

SCIENCE

24 April 1959

Volume 129, Number 3356

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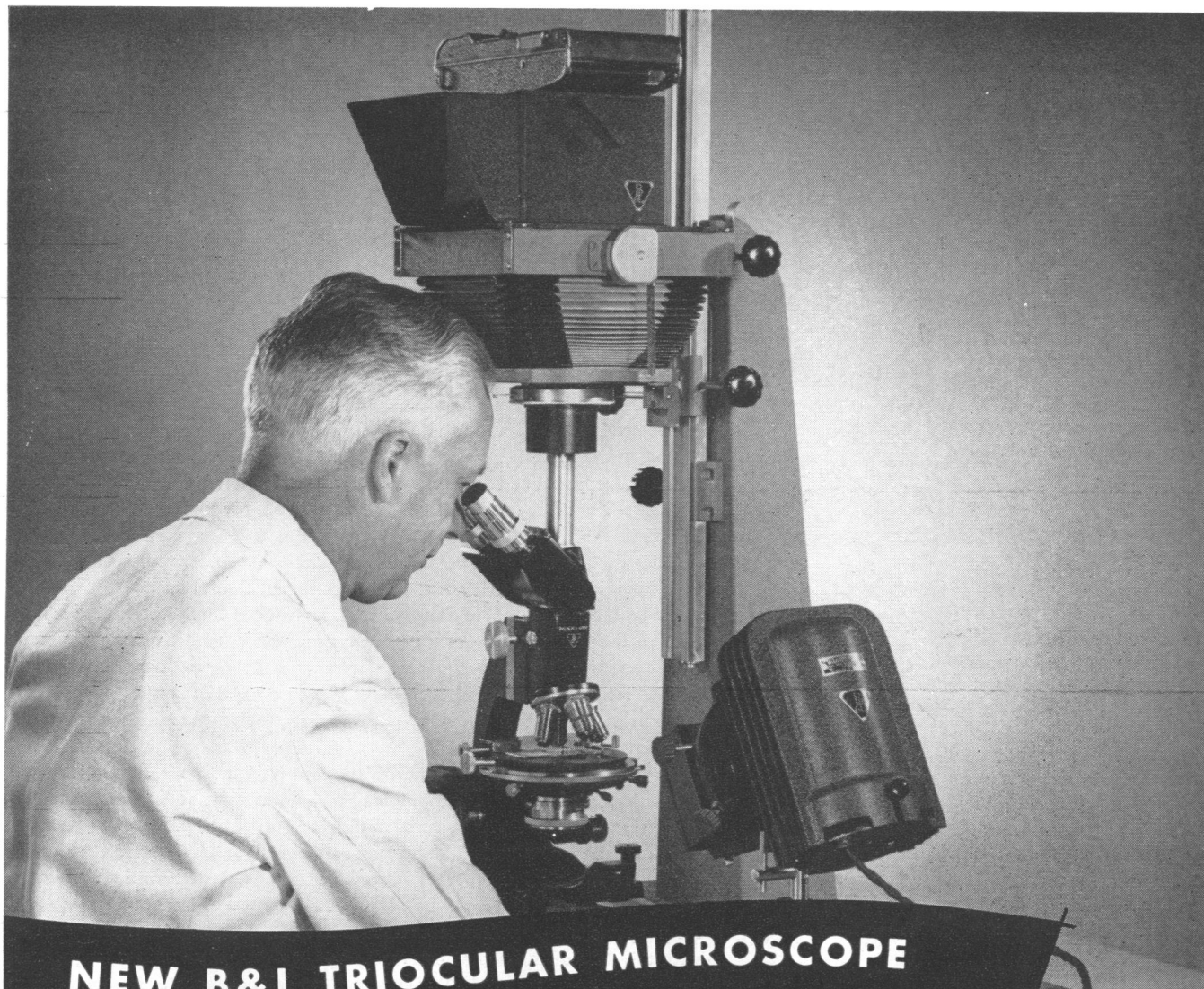
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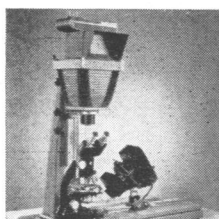
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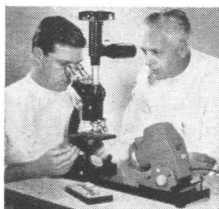


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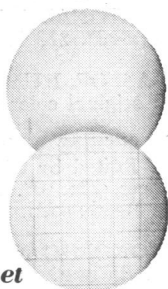
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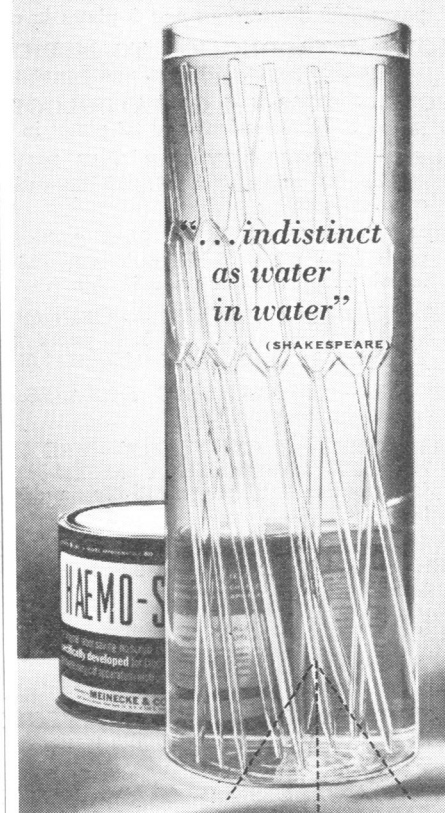
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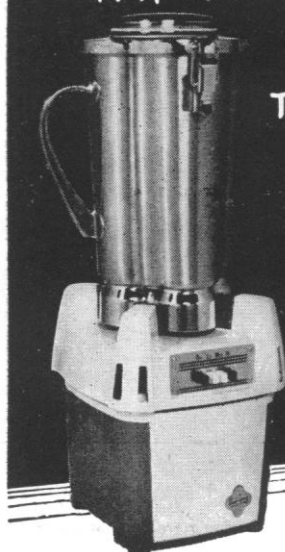
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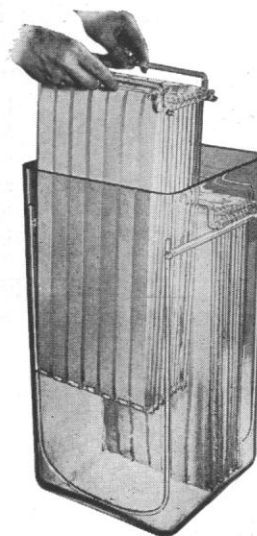
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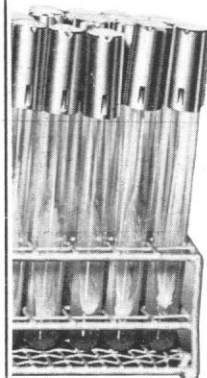
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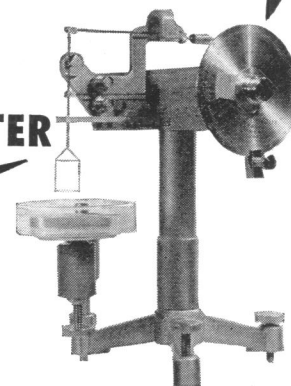
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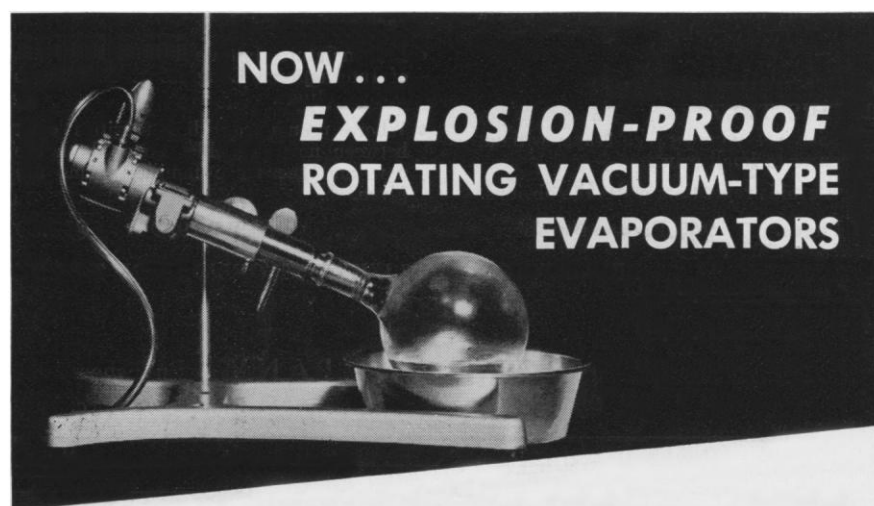
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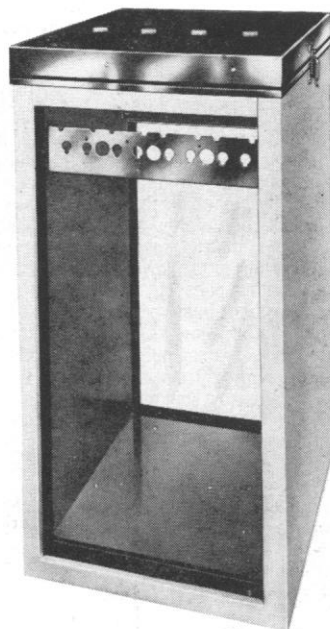
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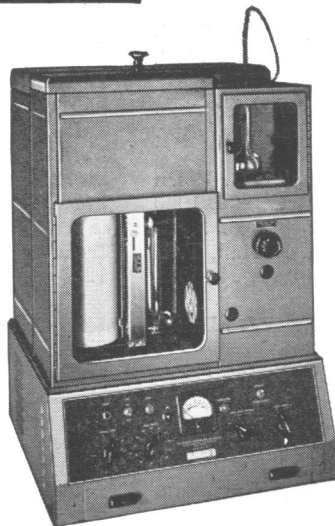
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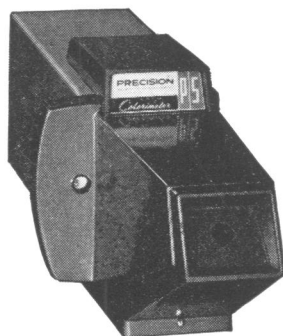
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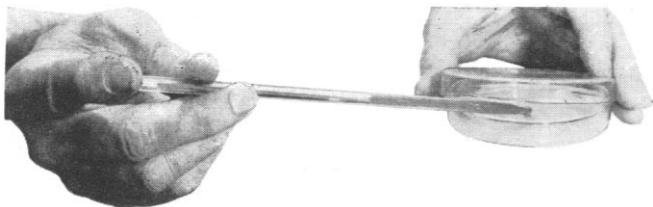
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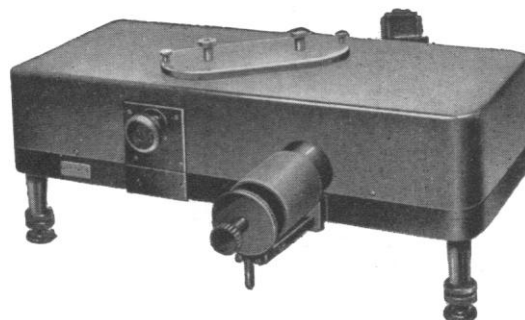
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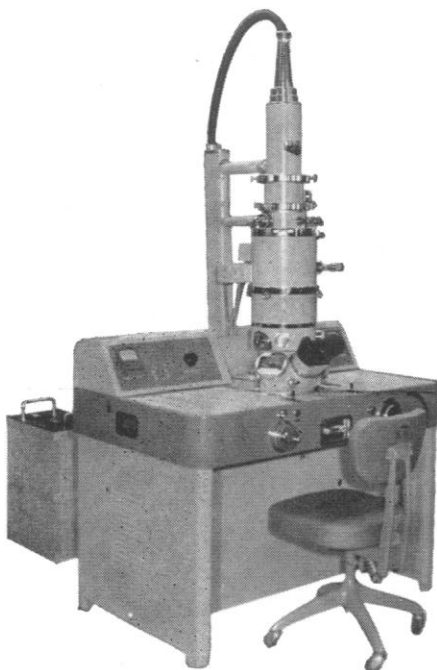
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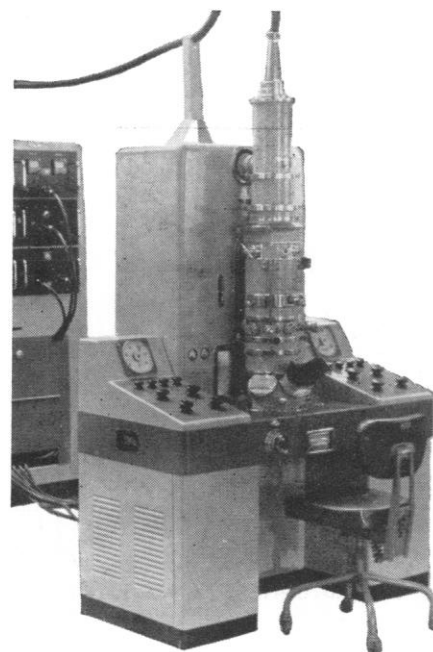
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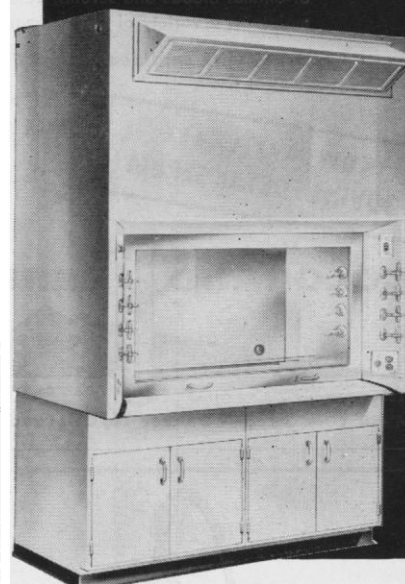
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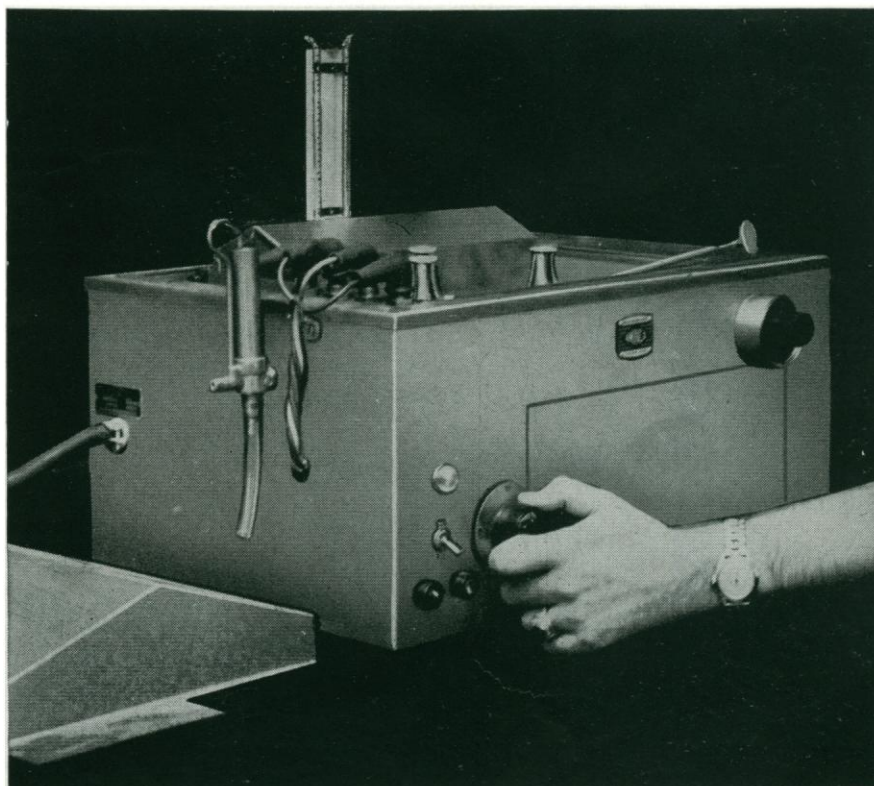
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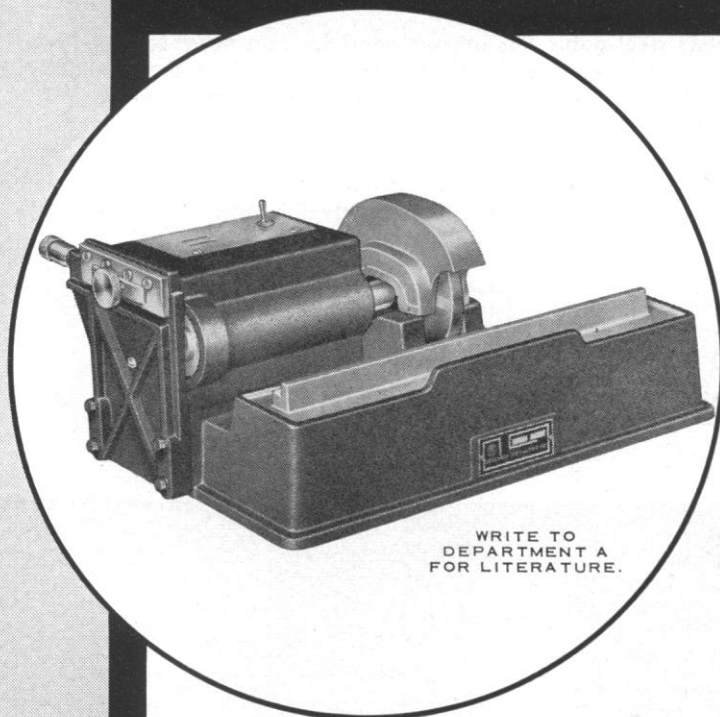
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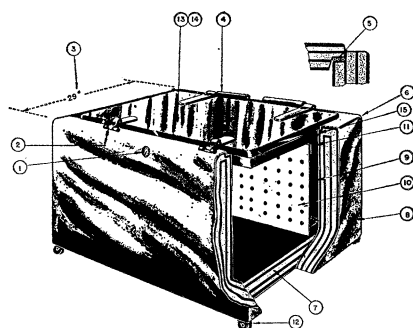
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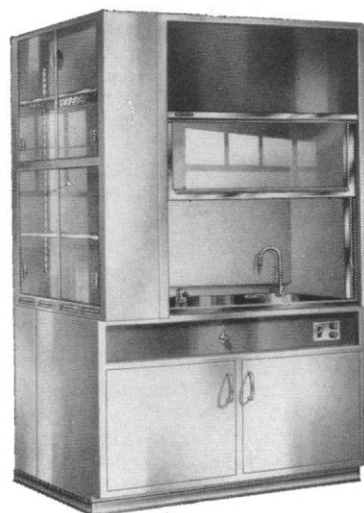
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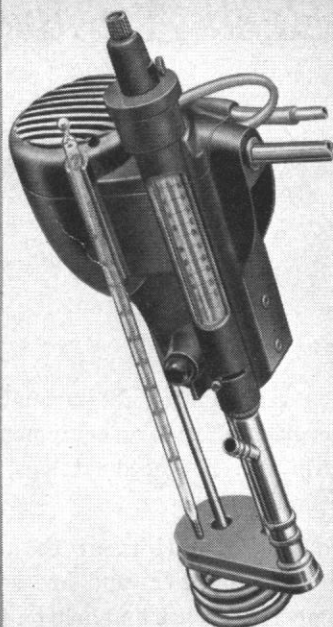
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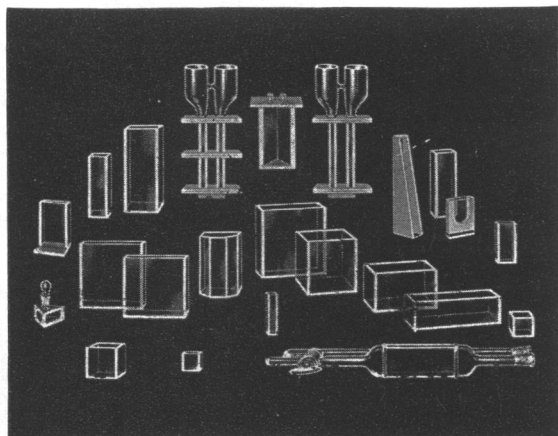
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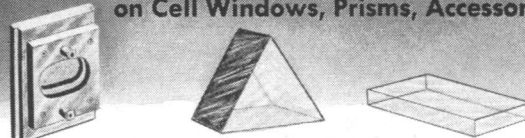
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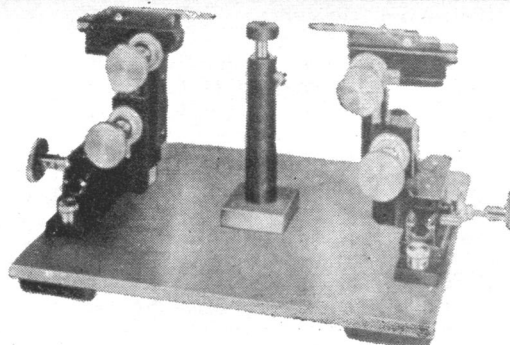
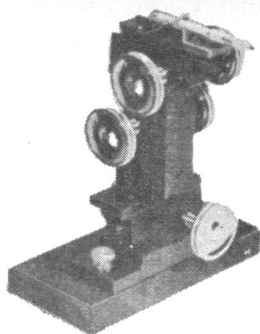
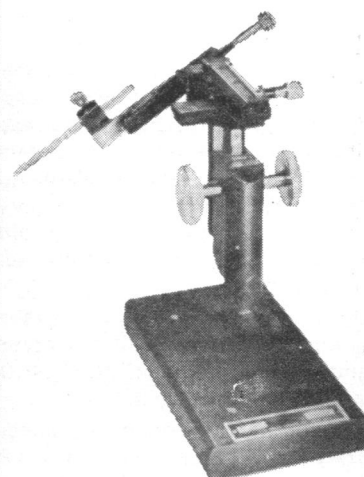
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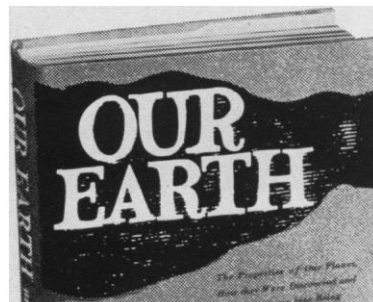
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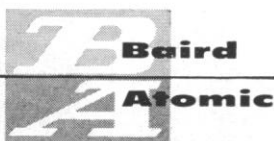


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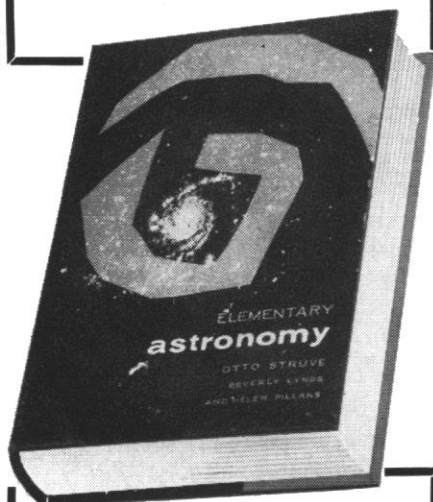
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Letters

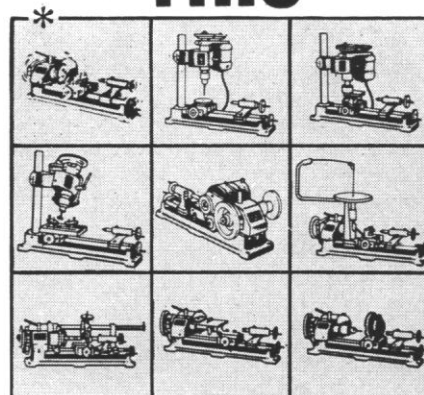
Keynes' Model

The article by David McCord Wright, "Mr. Keynes and the 'Day of Judgment'" [*Science* 128, 1258 (1958)], seemed to me to distort in several important respects Keynes' model of the operation of the economy and its impact on economic theorizing and policy making in the past 25 years.

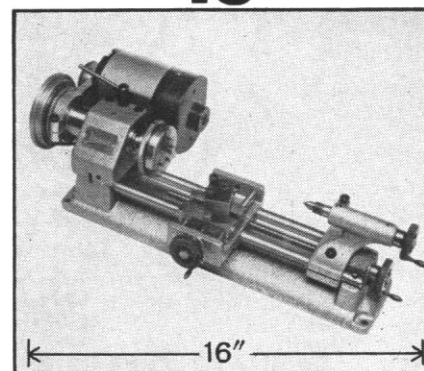
Wright criticizes Keynes for assuming in his model that resources, population, tastes, and technology are constant. He interprets this to mean that Keynes was ignoring all the dynamic forces which are usually considered vital to a free enterprise system. But Keynes began by specifically disavowing two other static assumptions which classical theory, from Adam Smith on, had always included. This body of theory, which was the theoretical genesis of *laissez faire* capitalism, assumed Say's law of markets, which prevented a condition of general overproduction, and full employment, which would always prevail provided that wages were suitably adjusted. Both these suppositions were clearly untenable in the environment of the 1930's, and Keynes' theory, far from including more static forces, included fewer. In economic theory, dynamics means simply that variables can be dated and their equilibrium path traced. It was the impact of the Keynesian model on economics which made the development of economic dynamics possible, as epitomized in the work of J. R. Hicks, Samuelson, Lawrence Klein, Roy Harrod, and others. Harrod's "Relation," mentioned critically by Wright, is in fact a major tool of dynamic economics. It is scarcely fair to criticize Keynes for being static when all economics had been static until his time and when his theory, though at best a comparative static model, paved the way for contemporary economic dynamics.

It is in his discussion of investment, however, that it seems to me Wright most seriously distorts Keynes. It is permissible to "scrape all the verbiage off Keynes' model" provided one doesn't scrape off crucial elements of the theory. Wright insists that Keynes made investment depend exclusively on consumption, and he notes that inasmuch as Keynes postulated that consumption would not increase as fast as income, a "day of judgment," involving an overproduction crisis, was inevitable. It is true that Keynes postulated this relationship of consumption to income within his static equilibrium model, but income is determined by investment quite as much as by consumption (indeed, in the Keynesian system, cycles are generated by fluctuations in invest-

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ment far more than by fluctuations in consumption, which Keynes felt was quite stable). Only in the sense that all economic activity is ultimately directed at satisfying consumer wants is it correct to state that investment depends on consumption. In his system, Keynes made investment a function of the interest rate and of the marginal efficiency of capital (his term for the rate of profit which the business community expected on the next contemplated unit of investment). So long as the businessmen expect the economy to grow (thus reflecting their estimation of the "dynamic social forces" that Wright insists are ignored by Keynes), there is no reason why they should not continue to expand investment. And so long as the economy is growing, there is no reason why the monetary authorities should raise interest rates (to prevent inflation). On the other hand, there is no reason why, if the business community does have reasonably high profit expectations, the interest rate should fall so low that no one is willing to lend.

Thus, Keynes' model is not itself gloomy at all. Keynes' immediate purpose was to explain the gloomy state of affairs he saw around him in England and the United States. But within the framework of his model, one can analyze with equal cogency "underemployment equilibrium" and "overemployment equilibrium." The inflationary gap can be explained as well as the deflationary gap.

Keynes, in short, did not concentrate on consumption to the exclusion of investment—quite the reverse. His theory has led to greater progress in "dynamizing" economic theory than was ever made before. His theory was profoundly procapitalist and antisocialist in the sense that he was pointing the way to the development of public policy which might vitiate the "internal contradictions of capitalism" constantly emphasized by the Marxists.

PHILIP A. KLEIN

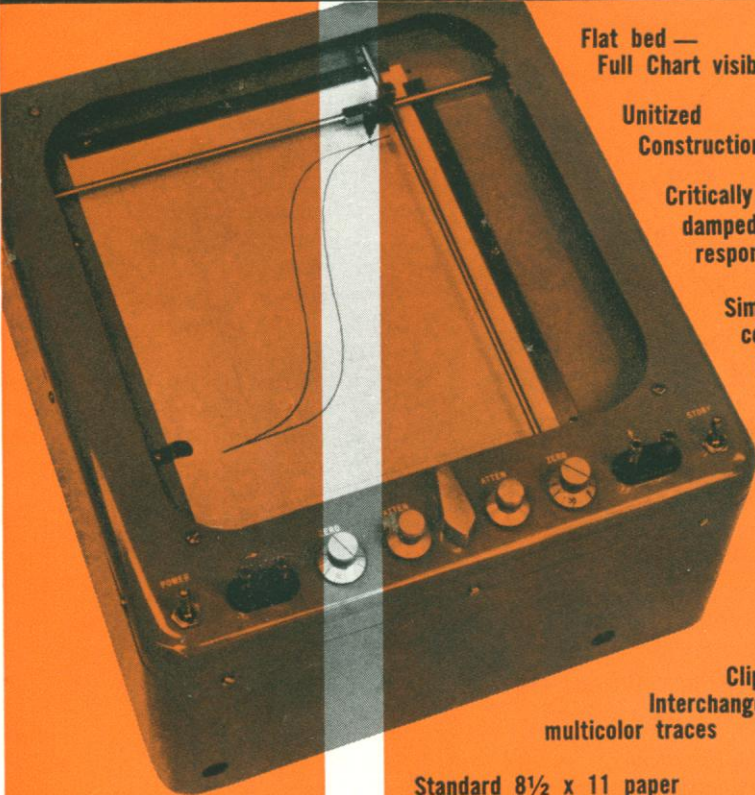
*Department of Economics,
Pennsylvania State University*

Most of Klein's criticisms would, I believe, be cleared up by a careful re-reading of my article. Let me, however, be more specific.

Klein is apparently unwilling to follow me in clearly distinguishing between Keynes' model and the extent to which Keynes was willing to apply it. The model, I submit, is just as rigid and as gloomy as I stated. Anyone who doubts this can read chapter 24 of the *General Theory*, to which Klein, for some reason, does not refer.

I tried hard in my article to show that Keynes did not always apply his model literally, and that therefore his thought

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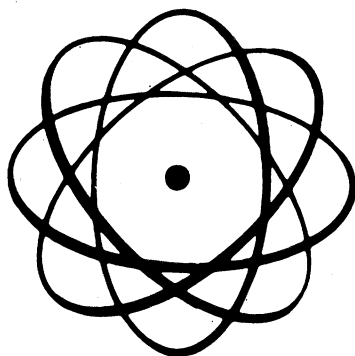
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was often more dynamic than is usually supposed. This is particularly evident from Keynes' approval of my "Future of Keynesian economics" article [*Am. Econ. Rev.* (June 1945)], which Klein does not seem to have read. I feel sure that were Keynes alive today he would be the first to repudiate much of what is now written in his name. On the other hand, Keynes undoubtedly did write, also, a great deal of nonsense. But to be scientists we have to distinguish between the model and the man.

The rest of Klein's letter contains an extraordinary collection of errors concerning the history of economic thought. Adam Smith had a rudimentary business-cycle theory. It is almost unbelievable to me that anyone could say that "all economics had been static" before Keynes' time. What about Sir Dennis Robertson, whom Keynes called his "father," or Irving Fisher, or Aftalion, or Wicksell?

Nearly every modern authority now admits that a sufficient wage cut would give full employment. Keynes, indeed, with typical inconsistency, said so himself.

DAVID MCCORD WRIGHT
*Department of Economics and
Political Science, McGill University*

Who Should Teach English?

With most of the suggestions of T. R. Henn["Literature in a technological age," *Science* 128, 1325 (1958)] I am in hearty agreement. But when Henn writes that "the teaching of English . . . should be done wherever possible by the science teachers themselves," I begin to disagree, unless he is willing to place special emphasis upon the qualification "wherever possible." How many and where are the science teachers in colleges and universities who can either meet or teach the writing standards Henn sets up for scientists?

Persons untrained in the teaching of English, rhetoric, or writing (call it what you will) are apt to insist upon their personal, and sometimes silly, preferences. Often these preferences are based upon imperfect understanding of such writing fundamentals as they picked up, somewhat against their will, as they dashed or slumbered through English classes. Only a few days ago I heard of a university teacher of entomology who was insisting to his graduate students that they should not use nouns as adjectives. I don't know what the gentleman says when he wants to discuss house flies or horse flies.

JAMES S. AYARS
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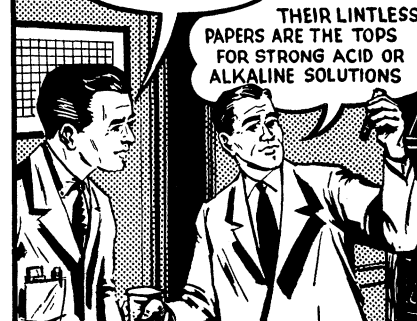
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PROJECT SUNSHINE

When an atomic bomb test is made anywhere on earth, radioactivity is scattered into the air and carried about by wind currents. These "hot" atoms fall with precipitation and settle on animals, vegetation, soil, and water. This fallout contains the dangerous radioactive nuclide, strontium-90, and it is desirable to maintain constant knowledge of the amount.

To monitor this fission fallout, the Atomic Energy Commission set up "Project Sunshine." NSEC has been active in the program since 1955, analyzing samples received from all over the world. NSEC recently has been awarded two additional major contracts to measure fallout in Pittsburgh rainfall and in particulate material in the air.

Close to half the fallout measurements, and most of the particulate material analyses in this country are being conducted by NSEC.

NSEC is one of very few private firms with the necessary low-level counting equipment to perform such vital work. This, and similar apparatus designed and built by our staff, is used to conduct research that leads to a better life for us all. Would you like to discuss the ways it might assist you?

FISSION PRODUCT BEHAVIOR IN A REACTOR SLURRY

In a proposed nuclear power reactor, the fuel used is a slurry of uranium oxide and thorium oxide particles. NSEC made a preliminary study of the probable distribution of fission products within the reactor, to aid in the design of the fuel-decontamination processes. High pressure, high temperature studies were made in an autoclave using reactor-irradiated slurries, as well as synthetic mixtures of fission products.

NSEC has conducted hundreds of radiochemical analyses of experimental nuclear fuel elements, reactor coolant water and other reactor components. NSEC also assists in determining fuel burn-up efficiency, and the rate of gain for breeder reactors. We are taking part in the development of nuclear power plants for aircraft, and are advising many firms which are fabricating fuel elements for various reactors.

If your work involves nuclear reactors or components, call us at HOMestead 2-4000 in Pittsburgh. We'll work with you from the preliminary environmental radioactivity survey through the disposal or use of the radioactive waste.

For more detailed information on our studies and services, just call or write. Proposals and quotations on your specific needs will be made without cost or obligation. And if you would like to keep informed of the latest developments in this constantly changing field, just write on your letterhead and ask us to put you on the mailing list for our monthly publication, "Radioactivity at Work."

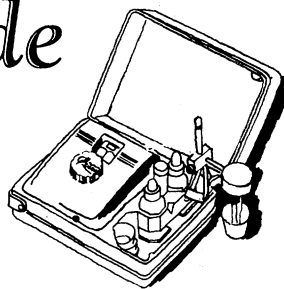
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Conference events will also include symposia, oral surveys on the status of information processing in each country, and an international exhibition of data processing equipment. Technical descriptions of such equipment will be scheduled in conjunction with the exhibits.

Some 1500 specialists will attend the conference, which is expected to lead to creation of an international organization to plan future conferences and to aid in international exchange of information in the field. For conference details, write to: United States Committee for the International Conference on Information Processing, Box 4999, Washington 8, D.C.

Quantum Electronics

An International Conference on Quantum Electronics—Resonance Phenomena will be held at the Shawanga Lodge, Bloomingburg, N.Y., 14–16 September. The conference will consider basic problems in physics and electronics that are important to the increasing use of molecular and atomic resonances in masers, atomic clocks, and related devices, as well as the application of quantum electronics to scientific problems.

It is intended that this will be a working conference rather than a tutorial meeting. Consequently, attendance is being limited to those who are active in appropriate fields of research. For information, write to I. Rowe, Scientific Department, Office of Naval Research, 346 Broadway, New York 13, N.Y.

Education of the Scientist

A conference on The Education of the Scientist in a Free Society will be held at Marquette University, 20–22 May, as part of the 50th anniversary celebration of Marquette's College of Engineering. The speakers will include: Edward Teller, University of California, "What is Scientific Education?—The Problem Today"; Senator Paul Douglas, Illinois, "What Does Free Society Demand of the Scientifically Educated?"; and Fred-eric Lindvall, California Institute of Technology, "On the Nature of an Engineer."

Arid Lands Research

The Spanish Government will be host to UNESCO's Symposium on the Water Relations of Plants in Arid and Semi-Arid Zones, which will take place in Madrid, 24–30 September. As part of UNESCO's arid-lands program, symposia bearing on subjects directly related to the fields of arid-zone research are or-

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ganized each year with the assistance of different member states.

In addition to its own specialists, the Spanish Government proposes to invite various foreign scientists to attend, while UNESCO will arrange for the participation of a number of experts, particularly from North Africa, the Middle East, and South Asia. It is hoped that certain specialists will also be able to attend at their own expense or at the expense of the institutions for which they work. The total number of participants will not exceed 60.

The UNESCO Department of Natural Sciences, Place Fontenoy, Paris 7^e, will arrange for the coordination of scientific papers so that the various sections of the

program will be properly balanced. Certain specialists have been invited by UNESCO to submit reviews of research on the main subjects of the symposium. These reviews will be circulated beforehand and will serve as an introduction to the work of the various sections.

Members of the symposium wishing to present scientific papers are requested to send the title, together with a summary of not more than 250 words, to UNESCO's Department of Natural Sciences *not later than 1 June 1959*. Only original scientific papers bearing on the program of the various sections will be accepted. The full texts of all scientific papers to be presented orally during the symposium must reach UNESCO *not*

later than 1 August 1959, in order to leave sufficient time for reproduction and circulation before the opening of the symposium.

All papers and summaries must be prepared either in English or in French; they will be reproduced only in the original language. Participants who wish to prepare their papers in Spanish are requested to supply an English or French translation.

The Spanish Government has set up an organizing committee responsible, in particular, for making all local arrangements for the reception and accommodation of members of the symposium. The secretary of this committee is Mr. Eladio Asensio, Instituto Nacional de Investigaciones Agronomicas, Avenida de Puerta de Hierro, Madrid.

The symposium will be followed by a study tour in southeastern Spain, organized by the Spanish Department of Agriculture. The organizing committee will in due course supply all particulars regarding this tour.

Forthcoming Events

May

24-27. Chemical Inst. of Canada, 42nd annual conf., Halifax, Nova Scotia. (Chemical Inst. of Canada, 18 Rideau St., Ottawa 2, Ontario.)

24-29. American Tuberculosis Assoc., Chicago, Ill. (Mrs. W. B. White, 1790 Broadway, New York 19.)

24-29. Social Welfare, natl. conf. and annual forum, San Francisco, Calif. (National Conference on Social Welfare, 22 W. Gay St., Columbus 15, Ohio.)

25-27. American Gynecological Soc., Hot Springs, Va. (A. A. Marchetti, 3800 Reservoir Rd., NW, Washington 7.)

25-27. American Soc. for Quality Control, Cleveland, Ohio. (L. S. Eichelberger, A. O. Smith Corp., Milwaukee, Wis.)

25-27. Chemical Inst. of Canada, 42nd annual conf., Halifax, Nova Scotia. (Chemical Inst. of Canada, 18 Rideau St., Ottawa, Ontario, Canada.)

25-27. Telemetering, natl. conf., Denver, Colo. (R. Schmidt, AVCO Mfg. Co., 201 Lowell St., Wilmington, Mass.)

25-28. Smoking and Lung Cancer, and Pulmonary Emphysema, symps., American Trudeau Soc., Chicago, Ill. (H. W. Harris, Medical Sessions Committee, ATS, 1790 Broadway, New York 19.)

25-29. Transistors and Associated Semiconductor Devices, intern. conv., London, England. (Institution of Electrical Engineers, Savoy Pl., London, W.C.2.)

25-31. Electroheat, 4th intern. cong., Stresa, Italy. (International Union for Electroheat, 14, rue de Stäel, Paris 15^e, France.)

26-29. American College of Cardiology, Philadelphia, Pa. (P. Reichert, 480 Park Ave., New York 22.)

27-28. Legal Environment of Medical Science, 1st natl. conf. (Natl. Soc. for Medical Research and Univ. of Chicago), Chicago, Ill. (Natl. Soc. for Medical Re-

Millipore BRIEF #172

A Method for Concentrating Cancer Cells Suspended in Large Quantities of Fluid.

Large volume fluid specimens containing cancer cells are filtered through an MF 25mm Hg regulated vacuum. The cells, then present on filter surface are fixed (10% formalin), stained with hematoxylin and eosin (alcohols and xylol) and mounted on immersion oil for microscopic examination.

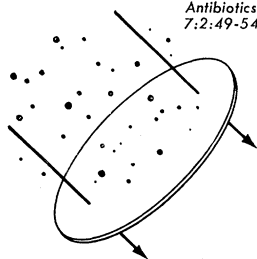
Seal, S. H.
Cancer
9:5:866-68, October, 1956

Millipore BRIEF #184

A New Sterility Test for Antibiotics; An Application of the Membrane Filter Technique.

Following experimentation, Holdowsky assayed 90 samples of various antibiotics. In 71 instances, sterility as determined by the FDA procedure was confirmed by the MF technique. Of 19 remaining, 16 proved unsterile by MF, but sterile by FDA. Both methods indicated unsterility of another: sample labeled sterile by the manufacturer. Of the two remaining, both methods indicated sterility of drugs determined unsterile by the manufacturer.

Holdowsky, S.
Antibiotics & Chemotherapy
7:2:49-54, February, 1957



Millipore BRIEF #187

Studies of Tissue Homotransplantation in Mice; Using Diffusion Chamber Methods.

Reviews the several studies carried on by the authors of the growth of cells *in vivo* and *in vitro* in diffusion chambers constructed of MF material so as to prevent direct cellular contact between graft and host tissue. Homografts were found to survive in diffusion chambers in nonimmune hosts. It then developed that homografts in diffusion chambers also survived in immune hosts.

Algire, G. H., Weaver, J. M., Prehn, R. T.
Annals New York Academy of Sciences
64:5:1009-13, March, 1957

Millipore BRIEF #196

Use of Millipore Membrane Filter in the Diagnostic Tuberculosis Laboratory.

The Millipore membrane filter was successfully adapted for use in the diagnostic tuberculosis laboratory. Cultures for *Mycobacterium tuberculosis* on membrane filters are usually positive in 3 to 7 days. Tarshis' blood agar yields positive cultures approximately 7 to 10 days earlier than those obtained with modified Lowenstein-Jensen medium. Methods of sample preparation for MF filtration are presented for urine, spinal fluids, gastric washings, sputum and other body fluids.

Haley, Lleanor D., Arch, Rosty
American Journal Clinical Pathology
27:1:117-121, January, 1957

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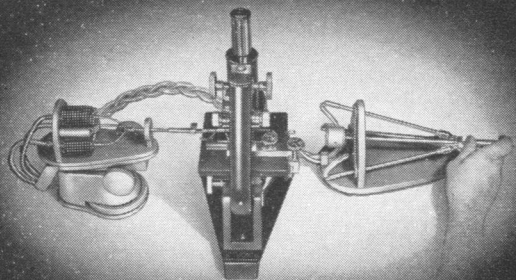
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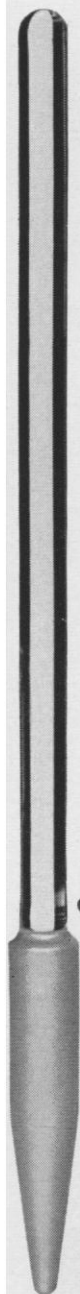
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28-30. American Ophthalmological Soc., Hot Springs, Va. (M. C. Wheeler, 30 W. 59 St., New York 19.)

29-30. International Assoc. for Bronchology, 9th cong., Madrid, Spain. (J. Abello, IAB, Lagascar 13, Spain.)

29-2. Giornate Avicole Varesine (intern. symp.), Varese, Italy. (T. Bonadonna, Univ. of Milan, Milan, Italy.)

30-5. Applications of Atomic Energy to the Petroleum Industry, symp., 5th World Petroleum Congress, New York, N.Y. (C. E. Davis, General Secretary, 5th World Petroleum Congress, 527 Madison Ave., New York 22.)

31-3. Special Libraries Assoc., 50th annual conv., Atlantic City, N.J. (Miss M. E. Lucius, 31 E. 10 St., New York 3.)

31-5. Industrial Research Conf., 10th annual, New York, N.Y. (R. T. Livingston, Director, IRC, 409 Engineering, Columbia Univ., New York 27.)

June

1-3. Evolution, symp., annual, Saskatoon, Saskatchewan, Canada. (Mrs. L. C. Metivier, Royal Soc. of Canada, Natl. Research Bldg., 100 Sussex Drive, Ottawa, Ontario.)

1-4. American Dermatological Assoc., Atlantic City, N.J. (W. M. Sams, 25 Southeast Second Ave., Miami, Fla.)

1-4. Spectroscopy, 10th annual symp., Chicago, Ill. (G. W. Bailey, Borg-Warner Research Center, Des Plaines, Ill.)

1-5. International Silk Assoc., cong., Munich, Germany. (H. Bonvallet, 25, Place Tolozan, Lyon 1, France.)

1-6. International Commission for Northwest Atlantic Fisheries, 9th annual (by invitation), Montreal, Canada. (ICNAF, Forest Bldg., Carleton St., Halifax, Nova Scotia.)

2-6. American Rheumatism Assoc., Washington, D.C. (E. F. Hartung, 580 Park Ave., New York 21.)

2-6. Rheumatic Diseases, 2nd Pan American cong., Washington, D.C. (R. T. Smith, West Point, Pa.)

3-5. Cellular Aspects of Immunity, symp. (by invitation), Royaumont (near Paris), France. (G. E. W. Wolstenholme, Ciba Foundation, 41 Portland Pl., London, W.1, England.)

3-7. American Assoc. of Bioanalysis, Cincinnati, Ohio. (L. D. Hertert, 490 Post St., Room 1049, San Francisco, 2, Calif.)

3-7. American College of Chest Physicians, Atlantic City, N.J. (M. Kornfeld, 112 E. Chestnut St., Chicago, Ill.)

3-10. Quantitative Biology, symp., 24th, Cold Spring Harbor, N.Y. (M. Demerec, Director, Biological Lab., Cold Spring Harbor, N.Y.)

4. Fine Structure as Related to Absorption, Synthesis and Transport in the Gastrointestinal Tract, symp., Atlantic City, N.J. (E. C. Texter, Gastroenterology Research Group, Medical School, 303 E. Chicago Ave., Northwestern Univ., Chicago 11, Ill.)

4. Petroleum Geochemistry, symp., New York, N.Y. (E. G. Baker, Esso Research and Engineering Co., P.O. Box 51, Linden, N.J.)

4-5. American Geriatrics Soc., Atlantic

City, N.J. (R. J. Kraemer, 2907 Post Rd., Warwick, R.I.)

4-6. Endocrine Soc., 41st annual, Atlantic City, N.J. (H. H. Turner, 1200 N. Walker, Oklahoma City, Okla.)

4-7. American Medical Womens Assoc., Atlantic City, N.J. (Miss L. T. Majally, 1790 Broadway, New York 19.)

4-7. American Therapeutic Soc., Atlantic City, N.J. (O. B. Hunter, Jr., 915 19 St., NW, Washington 6.)

4-8. Electrolytes, intern. symp., Trieste, Italy. (Societa Italiana per il Progresso delle Scienze 7, Rome, Italy.)

5-7. American College of Angiology, 5th annual, Atlantic City, N.J. (A. Halpern, 11 Hampton Court, Great Neck, N.Y.)

5-7. American Gastroenterological Assoc., and American Gastroscopic Soc., annual, Atlantic City, N.J. (H. M. Pollard, University Hospital, Ann Arbor, Mich.)

6. American Acad. of Tuberculosis Physicians, Atlantic City, N.J. (O. S. Levin, P.O. Box 7011, Denver 6, Colo.)

6. International Cardiovascular Soc. (North American Chapter), Atlantic City, N.J. (P. T. DeCamp, 3503 Prytania St., New Orleans, La.)

6-7. American Diabetes Assoc., Atlantic City, N.J. (E. Paul Sheridan, 1 E. 45 St., New York 17.)

6-7. Society of Investigative Dermatology, Inc., 20th annual, Atlantic City, N.J. (H. Beerman, 255 S. 17, Philadelphia 3, Pa.)

6, 20, and 27. Recent Advances in Medical Technology, symp., Staten Island, N.Y. (N. Colosi, Wagner College, Staten Island, N.Y.)

7-11. American Soc. of Heating and Air Conditioning Engineers, semi-annual, Vancouver, B.C., Canada. (A. V. Hutchinson, ASHAE, 62 Worth St., New York 13.)

7-13. Fertility and Sterility, 3rd world cong., Amsterdam, Holland. (W. W. Williams, 20 Magnolia Terrace, Springfield, Mass.)

8-12. American Medical Assoc., Atlantic City, N.J. (F. J. L. Blasingame, 535 N. Dearborn St., Chicago 10, Ill.)

8-12. Association for Research in Ophthalmology, Inc., Atlantic City, N.J. (L. V. Johnson, 10515 Carnegie Ave., Cleveland 6, Ohio.)

9-11. Canadian Federation of Biological Societies (Canadian Physiological Soc., Pharmacological Soc. of Canada, Canadian Assoc. of Anatomists, Canadian Biochemical Soc.), Toronto, Ontario, Canada. (E. H. Bensley, CFBS, Montreal General Hospital, 1650 Cedar Ave., Montreal 25, P.Q.)

9-11. Interferometry, intern. symp., Teddington, England. (Intern. Symp. on Interferometry, Natl. Physical Laboratory, Teddington.)

9-12. Health Technicians, 6th intern. cong., Paris, France. (Secrétariat Général du Ve Congrès-Exposition International des Techniciens de la Santé, 37, rue Monthon, Paris 9e.)

10-12. Gas Chromatography, 2nd intern. symp., East Lansing, Mich. (H. S. Kindler, Technical and Educational Services, ISA, 313 Sixth Ave., Pittsburgh 22, Pa.)

(See issue of 17 April for comprehensive list)