

SCIENCE

17 May 1957

Volume 125, Number 3255

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INTRODUCING THE SARGENT



LABORATORY RECORDER

(Patents Pending)

An automatic, self-balancing potentiometric recorder which measures voltages or current and graphically records these variables as a function of time.

- **MULTI-RANGE—40 ranges.**
- **MULTI-SPEED—9 standard chart speeds with provision for optional 1-5 range multiplication or 5-1 range reduction.**
- **VOLTAGE OR CURRENT RECORDING—for measurement of voltage or current or any other variable which can be translated to voltage or current signals.**
- **FLEXIBILITY OF APPLICATION**
- **DESIGNED FOR BENCH OPERATION**

Style: Vertical strip chart recorder, designed for laboratory bench operation. Assembly of three individual, separable, and self contained units; viz., control panel assembly, amplifier and power supply chassis, and chart and pen drive chassis unit.

Automatic full balancing potentiometric system with standard cell standardization by panel control, conventional chopper-amplifier method with special Sargent high gain amplifier and high stability Sargent bridge power supply using combined or alternate dry cells and mercury cells. Use of the latter obviates need for standardization over very long periods.

Ranges: Multiple full scale ranges selected by panel range switch as follows: 1.25, 2.5, 5, 12.5, 25, 50, 125, 250, 500, 1250, 2500. All ranges are made direct reading as full scale deflection in millivolts, milliamperes, or microamperes by use of an associated units selector switch. All 33 scales provide true potentiometric measurement. An additional series of the same eleven ranges in terms of volts is provided by an additional selector switch position, this series using a divider input with an impedance of one megohm.

True potentiometric measurements are thus provided to a maximum of 2.5 volts, higher voltages only being measured through a divider.

Accuracy: 0.1% or 20 microvolts, whichever is greater.

Chart: Width, 250 mm; length, 120 feet. Ruling rational with all ranges on a decimal basis. Indexed for reference. Graduated steel scale provides for any necessary correction of calibration. Two-position writing plate, 15° or 40° from vertical.

Chart Drive: Forward drive recording, reverse drive re-

cording, magnetic brake eliminating coasting when stopped and free clutch position with separate provision for rapid non-synchronous drive.

Recording speeds of $\frac{1}{3}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{2}{3}$, 4, 8, and 12 inches per minute, selected by interchange of two gears on end of chassis.

Free clutch or neutral drive at the rate of approximately 20 feet per minute in either direction for rapid scanning of recorded information, chart reroll, or chart positioning.

Recording either by automatic take-up on roll or with free end chart and tear off.

Synchronous switching outlet for automatic synchronization of external devices with recording.

Pen Speed: 1.8 seconds full scale. Other speeds can be provided on special order with change of motors.

Bridge: Special Sargent specification, ganged Helipot with resolution several times common commercial practice. Provision for coupled transmitting potentiometer for output to integrating circuits, etc.

Damping: Dynamics controlled with single panel knob adjustment of amplifier gain.

Dimensions: Width, $21\frac{1}{2}$ inches; depth, 13 inches; height, 24 inches; weight, about 75 pounds.

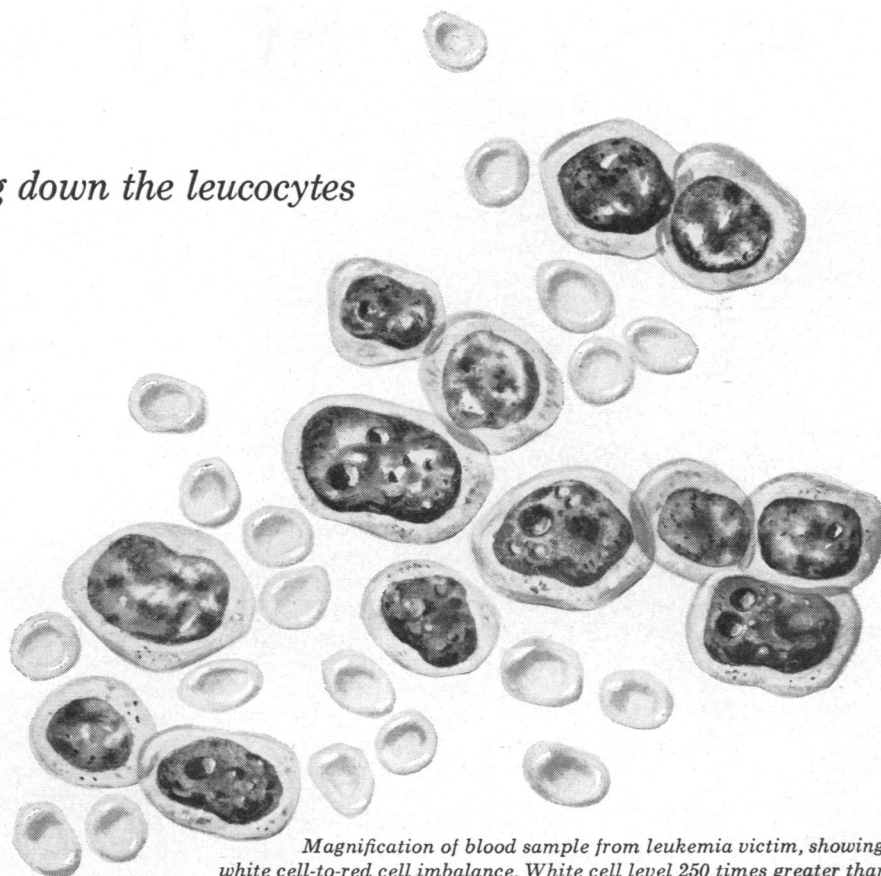
S-72150 RECORDER — Potentiometric, Sargent. Complete with two S-72165 chart rolls; two each S-72175 pens; red, blue and green; input cable assembly; synchronous switch cable assembly; plastic dust cover; spare ring for take-up mechanism; spare pen drive cable assembly; and fuses. For operation from 115 volt, A.C. single phase, 60 cycle circuits.....\$1725.00

SARGENT

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SOUTHEASTERN DIVISION, 3125 SEVENTH AVE., N., BIRMINGHAM 4, ALA.

Slowing down the leucocytes



Magnification of blood sample from leukemia victim, showing extreme white cell-to-red cell imbalance. White cell level 250 times greater than normal.

Beckman® DK Automatic Recording Spectrophotometer speeds research in leukemia



Seeking to stop leukemia, medical scientists have learned how to slow it down. Inhibitors have been found that temporarily stop the abnormal production of *leucocytes*, white blood cells. But, because the body develops resistance to these present inhibitors, white cell metabolism must be better understood and more selective inhibitors discovered to permanently stop abnormal production of leucocytes.

Leucocyte-inhibitor reaction is studied by introducing a radioactive assimilate into the environment of leucocyte samples, both in the presence and in the absence of an inhibitor. To determine what metabolic use the leucocytes make of the radioactive substance and what effect the inhibitor has on this process is a big analytical job.

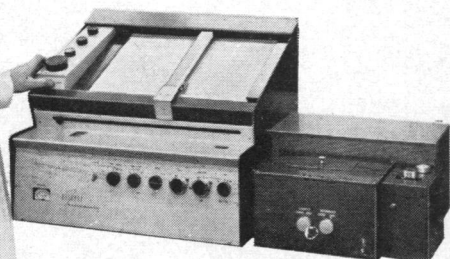
Beckman DK-2 gets the job done twenty times faster

A typical experiment of this type involves the collection of 1,000 fractions, measuring each fraction on a spectrophotometer for ultraviolet absorption, and plotting results – an almost insurmountable task without a high-speed automatic instrument. The medical researchers faced with making these thousands of analyses have found that the Beckman DK-2 Automatic Recording Spectrophotometer is 20 times faster than manual measurement and recording.

Whenever analysis in ultraviolet, visible, or near-infrared ranges is required, the speed and precision of the Beckman DK-2 can accelerate research significantly. For details, see your Beckman dealer, or request Data File L-27-38.



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when treated with P^{32} but probably not greater than when treated by other methods. In the case of patients with polycythemia vera who are treated with P^{32} , the mean life is approximately double that of similar patients treated by conventional methods. While pointing out the great promise in the therapeutic use of radionuclides, especially in the selected use of P^{32} and I^{131} , Mitchell calls attention to many difficult associated problems. He cautions against overirradiation of the marrow and warns of the risks of carcinogenesis.

Chapter 5, by W. Binks, deals with "Principles and standards of radiation safety." Many common terms, such as *absorbed dose*, *rad*, *rem*, and *R.B.E.*, are defined. Whereas most of the radiation standards in the U.S.S.R. are similar to those in other countries, there are some interesting differences. Administrative and legal problems associated with the use of radioisotopes are discussed.

The late A. J. Cipriani wrote the sixth chapter, dealing with "Health and safety activities in reactor and chemical processing plants."

The final chapter, by G. Failla, is titled, "Dosimetry of ionizing radiation," and is an extended discussion of the Bragg-Gray principle and of the two associated parameters—stopping power and energy—required to produce an ion pair.

KARL Z. MORGAN
Oak Ridge National Laboratory

New Books

Black Bourgeoisie. The rise of a new middle class in the United States. E. Franklin Frazier. Free Press, Glencoe, Ill., 1957. 264 pp. \$4.

Modern Science and the Nature of Life. William S. Beck. Harcourt, Brace, New York, 1957. 319 pp. \$5.75.

Instrumental Analysis. Paul Delahay. Macmillan, New York, 1957. 395 pp. \$7.90.

Annuaire des Organisations Internationales. 1956-57. L'Union des Associations Internationales, Brussels, ed. 6, 1957. 1266 pp. \$10.

Nuclear Reactors for Research. vol. 3 in *The Geneva Series on the Peaceful Uses of Atomic Energy*. Clifford K. Beck, Ed. Van Nostrand, Princeton, N.J., 1957. 279 pp. \$8.50.

Man against Germs. A. L. Baron. Duton, New York, 1957. 320 pp. \$4.50.

Mathematics, Magic and Mystery. Martin Gardner. Dover, New York, 1956. 188 pp. \$1.

The Chemical History of a Candle. Michael Faraday. Reprinted with foreword by E. N. da C. Andrade; biographical introduction by Sir J. Arthur Thomson. Crowell, New York, 1957. 190 pp. \$2.75.

Notions de Cytologie et Histologie. M. Chèvremont. Desoer, Liège, 1956. 998 pp.

Elementary Practical Organic Chemistry. pt. I, *Small Scale Preparations*. vol. 1 of *Elementary Practical Organic Chemistry*. Arthur I. Vogel. Longmans, Green, New York, 1957. 376 pp. \$4.50.

Frontiers of Knowledge in the Study of Man. Lynn White, Jr., Ed. Harper, New York, 1956. 342 pp. \$4.50.

Jets, Wakes, and Cavities. vol. 2 of *Applied Mathematics and Mechanics*. Garrett Birkhoff and E. H. Zarantonello. Academic Press, New York, 1957. 365 pp. \$10.

Tables of the Non-Central t-Distribution. Density function, cumulative distribution function, and percentage points. *Stanford Studies in Mathematics and Statistics*, 1. George J. Resnikoff and Gerald J. Lieberman. Stanford University Press, Calif., 1957. 389 pp. \$12.50.

Building an Engineering Career. Clement C. Williams and Erich A. Farber. McGraw-Hill, New York, ed. 3, 1957. 309 pp. \$4.75.

The American Oasis. The land and its uses. Edward Higbee. Knopf, New York, 1957. 272 pp. \$5.

Muscle Relaxants in Anesthesiology. A monograph in the Bannerstone Division of American Lectures in Anesthesiology. Francis F. Foldes. Thomas, Springfield, Ill.; Blackwell, Oxford, England; Ryerson, Toronto, 1957. 232 pp. \$5.50.

The Challenge of Soviet Education. George S. Counts. McGraw-Hill, New York, 1957. 343 pp. \$6.

Thermodynamics and Statistical Mechanics. A. H. Wilson. Cambridge University Press, New York, 1957. 510 pp. Illus. \$9.50.

Life, Language, Law. Essays in honor of Arthur F. Bentley. Richard W. Taylor, Ed. Antioch Press, Yellow Springs, Ohio, 1957. 235 pp. \$4.50.

Treatise on Marine Ecology and Paleocology. vol. 2, *Paleocology*. Memoir 67. Harry S. Ladd, Ed. Geological Society of America, New York, 1957. 1087 pp. \$10.

The Conquest of the Antarctic. Norman Kemp. Philosophical Library, New York, 1957. 152 pp. \$4.75.

Comfort for Survival. In nature and man. Angus M. Woodbury. Vantage, New York, ed. 1, 1957. 110 pp. \$3.

Living Chemistry. Maurice R. Ahrens, Norris F. Bush, Ray K. Easley. Ginn, Boston, rev. ed. 2, 1957. 638 pp. \$5.28.

The Theory of Social Structure. S. F. Wadel. Free Press, Glencoe, Ill., 1957. 175 pp.

Plant Ecology. William Leach. Methuen's Monographs on Biological Subjects. Michael Abercrombie, Ed. Methuen, London; Wiley, New York, ed. 4, 1957. 113 pp. \$2.

The Idealist Tradition. From Berkeley to Blanshard. vol. 1 of *The Library of Philosophical Movements*. Paul Edwards, Ed. Free Press, Glencoe, Ill., 1957. 376 pp. \$5.50.

Year Book 1955-1956. With administrative reports through 14 Dec. 1956. Carnegie Institution of Washington, 1956. 383 pp. Cloth, \$1.50; paper, \$1.

A Handbook of Hard Metals. W. Dawhl. Abridged English translation of *Handbuch der Hartmetalle*. Philosophical Library, New York, 1956. 170 pp. \$10.

Hémostase Spontanée, Plaquettes Sanguines et Parois Vasculaires. Actes du I^{er} symposium de la Fondation V. Baldacci. J. Roskam, Ed. Istituto di Ricerche V. Baldacci, Pisa, Italy, 1956. 190 pp.

Walt Disney: Secrets of Life. A true-life adventure. Rutherford Platt and the staff of the Walt Disney Studio. Based on the film narration by James Algar. Simon and Schuster, New York, 1957. 124 pp. \$2.95.

The Wonder of Snow. Corydon Bell. Hill and Wang, New York, 1957. 285 pp. \$5.

Introduction to Psychology. Ernest R. Hilgard. Harcourt, Brace, New York, ed. 2, 1957. 668 pp.

Beekmantown Group (Lower Ordovician) of Maryland. William J. Sando. Memoir 68. Geological Society of America, New York, 1957. 161 pp.

Plant Virus Serology. R. E. F. Matthews. Cambridge University Press, New York, 1957. 139 pp. \$5.

The Americana Annual: 1957. An encyclopedia of the events of 1956. Lavinia P. Dudley and John J. Smith, Eds. Americana Corp., New York, 1957 (order from Americana Corp., 333 N. Michigan Ave., Chicago). 936 pp. \$12.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, but to the publisher or agency sponsoring the publication.)

Laboratory Manual of Microbiology. H. Magdalene Steward. Mosby, St. Louis, ed. 2, 1957. 103 pp. \$2.25.

Higher Education and the Society It Serves. Statements presented at the annual meeting of the American Council on Education, 11-12 October 1956, Chicago. Raymond F. Howes, Ed. American Council on Education, Washington, 1957. 103 pp. \$1.

Two New Species of Birds from Angola. Fieldiana: Zoology, vol. 39, No. 5. Austin L. Rand, 5 pp. \$0.15. *The Bayou Goula Site, Iberville Parish, Louisiana*. Fieldiana: Anthropology, vol. 47, No. 2. George I. Quimby. 170 pp. \$1.75. *The Present Status of the Volcanoes of Central America*. Fieldiana: Geology, vol. 10, No. 28. Sharat Kumar Roy. 5 pp. \$0.15. *Early Cretaceous Mammals and the Evolution of Mammalian Molar Teeth*. Fieldiana: Geology, vol. 13, No. 1. Bryan Patterson. 105 pp. \$2.25. Chicago Natural History Museum, Chicago, 1957.

Emmetropia and Its Aberrations. A study in the correlation of the optical components of the eye. Special Report Series No. 293. Arnold Sorsby, B. Benjamin, J. B. Davey, M. Sheridan, J. M. Tanner. Medical Research Council, London, 1957 (order from Her Majesty's Stationery Office, London). 69 pp. 7s. 6d.

Anatomical Atlas. Maud Jepson. Rinehart, New York, 1957. 24 pp. \$0.95.

The Measurement of Body Radioactivity. Papers read at a conference held at Leeds on 16-17 April 1956. Supplement No. 7, *British Journal of Radiology*. C. B. Allsopp, Ed. British Institute of Radiology, London, 1957. 130 pp. 25s.