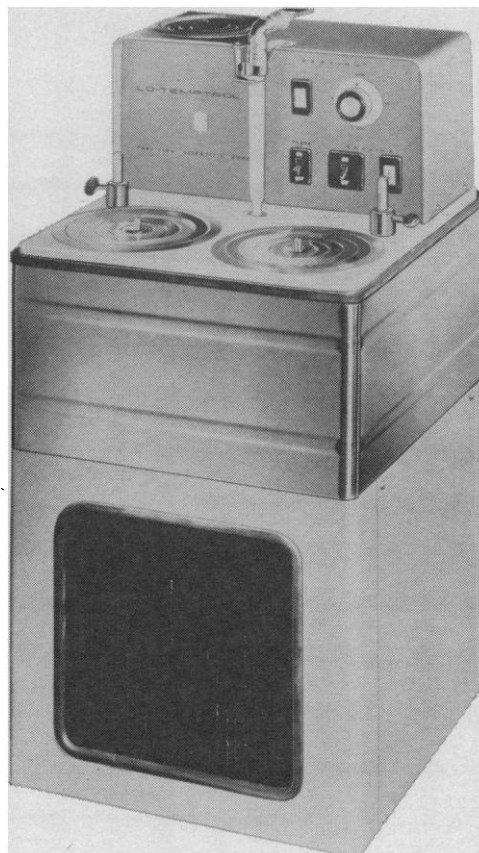
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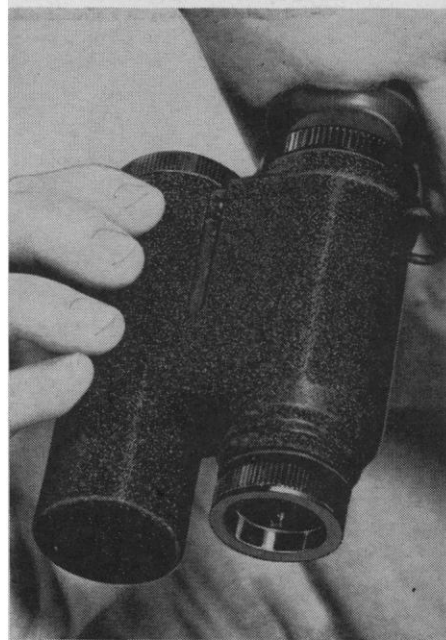
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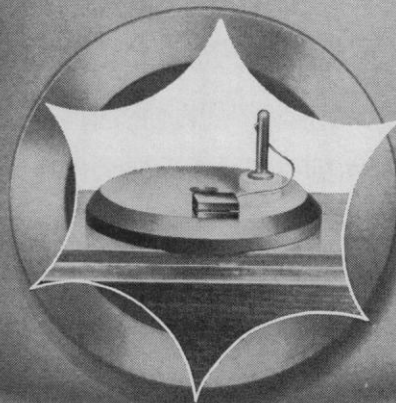
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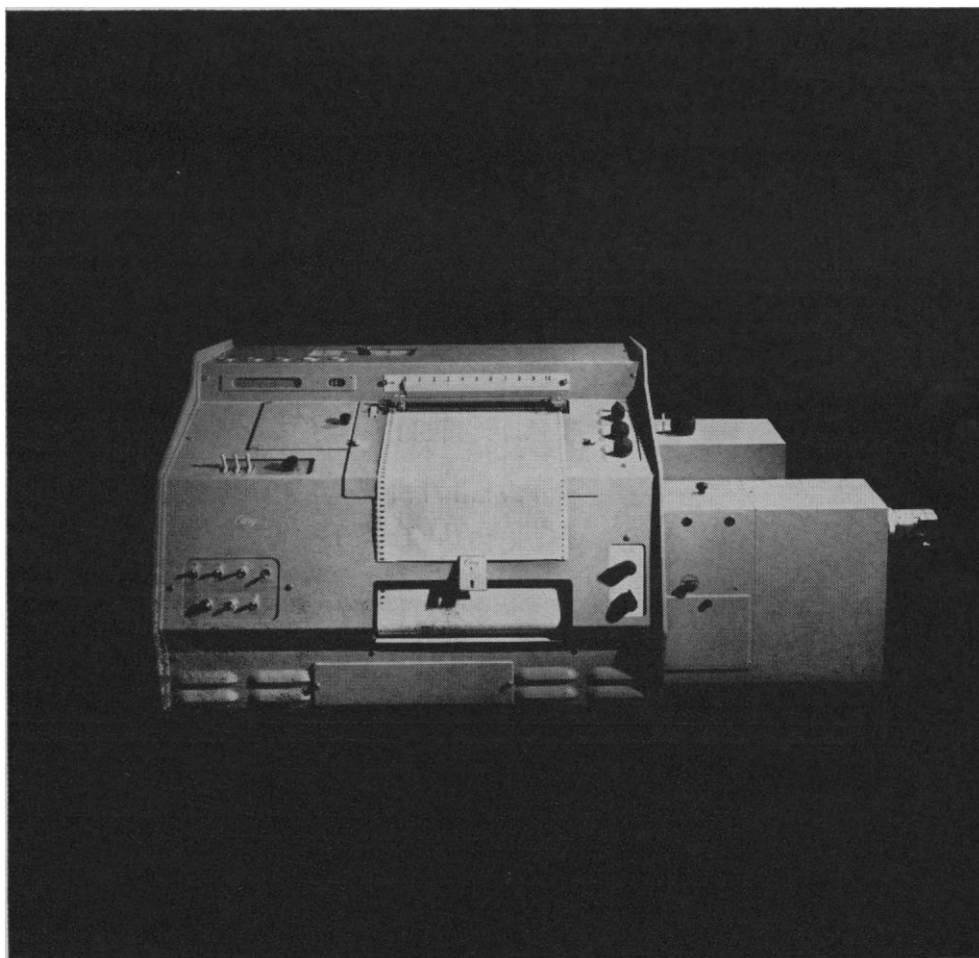
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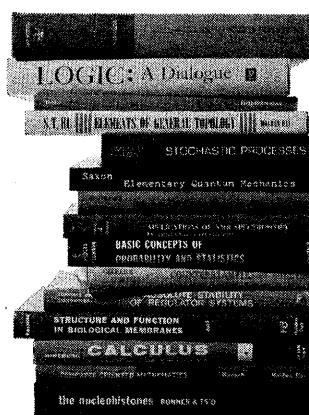
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