SCIENCE

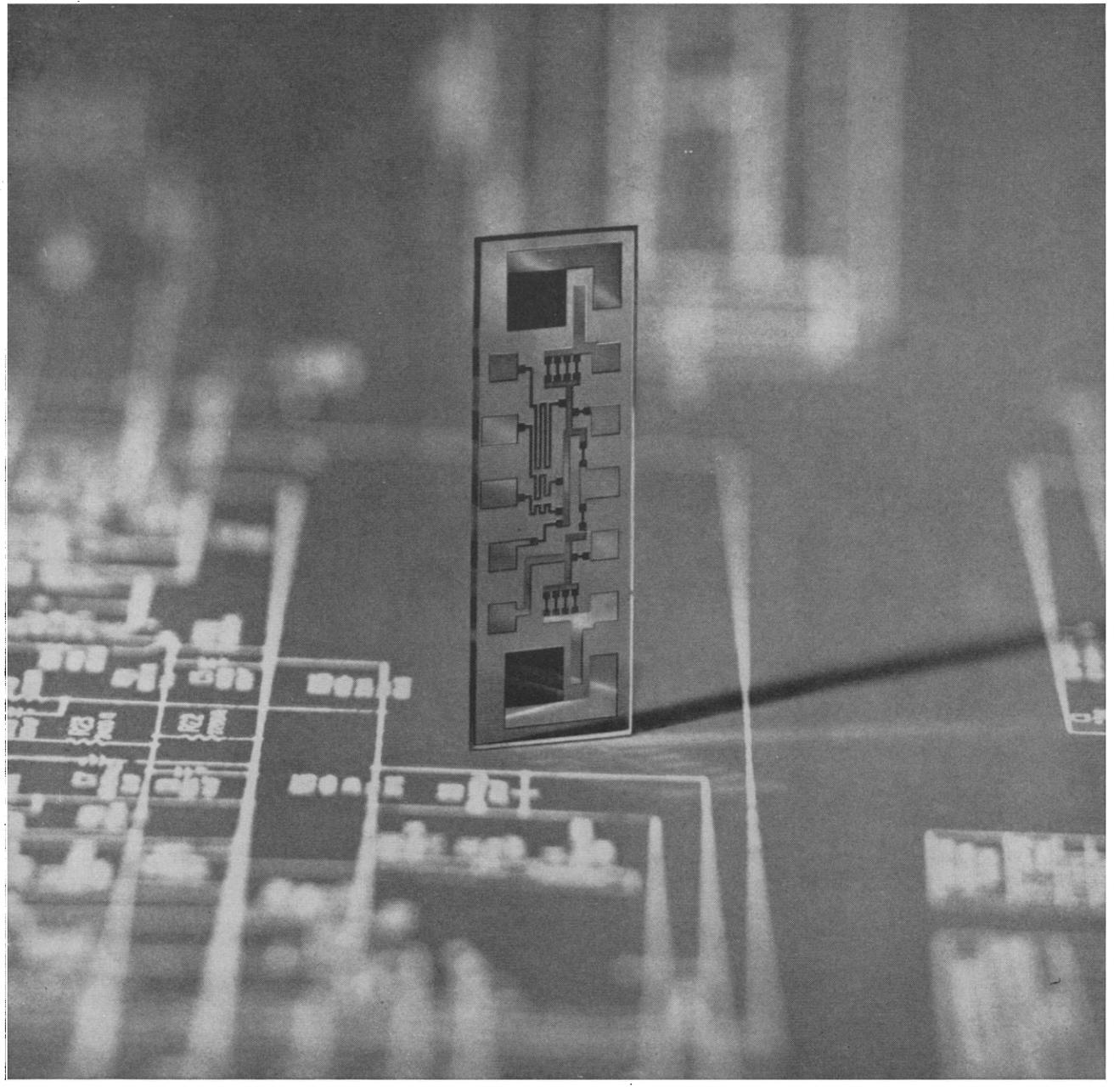
28 February 1964

Vol. 143, No. 3609

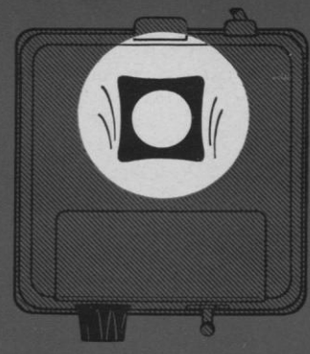
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REGENERATING LEG

PROCESSES. Thin film circuits, a major step forward in miniaturized electronics, are now replacing capacitors and resistors in the Bell telephone network. Western Electric had the unique and difficult job of mechanizing the vacuum operations required for thin film deposits of tantalum and other metals. From our Engineering Research Center at Princeton came the answer: A machine that continuously moves a glass or ceramic substrate through chambers with vacuums lower than a hundredth of a millionth of the earth's atmosphere. The machine passes substrates through separate zones for out-gassing, preheating and metal-sputtering. This makes thin film production economical and practical—producing high-quality, uniform metal deposits as thin as 4 millionths of an inch. Whether making thin film circuits or Princess telephones, coming up with new and better manufacturing techniques is a Western Electric habit that helps bring Americans the finest communications in the world. **WESTERN ELECTRIC**



THE MIXER WITH THE "SQUAROID" HEAD

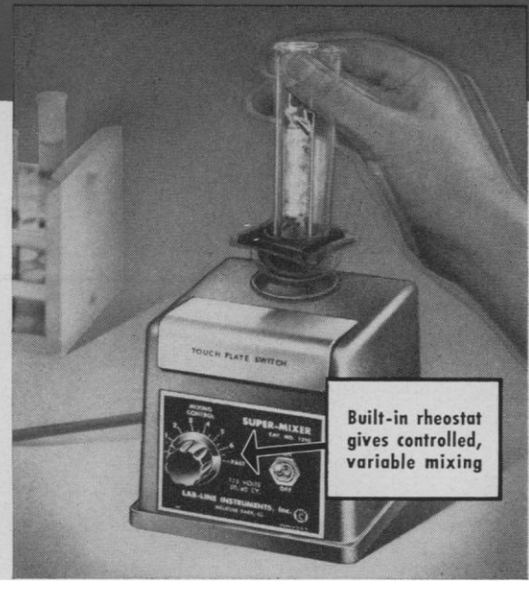


stirs, agitates, mixes . . . in seconds!

THE NEW LAB-LINE

SUPER-MIXER

with exclusive variable mixing control



Single-hand control with Touch Plate Switch

Positive mixing of contents in flasks, beakers, square or odd-shaped tubes . . . even micro size tubes

Easily handles two or more tubes simultaneously

"What could be easier?" . . . is the first reaction when you see the Super-Mixer in action. The exclusive "Squaroid" mixing head—molded of durable Neoprene—provides quick, positive mixing action in test tubes, flasks, or other vehicles. Easy, convenient operation will convince you that this mixer has superior features:

- **Built-in rheostat control, gives smooth, stepless action; provides gentle, moderate or violent mixing**
- **Exclusive "Squaroid" mixing head handles micro size tubes, standard tubes, flasks and beakers**
- **"Squaroid" design of mixing head handles two or more tubes simultaneously**
- **Even square or odd-shaped tubes and flasks can be touched to the mixing head for positive stirring of contents**
- **Unique "Touch Plate" switch permits one-hand operation; mixing head stops instantly with release of pressure**
- **No springs used in the mixing mechanism**
- **Requires no stoppers, no capping of test tubes**
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- **Efficient, yet inexpensive (Order one for each lab table)**

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Write for Bulletin 385

LAB-LINE INSTRUMENTS, Inc.
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Vol. 143, No. 3609

SCIENCE

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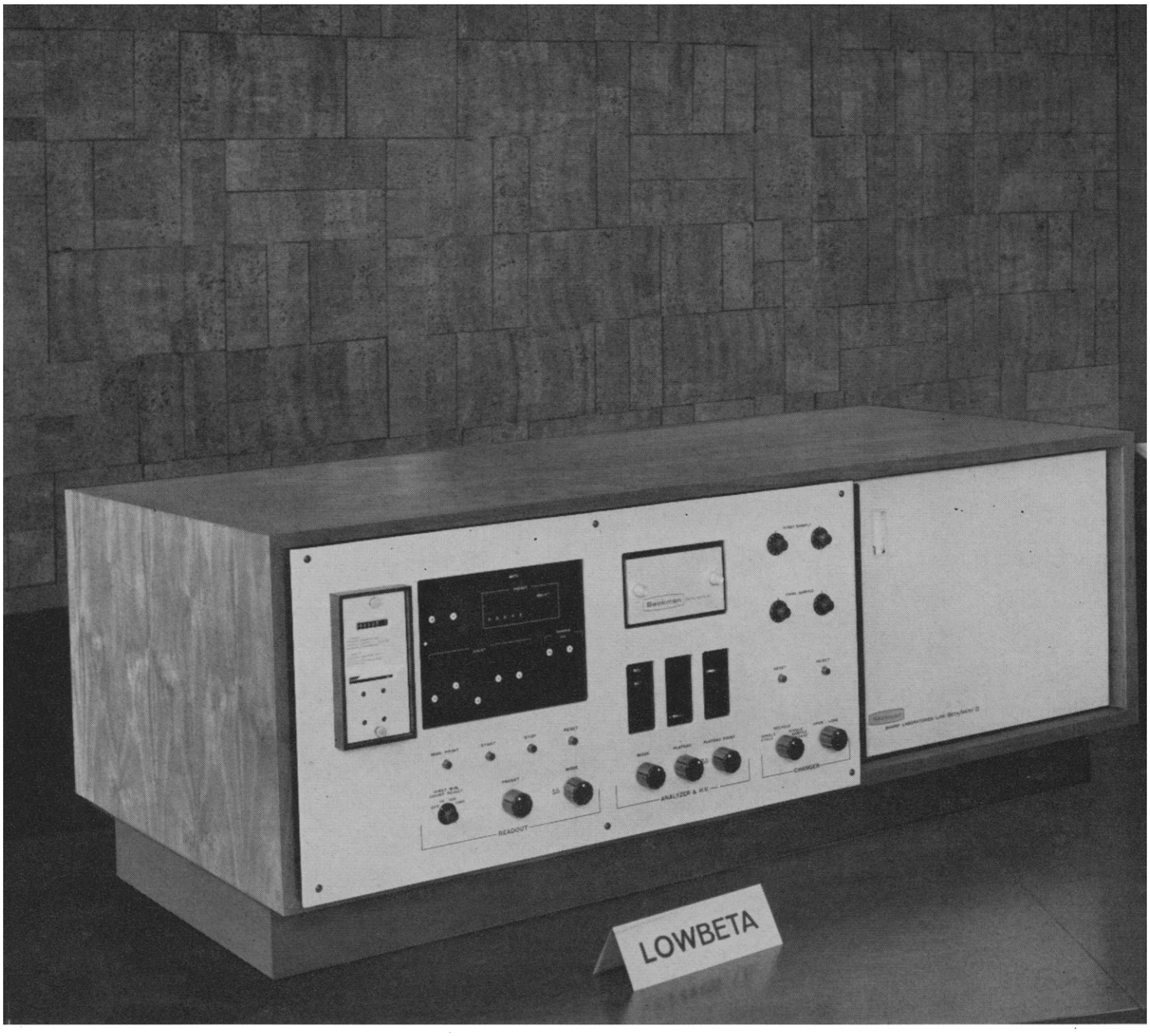
COVER

The regenerating leg of a nymphal cockroach has taken on definite form. The trachea are clearly visible and the cuticle has already been secreted. This leg regenerate was removed from the coxal stump 43 days after the original leg had been removed; it was then placed in a tissue culture chamber. After 3 days in vitro (when this photograph was taken), the muscles were still contracting vigorously (× 65). See page 961. [John P. Reinecke, Washburn University]



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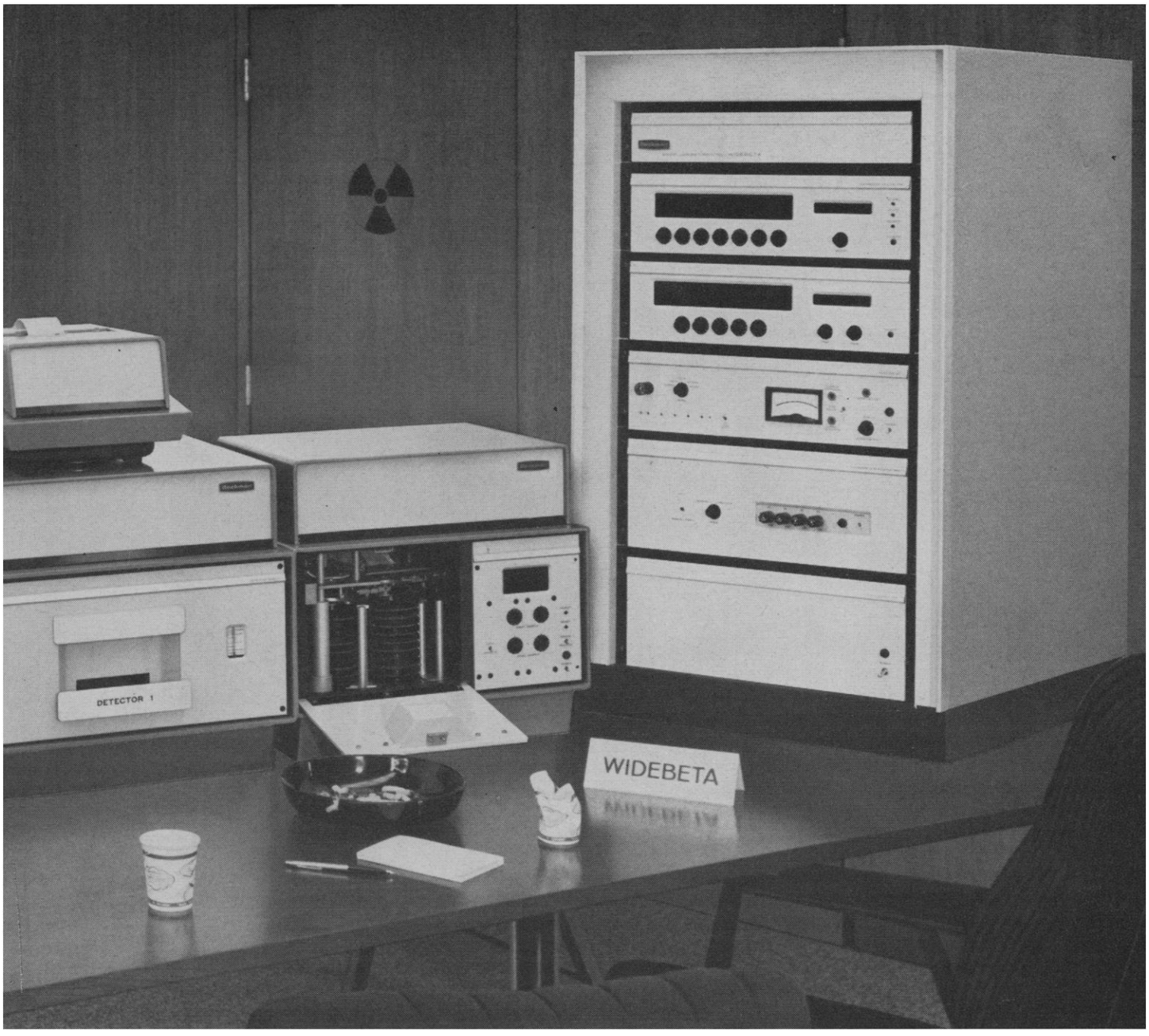

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A wide choice of detectors and optional features makes WIDEBETA the most versatile as well. For more information about these two systems, call your Beckman Sales Engineer or write for Data File LWB-38-164.

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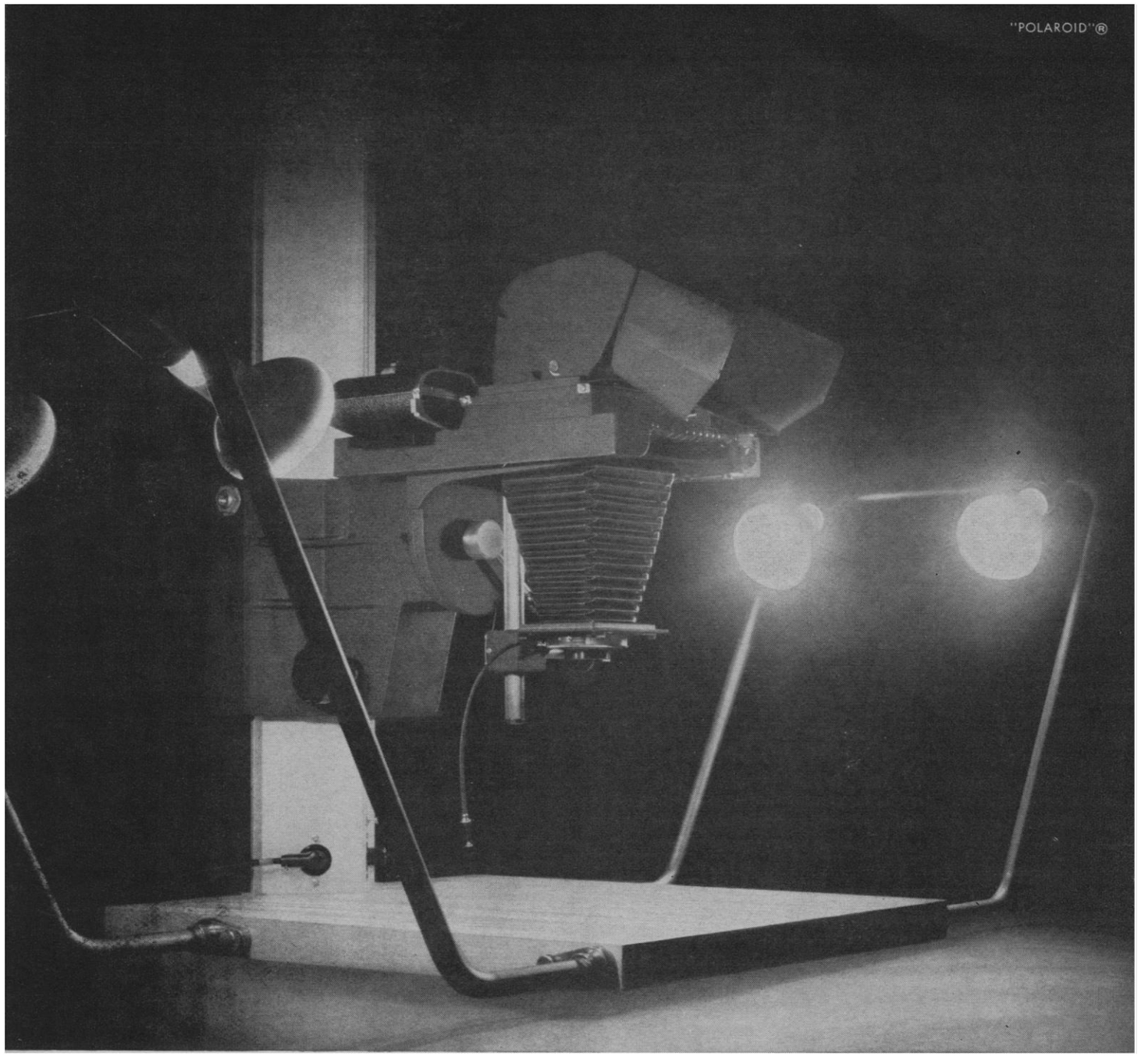

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This MP-3 does the work of a view camera, micro/macro camera, copy camera, slide maker, enlarger and darkroom And does the job in 90 seconds or less.

28 February 1964, Volume 143, Number 3609

SCIENCE

New Goals for Science in Britain

During the past seven years I have visited London five times. On the first four occasions I came away depressed. I felt there was a refusal to face reality and a worship of tradition that could lead only to further decay. On a recent visit I found a completely different atmosphere, a sense of urgency almost like that of wartime. In talking with a score of scientists, journalists, and politicians I found them unanimous in desiring change and in feeling that science and technology are Britain's hope for the future. Both major political parties have, to differing degrees, adopted this view, and science is to be one of the major issues of the forthcoming General Election.

Mr. Harold Wilson, leader of the Labour Party, expressed some of his views on science in Parliament last November 19:

> . . . whatever differences there may be in priorities, there should be no differences about objectives, the vital need to mobilise the talents of this nation, its skill and science, its ingenuity and its power of innovation, not only to enhance our economic strength, but to strengthen the voice of this country in the world. . . . We live, or we perish, on our skill and our science. This means, quite simply, that we have to have more trained people and that we have to use them more efficiently.

Mr. Wilson pointed out four problems: "the training of scientists, holding them in this country, using them more intelligently, and ensuring a greater success in applying the results of scientific research to industry."

In the matter of training more scientists, the two political parties are not far apart. The government initiated in 1961 a study of needs in higher education. This study was conducted by a committee headed by Lord Robbins. Some of the resultant drastic recommendations already have been implemented.

The second need mentioned by Mr. Wilson—holding scientists in Britain—has provided the Labour Party with what may be its most politically potent slogan, "The Brain Drain" (see "News and Comment," 21 February). Each occasion on which a scientist emigrates from Britain is headline news. The flow is continuing, and the Government is destined to experience an additional series of blows between now and the election. Even then, the problem seems unlikely to disappear.

Mr. Wilson's third point—using scientists more intelligently—involves another hard problem. The expression "using" scientists is not felicitous and does not take into account the free spirit essential to the creative process. If government is to support science on a large scale, scientists must be responsive to the needs of society, but the terms under which the response is elicited must be carefully delineated.

Mr. Wilson's fourth point—ensuring greater success in applying the results of research—requires a change in national attitudes. British contributions in fundamental research are unsurpassed, particularly when viewed on a population basis. To a substantial degree this success is due to emphasis on values of scholarship. The reverse side of the coin, however, has been a downgrading in the status of those who apply the results of research. In some circles engineers are regarded as being not much above common laborers.

The British have entered on an important new phase in their history. They face difficult problems in their determination to use science and technology to achieve national goals. When aroused, they have tremendous capacities. Their performance at this time will be worth watching.—P.H.A.

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The new 7200 Series instruments incorporate many features designed to provide optimum detection accuracy, greater instrument utility, and time-saving user convenience. Ultra-sensitive detection is ensured by two windowless gas flow Geiger detectors arranged in 4 pi configuration to scan simultaneously both sides of a paper chromatogram. 2 pi scanning with either upper or lower detector may also be selected with a front panel switch.

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Collected data are presented on a Packard Model 380 Recording Ratemeter. The Ratemeter offers 8 time constants and 9 linear count ranges. The interrelated Ratemeter and Recorder may be operated in either LINEAR or LOG modes. In the Linear mode, both the Ratemeter and Recorder display cpm on a linear scale; in the Log mode, they display cpm on a logarithmic scale from 10 to 10^6 cpm. Logarithmic presentation of data permits the user to prepare a preliminary run to establish settings for a final linear run or to accurately compare peak values in a minimum of time.

A valuable feature incorporated in this system is precise maintenance of a 1:1 speed ratio between the paper being scanned and the recording chart, enabling the user to quickly compare the strip and chart for precise activity location upon completion of a run. Another time and labor saving feature provided in the 7200 Series instruments is automatic chart indication of origin, solvent fronts, and other areas of interest.

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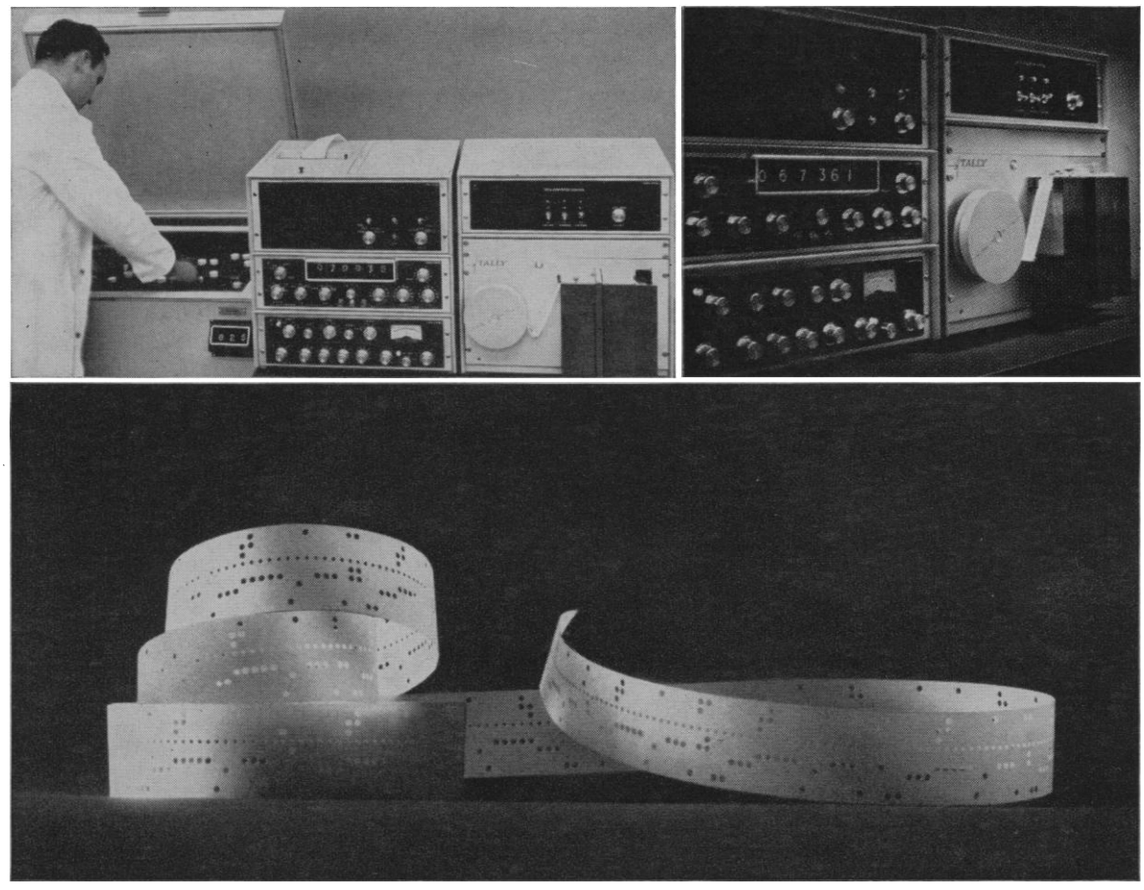

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8–12. **Water Resources** Engineering, conf., Mobile, Ala. (American Soc. of Civil Engineers, 345 E. 47 St., New York 10017)

8–15. North American **Clinical Dermatologic Soc.**, Mexico City, Mexico. (E. F. Finnerty, 510 Commonwealth Ave., Boston, Mass.)

9–10. **Aerodynamic Testing** Conf., American Inst. of Aeronautics and Astronautics, Washington, D.C. (J. N. Fresh. David Taylor Model Basin, Code 630, U.S. Navy, Washington, D.C.)

9–11. **Computers in Education**, conf., Eugene, Ore. (J. W. Loughary, School of Education, Univ. of Oregon, Eugene)

9–11. North American **Wildlife and Natural Resources** conf., Las Vegas, Nev. (Wildlife Management Inst., 709 Wire Bldg., Washington 5)

9–11. Society of **Toxicology**, annual, Williamsburg, Va. (C. S. Weil, Mellon Inst., 4400 Fifth Ave., Pittsburgh, Pa. 15213)

9–13. National Assoc. of **Corrosion Engineers**, 20th conf., Chicago, Ill. (W. H. Schultz, Dearborn Chemical Corp., Chicago, Ill.)

9–13. Peaceful Applications of **Nuclear Energy**, 5th inter-American symp., Valparaiso, Chile. (J. D. Perkinson, Inter-American Nuclear Energy Commission, Pan American Union, Washington, D.C.)

10. **Wildlife Telemetry**, annual, Las Vegas, Nev. (L. Adams, Univ. of California, Carmel Valley)

10–12. **Exploding Conductor** Phenomena, 3rd conf., Boston, Mass. (W. G. Chace, Air Force Cambridge Research Laboratories, Hanscom Field, Bedford, Mass.)

10–13. **Raman** Colloquium, Freudenstadt/Schwarzwald, Germany. (J. Gobeau, Dept. of Chemistry, Technische Hochschule Stuttgart, 7 Stuttgart, Germany)

10–14. American Inst. of **Chemical Engineers**, New Orleans, La. (AIChE, 345 E. 47 St., New York 17)

11–12. Instrument Soc. of America, 14th conf. on **instrumentation** for the iron and steel industry, Pittsburgh, Pa. (N. F. Simcic, Research Laboratory, Jones and Laughlin Steel Corp., 900 Agnew Rd., Pittsburgh 30)

12. **Interplanetary Monitoring Platform** Experiments, symp., Greenbelt, Md. (C. P. Boyle, Code 207, Goddard Space Flight Center, Greenbelt, Md. 20771)

12–13. **Information** Organization, New Brunswick, N.J. (S. Artandi, Graduate School of Library Service, Rutgers Univ., New Brunswick)

13–14. **Louisiana Acad.** of Sciences, Baton Rouge. (H. J. Bennett, Dept. of Zoology, Louisiana State Univ., Baton Rouge)

13–14. Institute of **Management** Sciences. 11th intern., Pittsburgh, Pa. (IMS, Box 273, Pleasantville, N.Y.)

13–14. Effects of **Shock and Vibration** on the human body, Denver, Colo. (A. E. Paige, Dept. of Electrical Engineering, University of Denver, Denver)

14–15. **Endocrinology**, 2nd annual symp., Salisbury, N.C. (H. Nushan, Medical Service, Veterans Administration Hospital, Salisbury)

14–19. American Assoc. of **Psychiatric Clinics for Children**, annual, Chicago, Ill. (AAPCC, 250 W. 57 St., New York 19)

15–19. **Microcirculation**, 3rd European conf., Jerusalem, Israel. (E. Davis, Capillary Research Laboratory, Hadassah Univ. Hospital, P.O. Box 499, Jerusalem)

15–21. American Soc. of **Photogrammetry**, congr. on surveying and mapping, Washington, D.C. (American Soc. of Photogrammetry, 44 Leesburg Pike, Falls Church, Va.)

17–18. **Hypervelocity Flight** Techniques, symp., Denver, Colo. (W. G. Howell Denver Research Inst., Univ. of Denver, Denver, Colo. 80210)

17–19. Society for **Nondestructive Testing**, Los Angeles, Calif. (D. E. O'Halloran, Northrop Corp., 1001 E. Broadway, Hawthorne, Calif.)

17–19. Statistical Assoc. Methods for **Mechanized Documentation**, symp., Washington, D.C. (M. E. Stevens, Natl. Bureau of Standards, Washington, D.C. 20234)

17–20. Society of **Biological Chemistry**, Paris, France. (P. Malangeau, Executive Committee, 4, Avenue de l'Observatoire, Paris 6e)

18–19. **Mycotoxins in Foodstuffs**, intern. symp., Cambridge, Mass. (G. N. Wogan, Rm 16-210-B, Massachusetts Inst. of Technology, Cambridge 02139)

18–20. **Chemurgic Council**, 28th natl. conf., Philadelphia, Pa. (J. W. Ticknor, Chemurgic Council, 350 Fifth Ave., New York 1)

18–21. Latin **Medical** Union, intern. congr., Rome, Italy. (B. Urso, Policlinico Umberto I, Viale Policlinico, Rome)

18–21. American **Orthopsychiatric** Assoc., Chicago, Ill. (M. F. Langer, 1790 Broadway, New York 19)

19–22. International Assoc. for **Dental Research**, 42nd meeting, Los Angeles, Calif. (J. C. Muhler, 1120 W. Michigan St., Indianapolis, Ind. 46202)

20–24. National Assoc. for **Research in Science Teaching**, Chicago, Ill. (G. G. Mallinson, Western Michigan Univ., Kalamazoo)

20–24. National **Science Teachers** Assoc., Chicago, Ill. (R. H. Carleton, 1201 16th St., NW, Washington, D.C.)

21–3. British **Computer** Soc., conf., Edinburgh, Scotland. (Secretariat, I.E.E., Savoy Pl., London, W.C.2, England)

21–23. Asian-Pacific **Dental** Federation, 4th congr., Singapore and Malaya. (B. B. Eraña, Manila Doctors Hospital, Isaac Peral St., P.O. Box 373, Manila, Philippines)

21–24. **Cybernetic Medicine**, 3rd intern. congr., Naples, Italy. (A. DeChiara, 348, Via Roma, Naples)

22–25. American Assoc. of **Dental Schools**, 41st annual, Los Angeles, Calif. (AADS, 840 Lake Shore Dr., Chicago 11, Ill.)

23–24. Society for **Economic Botany**, 5th annual, Chapel Hill, N.C. (D. J. Rogers, New York Botanical Garden, Bronx Park, N.Y.)

23–25. Federation of European **Biochemical** Societies, 1st, London, England. (FEBS, Lister Inst., Chelsea Bridge Rd., London, S.W.1)

23–26. Institute of **Electrical and Electronics Engineers**, intern. conv., New York, N.Y. (IEEE, Box A, Lenox Hill Station, New York 21)