SCIENCE 20 December 1963
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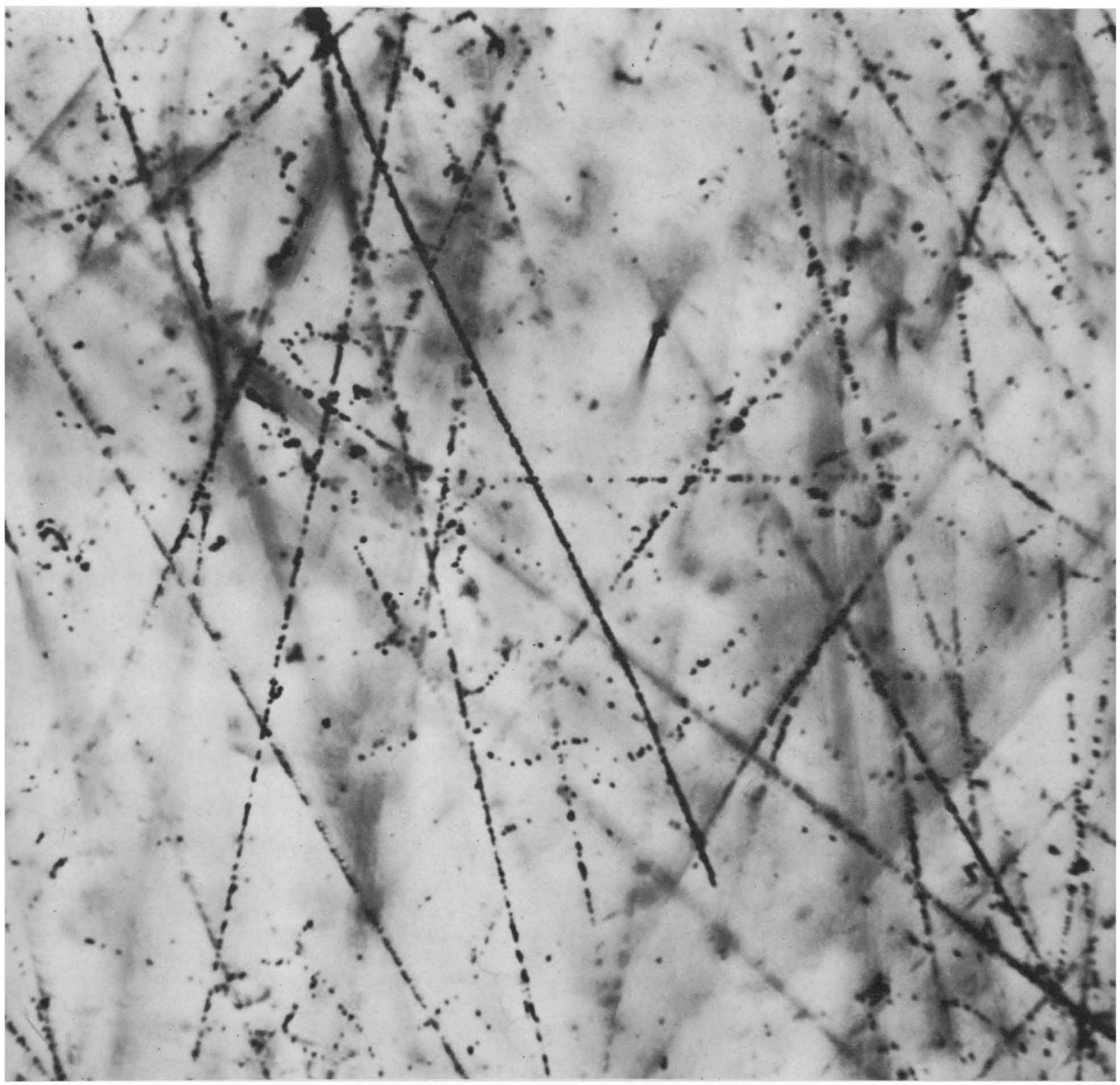
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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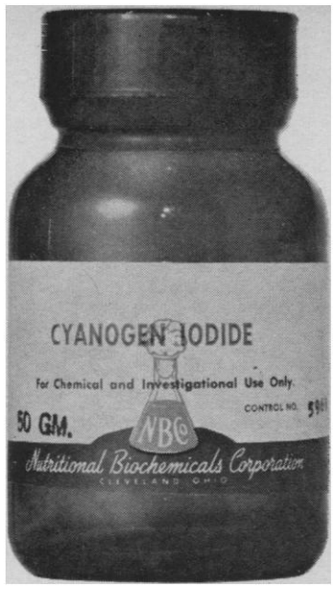

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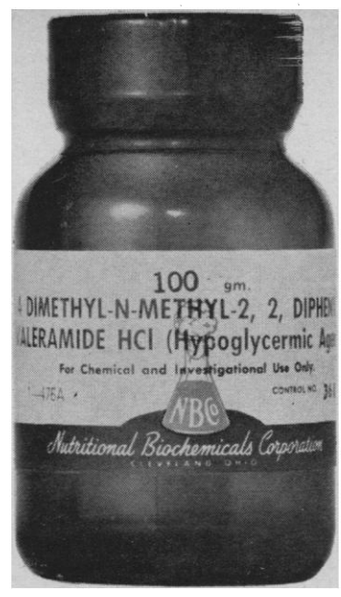

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(1) J. E. Rall, J. Roche, R. Michel, O. Michel, S. Varonne, Biochem. Biophys. Acta. 62, 622, (1962). (2) A. L. Lehninger, B. L. Ray, M. Schneider, J. Biophys. Biochem. Cytol. 5, 97, (1959). (3) A. L. Lehninger, B. L. Ray, Biochem. Biophys. Acta. 26, 643, (1957). (4) D. F. Tapley, J. Biol. Chem. 222, 325, (1956). (5) A. L. Lehninger, Ibid. 234, 2187, (1959).

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(1) W. E. Dulin, F. L. Schmidt, M. C. Blanks, G. H. Luna, Proc. Soc. Exptl. Biol. Med. 109, 729, (1962).

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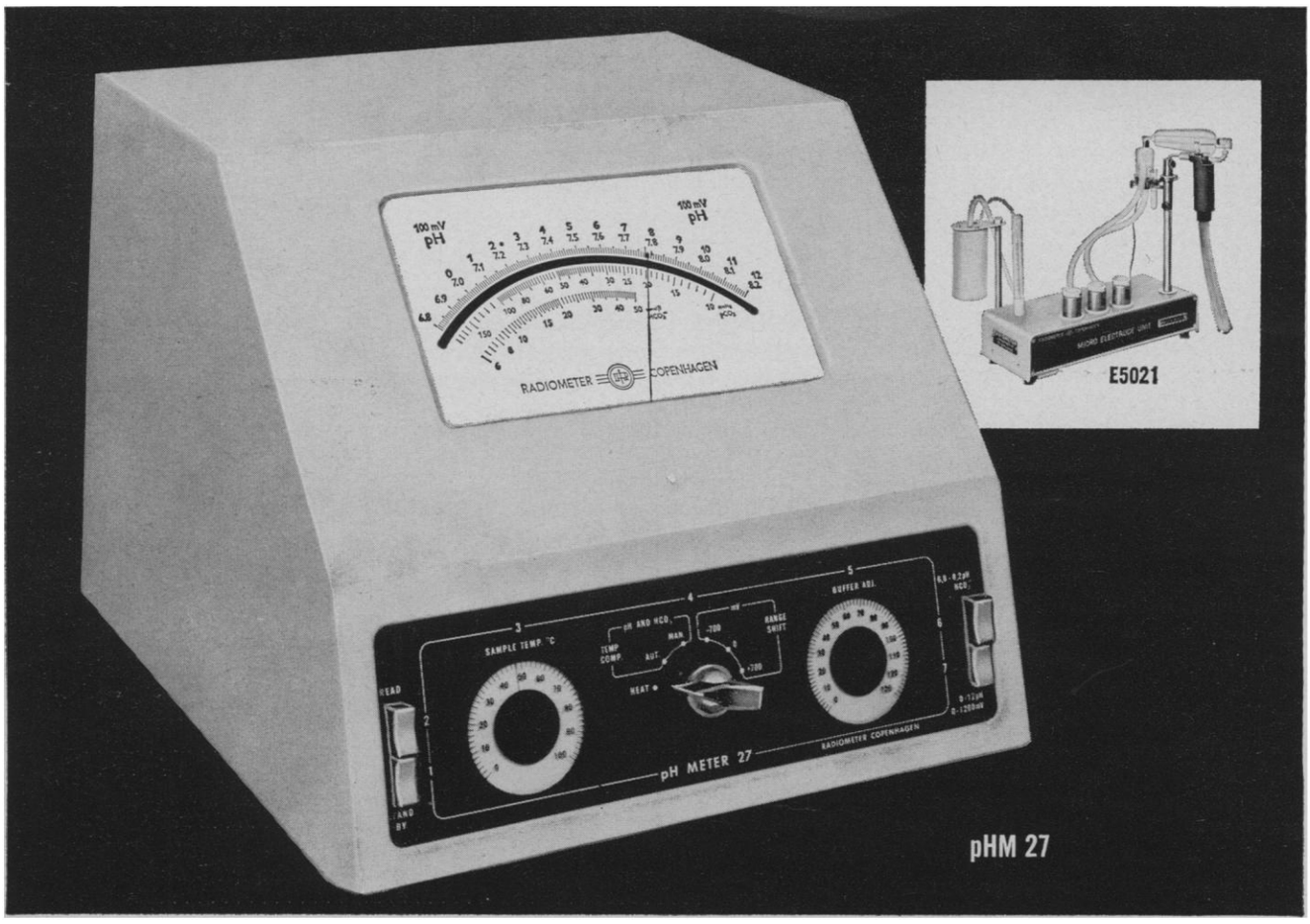

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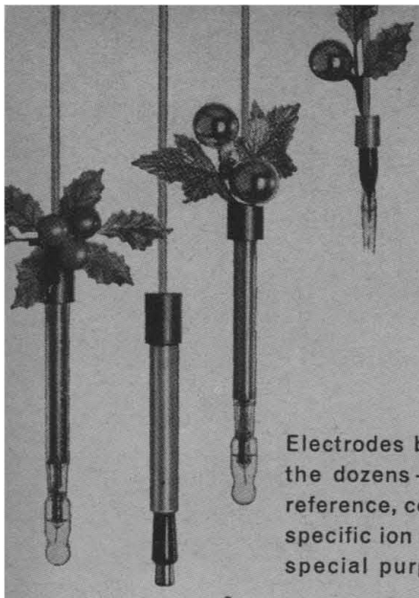

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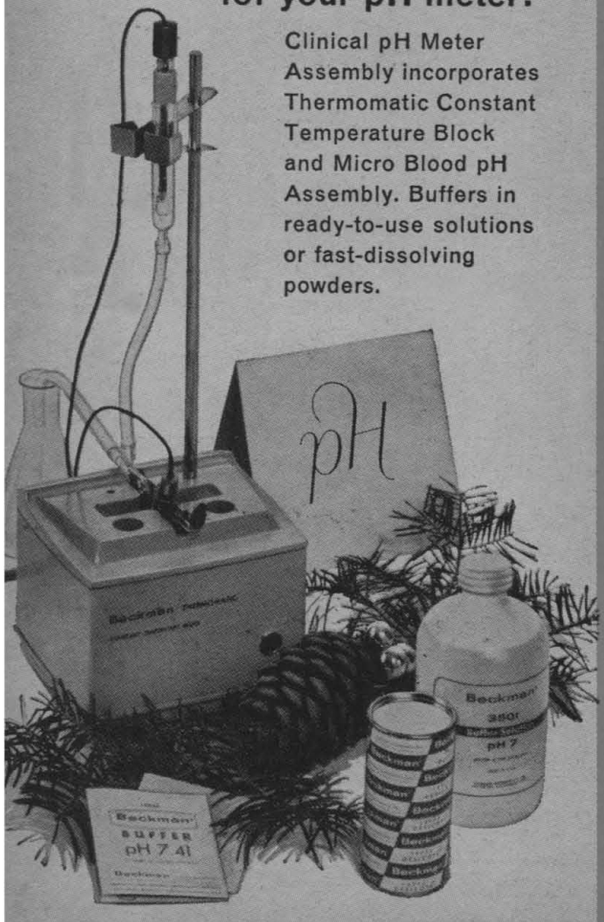

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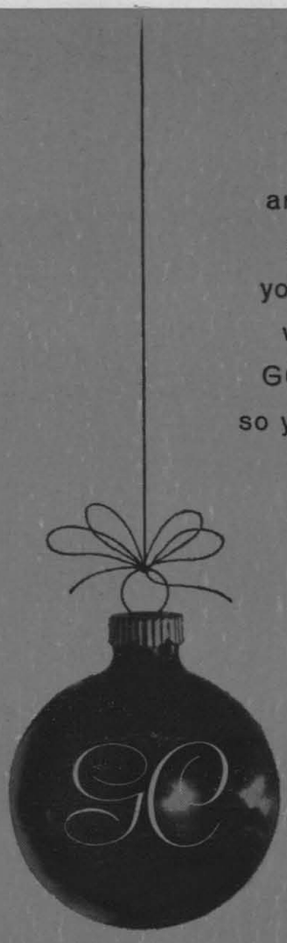

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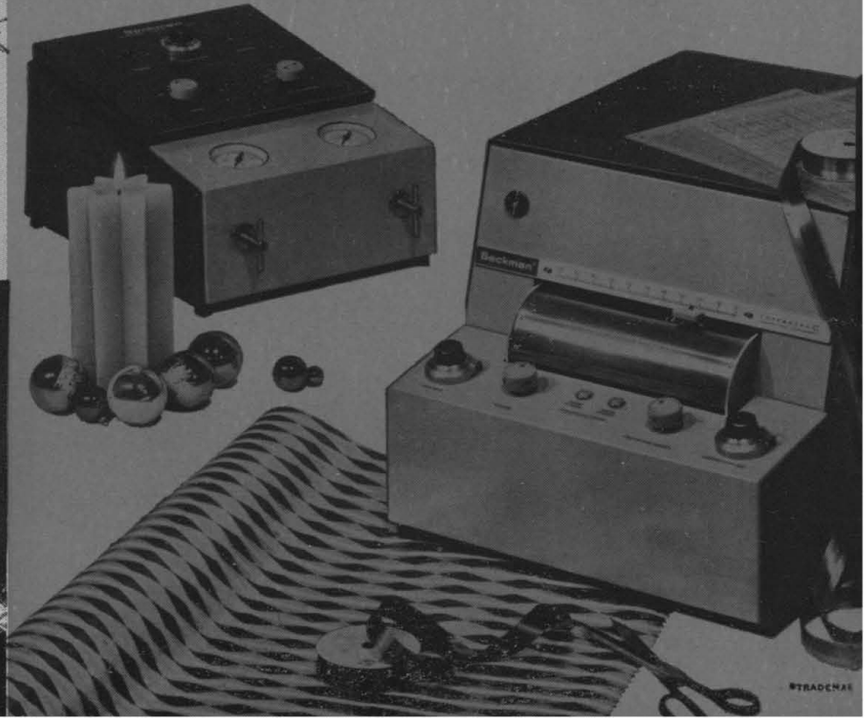

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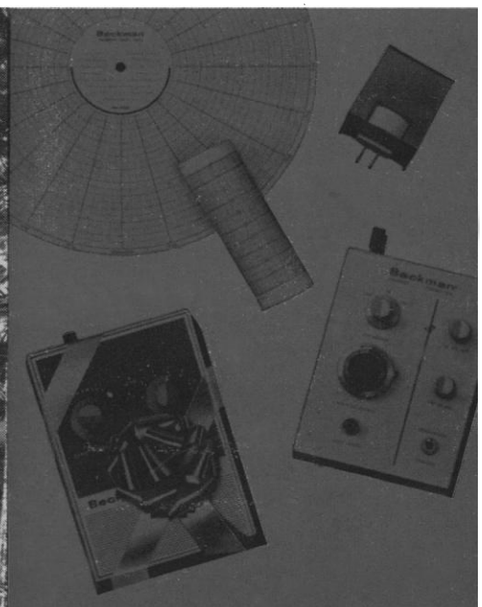

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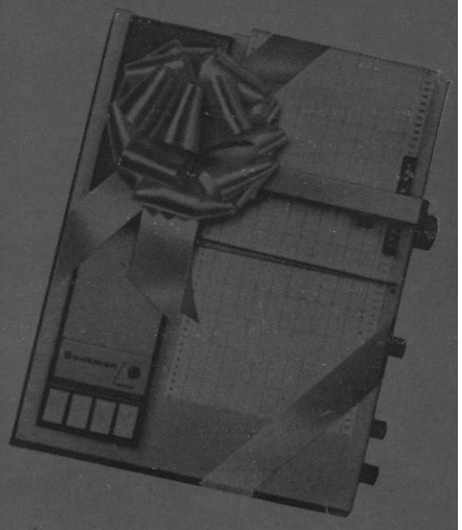

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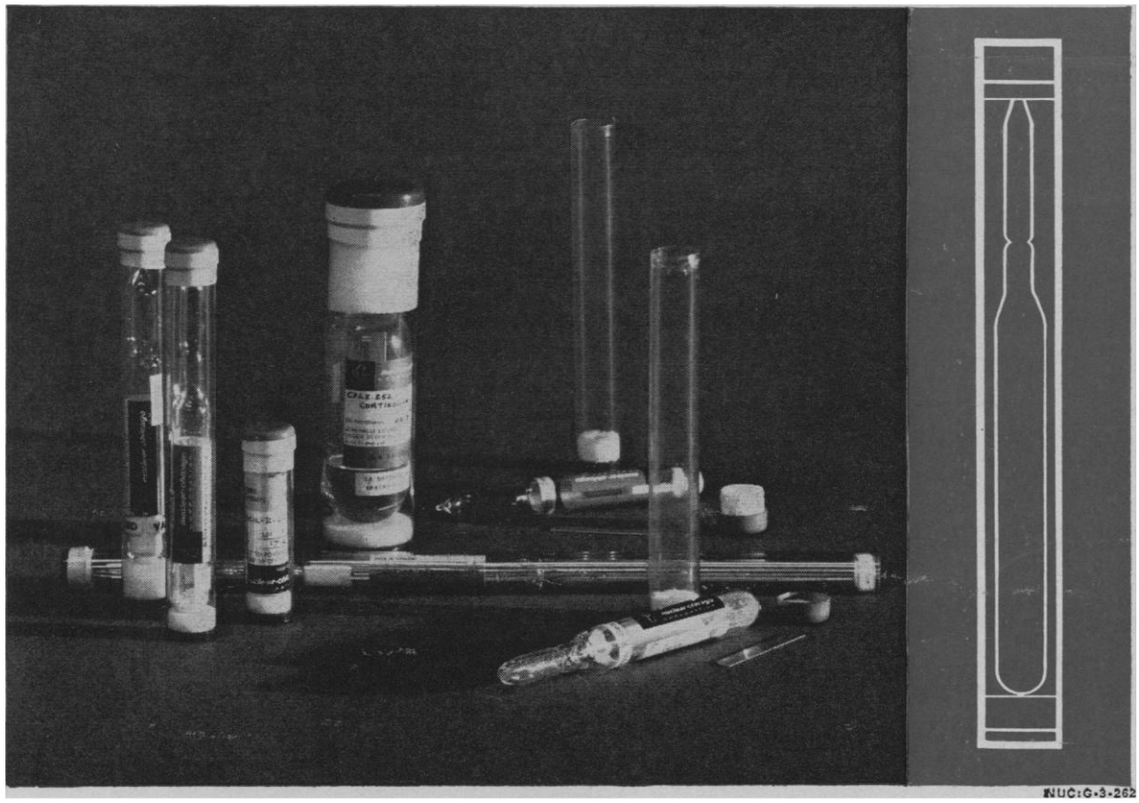

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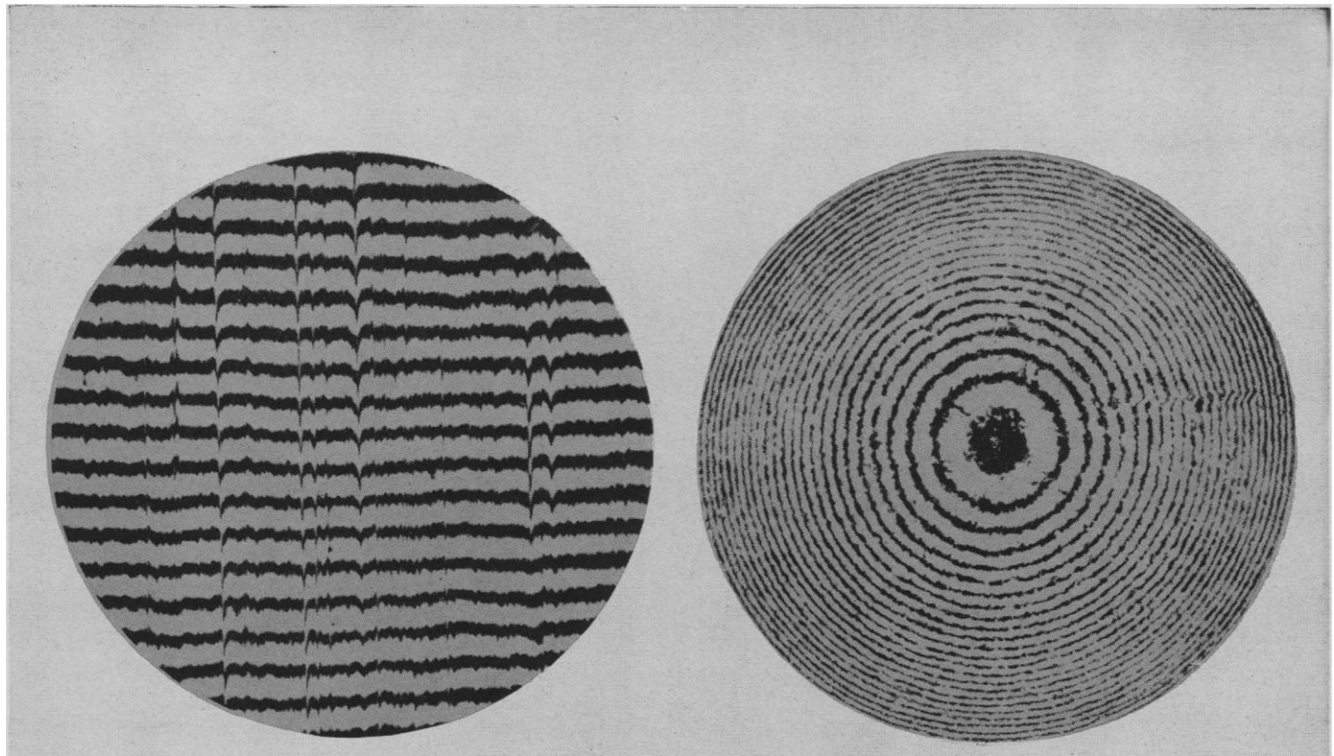

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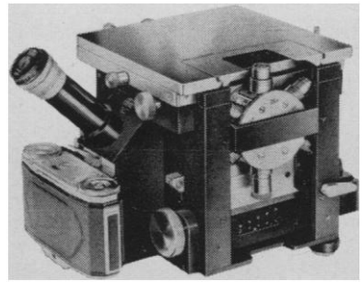

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Educational Tests

The standardized educational or psychological tests that are widely used to aid in selecting, classifying, assigning, or promoting students, employees, and military personnel have been the target of recent attacks in books, magazines, the daily press, and even in Congress. The target is wrong, for in attacking the tests, critics divert attention from the fault that lies with ill-informed or incompetent users. The tests themselves are merely tools, with characteristics that can be measured with reasonable precision under specified conditions. Whether the results will be valuable, meaningless, or even misleading depends partly upon the tool itself but largely upon the user.

All informed predictions of future performance are based upon some knowledge of relevant past performance: school grades, research productivity, sales records, batting averages, or whatever is appropriate. How well the predictions will be validated by later performance depends upon the amount, reliability, and appropriateness of the information used and on the skill and wisdom with which it is interpreted. Anyone who keeps careful score knows that the information available is always incomplete and that the predictions are always subject to error.

Standardized tests should be considered in this context. They provide a quick, objective method of getting some kinds of information about what a person has learned, the skills he has developed, or the kind of person he is. The information so obtained has, qualitatively, the same advantages and shortcomings as other kinds of information. Whether to use tests, other kinds of information, or both in a particular situation depends, therefore, upon the empirical evidence concerning comparative validity, and upon such factors as cost and availability.

In general, the tests work most effectively when the traits or qualities to be measured can be most precisely defined (for example, ability to do well in a particular course or training program) and least effectively when what is to be measured or predicted cannot be well defined (for example, personality or creativity). Properly used, they provide a rapid means of getting comparable information about many people. Sometimes they identify students whose high potential has not been previously recognized. But there are many things they do not do. For example, they do not compensate for gross social inequality, and thus do not tell how able an underprivileged youngster might have been had he grown up under more favorable circumstances.

Professionals in the business and the conscientious publishers know the limitations as well as the values. They write these things into test manuals and in critiques of available tests. But they have no jurisdiction over users; an educational test can be administered by almost anyone, whether he knows how to interpret it or not. Nor can the difficulty be controlled by limiting sales to qualified users; some attempts to do so have been countered by restraint-of-trade suits.

In the long run it may be possible to establish better controls or to require higher qualifications. But in the meantime, unhappily, the demonstrated value of these tests under many circumstances has given them a popularity that has led to considerable misuse. Also unhappily, justifiable criticism of the misuse now threatens to hamper proper use. Business and government can probably look after themselves. But school guidance and selection programs are being attacked for using a valuable tool, because some of the users are unskilled.—D.W.

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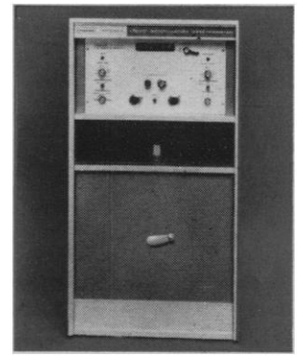

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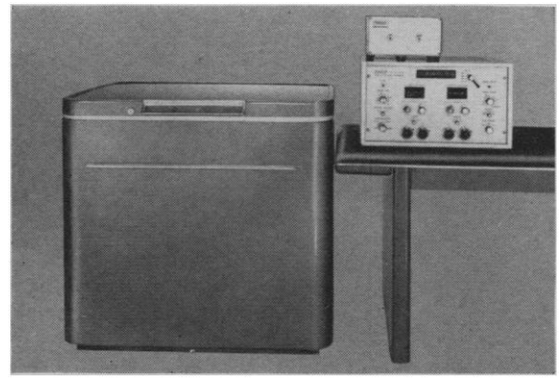

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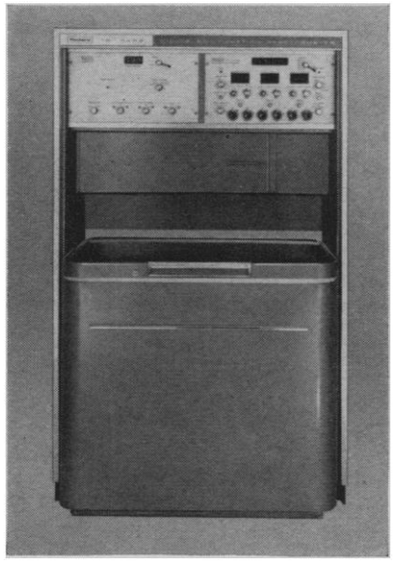

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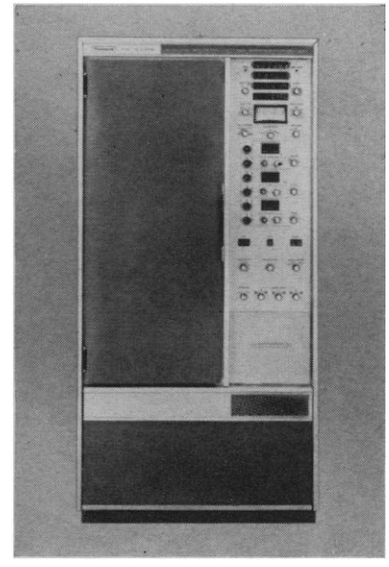

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that, at least for certain parameters, this is not the case. The observations include those of gravity (Woollard, United States), earth tides (Pariisky, U.S.S.R.), heat flow (Lubimova, U.S.S.R.), and seismology (Pakiser, United States; Tryggvason, Iceland; Anderson, United States; Brune, United States; Tarakanov, U.S.S.R.). Broadly speaking, it appears that lateral variations in the elastic parameters and density of the upper mantle of the order of 5 percent over distances of a few hundred kilometers or less are required to satisfy the observations. The depth to which such variations are detectable is not yet known.

Several groups are studying magnetic variations. Observations of magnetic disturbances with arrays of instruments have illustrated that there are many relatively local and probably subcrustal areas with unusually high electrical conductivity. Several papers indicated that there are such effects in ocean areas, not related to the conductivity of sea water. It is still not clear how, or if, certain of these features are related to the American mid-continent gravity high, to areas of anomalous heat flow, or to large-scale magnetic anomalies.

There is renewed interest in the quiet-solar variation and its variability. Interest in investigations of rapid magnetic variations is still growing. This was evidenced by the large number of extra sessions on that subject. Papers were presented on magnetic conjugate points and observations near the magnetic equator. Plans for the World Magnetic Survey have been endorsed by a number of national groups, and this survey promises to be a highly successful undertaking.

Bullen (Australia), using new data obtained by Bolt (United States) on the structure of the earth's core, showed that the earth's central density could be as low as 15 grams per cubic centimeter, and that the degree of inhomogeneity within the inner core is low.

Crustal exploration by the seismic refraction method or by surface-wave methods has now been carried out for large portions of the earth; in most cases, crust-mantle models can be found which are compatible with these data and with those obtained by other geophysical techniques. Both seismic methods still lack good resolution for exploring the deeper portions of the crust. Comparison of results obtained with the two techniques is sometimes hampered by the fact that shear velocities are not normally reported in refraction

studies; it is these velocities that are the most important in surface-wave studies.

Uffen (Canada) proposed a qualitative hypothesis relating the radiation-shielding effect provided by the earth's magnetic field to certain features of life on earth. As a result of the thermal history of the earth, the field did not exist in the earlier stages, nor did life. Later, near times of field reversal, intense radiation would have strongly increased the rate of mutation in living organisms.

Stichov (U.S.S.R.) demonstrated the existence of a high-density form of silica, thus providing a possible explanation for the high densities observed in the lower mantle.

Some confirmation of the resonance effect between earth tides and the diurnal nutation of the earth was presented by Pariisky (U.S.S.R.). His results are based on the analysis of two long series of tidal-gravity observations at Tashkent (64-month analysis) and Frunze (39-month analysis).

Vinogradov (U.S.S.R.) claims that stony meteorite matter at atmospheric pressure under repeated heating at a temperature of 1500°C actually separates into basaltic and dunite matter. Further experimental verification, especially at high pressure and temperature, accompanied by careful petrographic analysis may lead to the solution of some fundamental problems concerning the origin and formation of the earth.

Some papers were given on the deep-drilling programs in the United States and the U.S.S.R. The order of priority in the Soviet program is as follows: (i) deep depressions of platform and geosynclinal areas (the North-Caspian depression, or oil- and gas-bearing areas of Azerbaidzhan); (ii) Paleozoic geosynclines (the Urals, or Central Kazachstan); (iii) ancient shields (Karolia or the Ukraine); (iv) crustal regions of the transitional type (Transcaucasus or Black Sea); (v) regions of the island areas and of the crust close to the oceanic type (southern Kurile Islands or Southern Sakalin). This order of priority is very different from that of the United States, where all effort is being focused on an attempt to drill to the Mohorovicic discontinuity, beneath the ocean.

About 2000 scientists from 60 countries attended the assembly.

JACK OLIVER
Lamont Geological Observatory of Columbia University, Palisades, New York

Forthcoming Events

December

26–28. National Council of **Teachers of Mathematics,** San Angelo, Tex. (H. T. Karnes, Dept. of Mathematics, Louisiana State Univ., Baton Rouge 3)

26–30. American Assoc. for the **Advancement of Science**, Cleveland, Ohio. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005)

28–29. **Linguistic** Soc. of America, Chicago, Ill. (H. L. Smith, Jr., Dept. of Linguistics, Univ. of New York at Buffalo, N.Y.)

January

1–4. Solid State **Physics** Conf. Bristol, England. (L. Lawrence, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1)

7–9. **Reliability and Quality Control**, natl. symp., Washington, D.C. (American Soc. for Quality Control, 161 W. Wisconsin Ave., Milwaukee, Wis. 53203)

8–11. **Radioactive Isotopes** in Clinical Medicine and Research, 6th intern. symp., Bad Gastein, Austria. (R. Höfer, Second Medical University Clinic, Garnisongasse 13, Vienna 9, Austria)

8–11. National Soc. of Professional **Engineers**, winter meeting, Phoenix, Ariz. (P. H. Robbins, 2029 K St., NW, Washington, D.C.)

16–18. Royal College of **Physicians and Surgeons of Canada**, Quebec. (The College, 74 Stanley Ave., Ottawa 2, Ont.)

16–23. **Nucleic Acids**, symp., Hyderabad, India. (P. M. Bhargava, Regional Research Laboratory, Hyderabad 9)

19–24. **American Chemical Soc.**, 146th natl. meeting, Denver, Colo. (ACS, 1155 16th St. NW, Washington, D.C.)

20–15. Commission for **Aeronautical Meteorology**, World Meteorological Organization, 3rd, Paris, France. (WMO, 41 Ave. Giuseppe-Motta, Geneva, Switzerland)

20–22. American Inst. of **Aeronautics and Astronautics**, aerospace sciences mtg., New York, N.Y. (R. R. Dexter, AIAA, 2 E. 64 St., New York 21)

20–23. **Cardiovascular Drug Therapy**, symp., Philadelphia, Pa. (S. Rosen, Dept. of Medicine, Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia 2)

20–24. **American Mathematical Soc.**, Miami, Fla. (AMS, 190 Hope St., Providence 6, R.I.)

20–24. **Australian and New Zealand Assoc. for the Advancement of Science**, Canberra (J. R. A. MacMillan, Faculty of Agriculture, Univ. of Sydney, N.S.W., Australia)

20–27. **Agricultural Film Competition**, 3rd intern., Berlin, Germany. (Congress Hall, John Foster Dulles Allee, Berlin N.W. 21)

22–25. **American Physical Soc.**, New York, N.Y. (APS, Columbia Univ,, New York, N.Y.)

22–25. American Assoc. of **Physics Teachers**, New York, N.Y. (E. U. Condon, Oberlin College, Oberlin, Ohio)

23. Central Council for **Health Education**, annual conf., London, England. (Director, CCHE, Tavistock House, Tavistock Sq., London, W.C.1)

23–24. **Industrial Water and Waste** Conf., Austin, Tex. (J. B. Maline, Jr., 305 Engineering Laboratories Bldg., Univ. of Texas, Austin 12)

25. **Industrial Hygiene** and Air Pollution, 8th conf., Austin, Tex. (J. O. Ledbetter, 305 Engineering Laboratories Bldg., Univ. of Texas, Austin 12)

27–30. Society of **Plastics Engineers**, 20th annual technical conf., Atlantic City, N.J. (J. J. McGraw, Natl. Vulcanized Fibre Co., Philadelphia, Pa.)

27–31. UNESCO, working party on **scientific translation and terminology**, Rome, Italy, (UNESCO, Place de Fontenoy, Paris 7)

29–31. American **Meteorological** Soc., 44th annual, Los Angeles, Calif. (A. Court, 17168 Septo St., Northridge, Calif.)

29–1. Southwestern Federation of **Geological Societies**, 6th annual, Midland, Tex. (W. E. Wadsworth, AAPG, 1444 S. Boulder, P.O. Box 979, Tulsa 1, Okla.)

29–1. Western Soc. for **Clinical Research**, 17th annual, Carmel-by-the-Sea, Calif. (H. R. Warner, Latter-Day Saints Hospital, 325 Eighth Ave., Salt Lake City, Utah)

30–31. Spontaneous and Experimental Comparative **Atherosclerosis**, conf., Beverly Hills, Calif. (E. McCandless, Los Angeles County Heart Assoc., Los Angeles 57, Calif.)

February

2–5. American Inst. of **Chemical Engineers**, annual, Boston, Mass. (J. Henry, AICE, 345 E. 47 St., New York, N.Y. 10021)

2–7. Institute of **Electrical and Electronics Engineers**, winter meeting, New York, N.Y. (A. P. Fughill, Detroit Edison Co., 2000 Second Ave., Detroit, Mich. 48226)

2–8. **Teratology**, workshop, Commission on Drug Safety, Gainesville, Fla. (D. C. Trexler, Commission on Drug Safety, 221 N. LaSalle St., Chicago, Ill. 60601)

2–11. Scientific-Technical **Documentation and Information**, intern. congr., Rome, Italy. (I. M. Lombardo, La Produttivita, Viale Regina Margherita, 84d, Rome)

3–4. Society of **Rheology**, Claremont, Calif. (T. L. Smth, Stanford Research Inst., Menlo Park, Calif.)

3–4. Perspectives in **Virology** IV, Gustav Stern symp., New York, N.Y. (M. Pollard, Lobund Laboratory, Univ. of Notre Dame, Notre Dame, Ind.)

3–7. **Materials**, intern. conf., Philadelphia, Pa. (A. G. H. Dietz, Dept. of Building Engineering, Massachusetts Inst. of Technology, Cambridge, Mass.)

3–6. Philippine Acad. of **General Practitioners**, Manila. (J. C. Denoga, 1850 Taft Ave., Manila)

4–6. Society of the **Plastics** Industry, conf. of the reinforced plastics div., Chicago, Ill. (W. C. Bird, SPI, 250 Park Ave., New York, N.Y. 10017)

4–6. Cellular Biology of **Myxovirus Infections**, CIBA Foundation symp., London, England. (CIBA Foundation, 41 Portland Pl., London, W.1)

5–7. **Military Electronics**, 1964 winter conv., Los Angeles, Calif. (Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York, N.Y. 10021)

5–8. American College of **Radiology**, natl. meeting, Tucson, Ariz. (American College of Radiology, 20 N. Wacker Dr., Chicago, Ill. 60606)

7–8. **Differentiation and Development**, symp., New York, N.Y. (New York Heart Assoc., 10 Columbus Circle, New York, N.Y. 10019)

10–14. New Zealand Institution of **Engineers**, conf., Wellington. (F. N. Stace, P.O. Box 3047, Wellington, N.Z.)

10–14. **Information** Storage and Retrieval, 6th, Washington, D.C. (American Univ., 1901 F St., NW, Washington, D.C. 20006)

12–16. American College of **Cardiology**, 13th annual, New Orleans, La. (P. Reichert, Empire State Bldg., New York, N.Y. 10001)

13–14. Texas **Industrial Pharmacy** Seminar, Austin. (L. R. Parker, Pharmacy Extension Service, Univ. of Texas, Austin)

13–15. Golden Gate **Metals** conf., San Francisco, Calif. (Golden Gate Chapter, American Soc. of Metals, 1605 Solano Ave., Berkeley 7, Calif.)

15–16. **Atomic Energy**, Japanese natl. symp., Tokyo. (Atomic Energy Soc. of Japan, c/o Atomic Energy Research Inst., 1-1 Shiba-tamura-cho, Minato-ku, Tokyo)

16–20. American Inst. of **Mining, Met-**