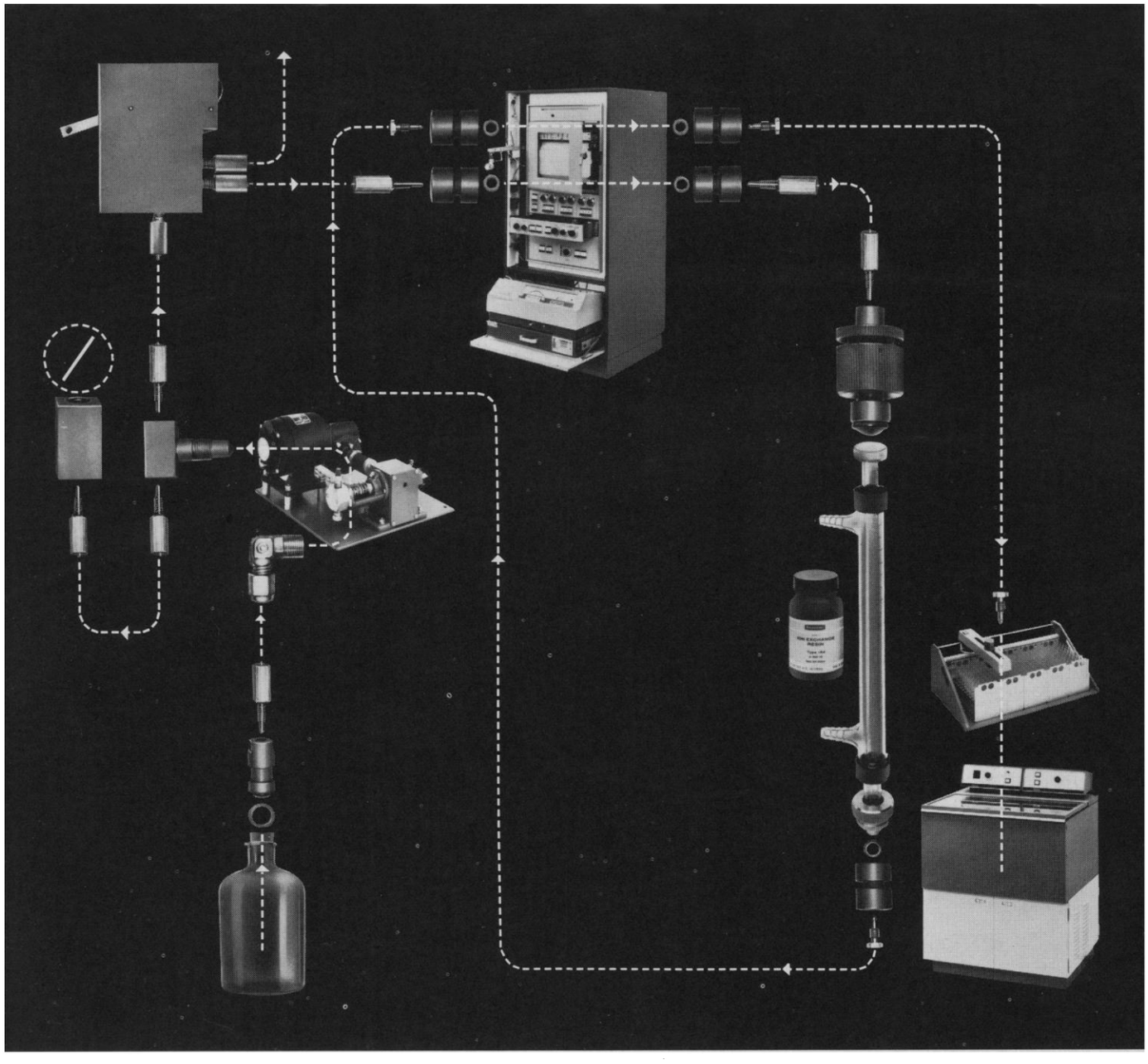
SCIENCE

5 March 1965
Vol. 147, No. 3662

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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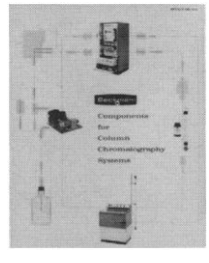

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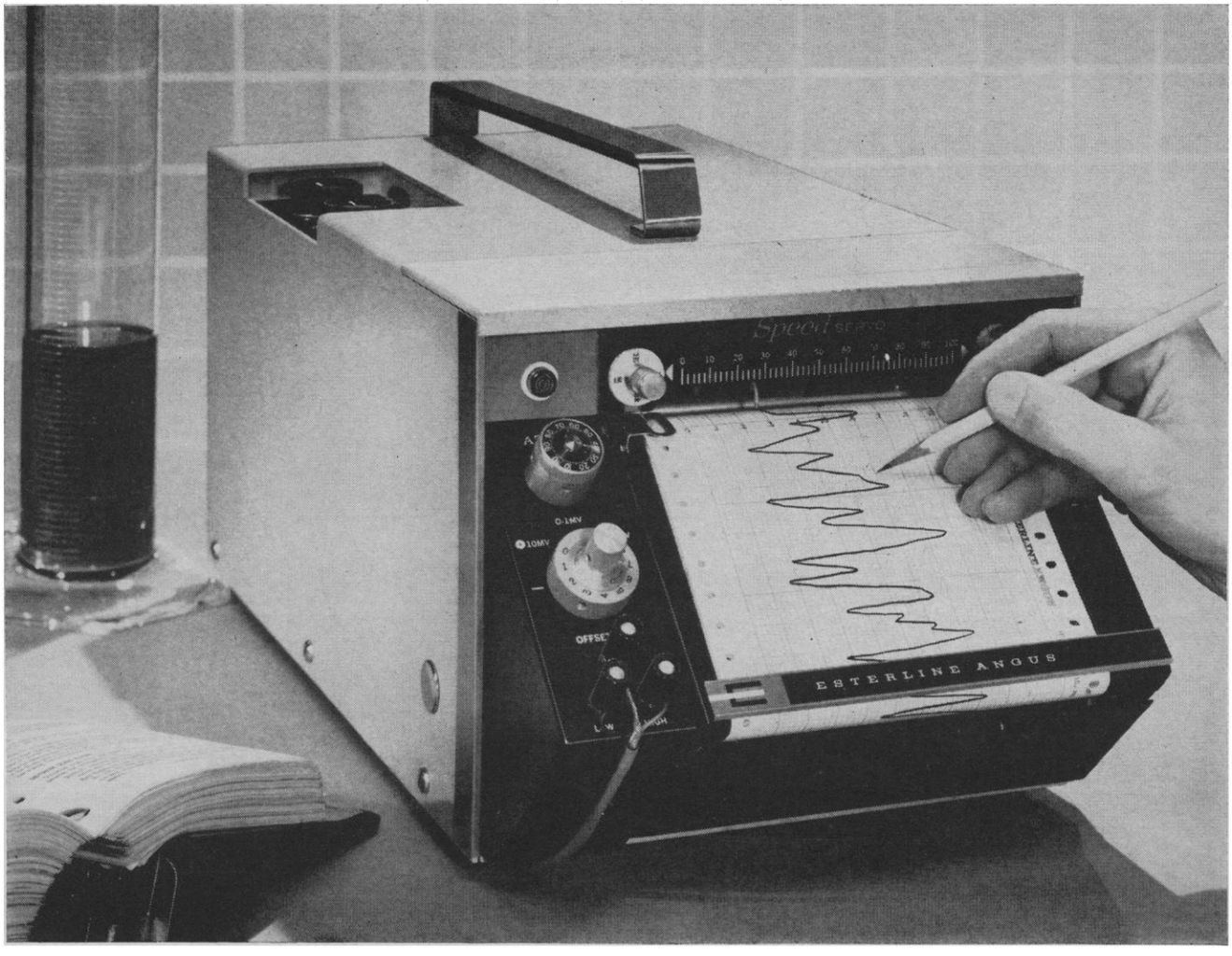

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5 March 1965
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SCIENCE

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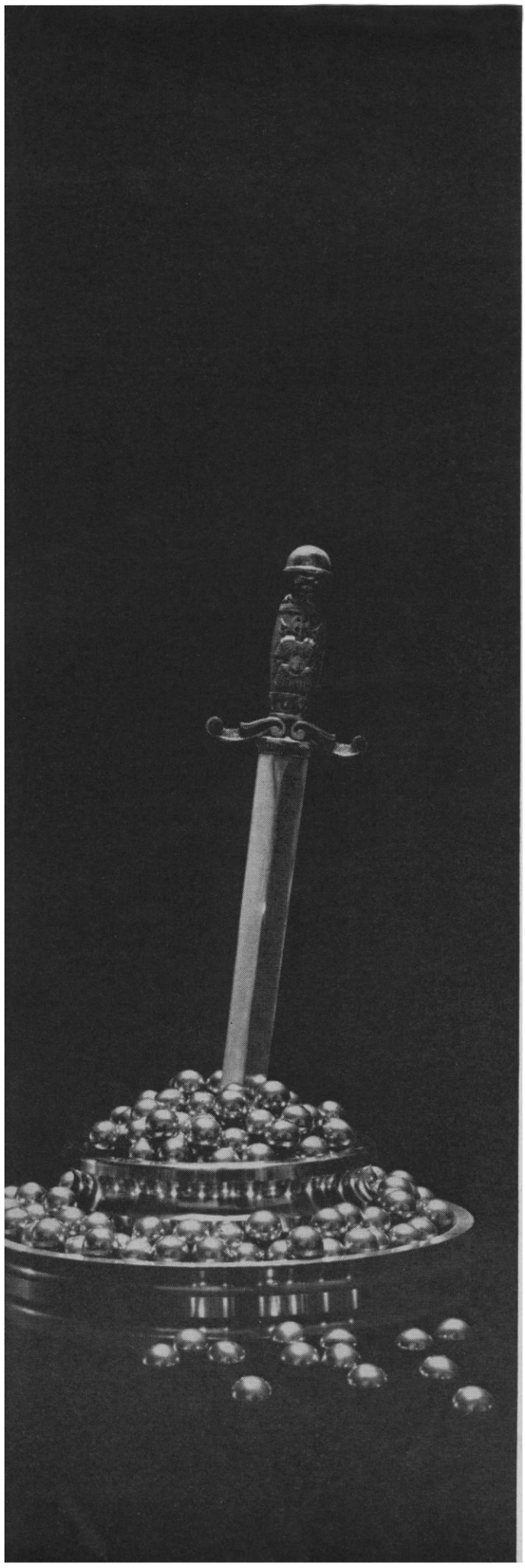
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

The flash of a single bioluminescent cell. The dinoflagellate *Noctiluca miliaris*, stimulated electrically in total darkness by five brief pulses 15 milliseconds apart, produced a summated flash. Photography of the image was made possible by use of a five-stage image intensifier; an accelerating voltage of 36 kv amplified the intensity of the image approximately 900,000 times (× 270). See page 1140. [G. T. Reynolds, R. Eckert, and R. D. Allen]



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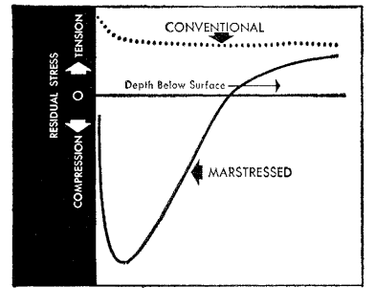
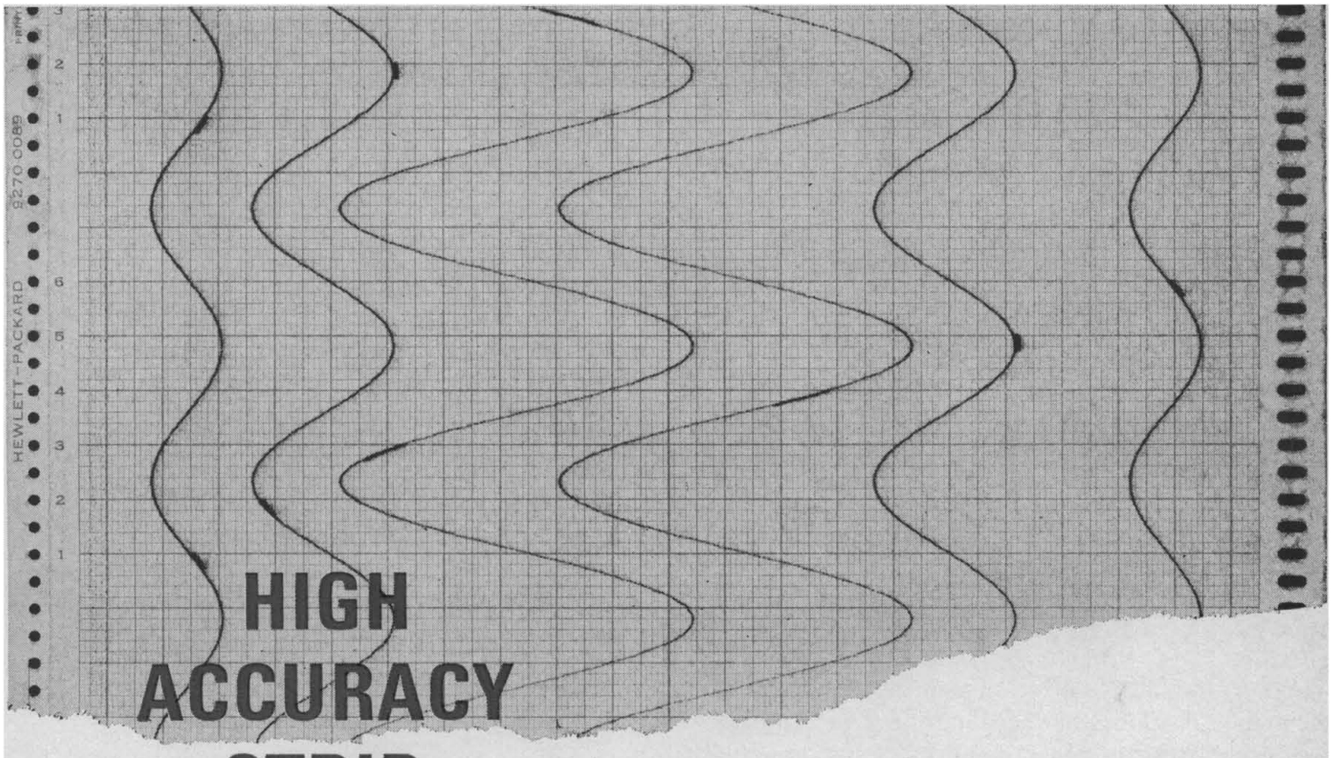
General Motors Research Laboratories

Warren, Michigan



Comparison of subsurface stress patterns in conventionally hardened and *Marstressed* parts



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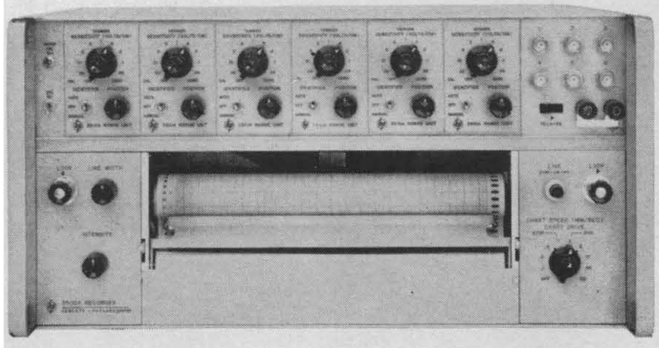

from a new concept in multi-channel recording . . . Here's an instrument for recording up to twelve channels of data, each with 20 cm full-scale response, an accuracy of ±0.2% of full scale, high resolution—and at a cost of less than $500 per channel. It's the new Hewlett-Packard/Sintef 3500A Recorder.

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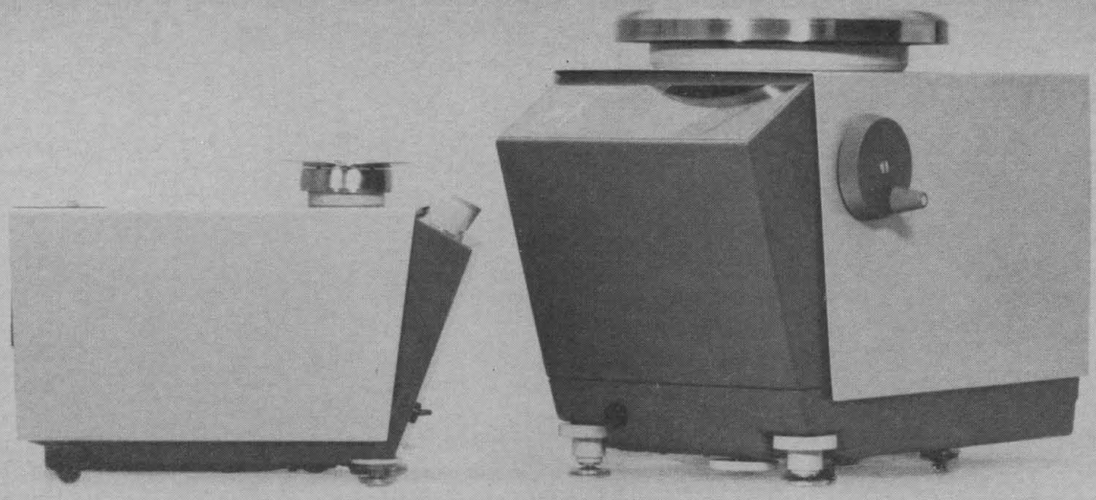

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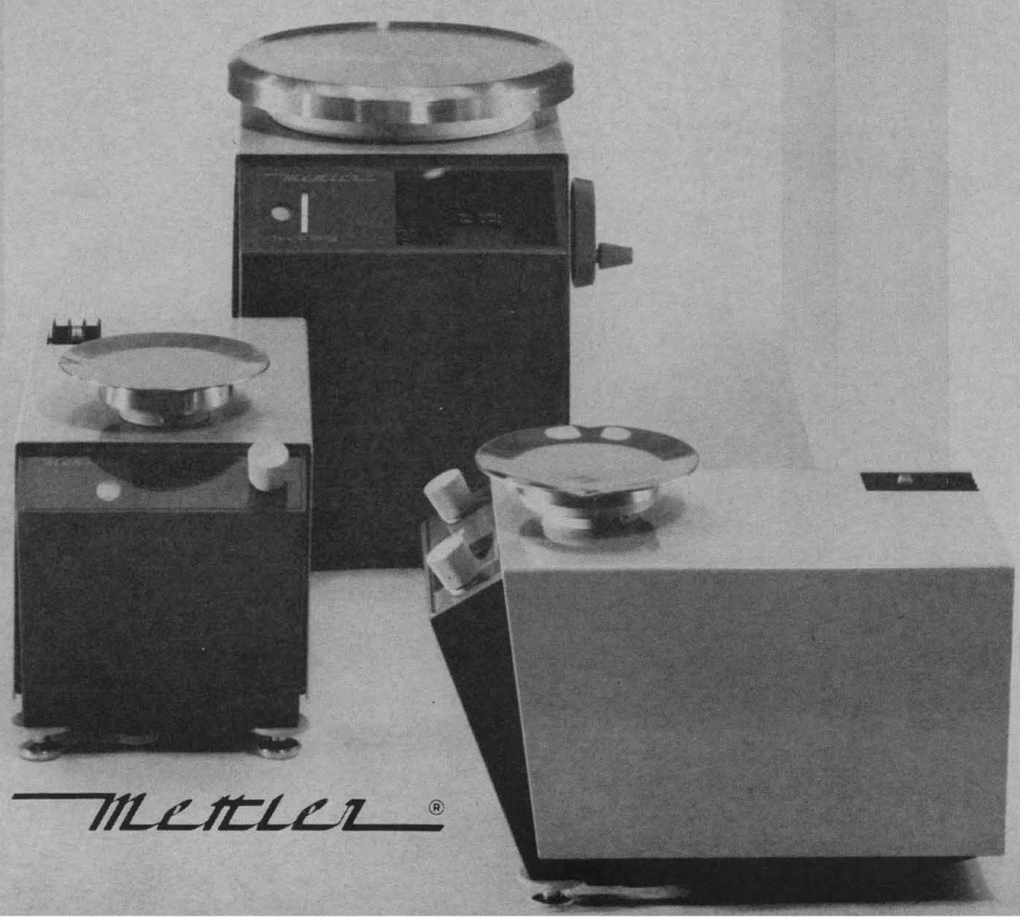

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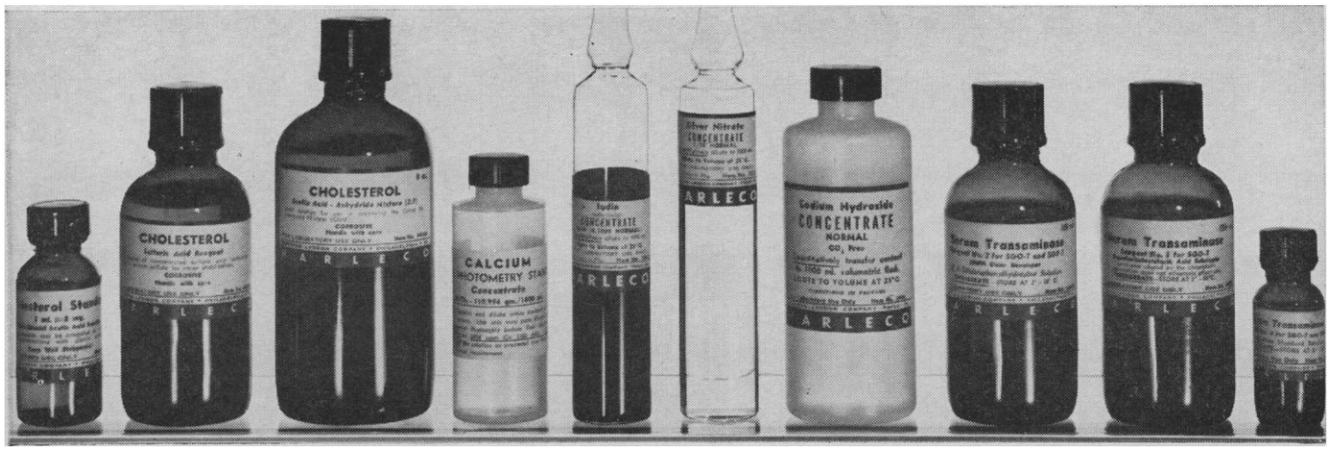

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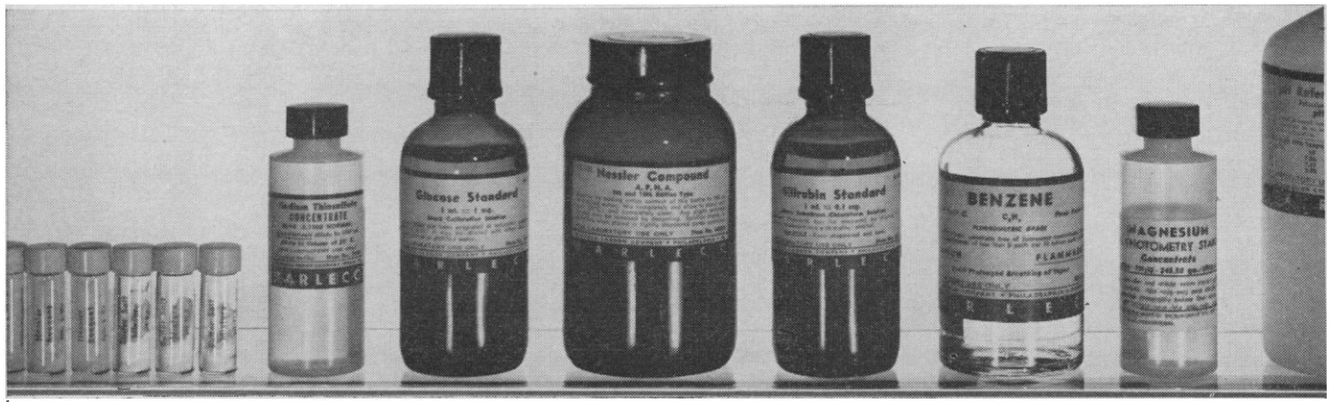

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about solar flares, solar activity in general, surface and atmospheric magnetic fields, and the important solar-terrestrial relations. Better understanding of all these is critical for the national space effort as well as other endeavors, including stellar and radio astronomy.

We do not wish to represent ourselves as spokesmen for solar astronomy, but, since that field has had no representation on the committee, we should like to suggest several directions for the national effort in solar astronomy which would help satisfy critical needs. In our opinion three important points are: graduate teaching, construction of medium-size instruments, and site testing.

1) There is only one full program training Ph.D.'s in solar astronomy today; two other schools train some of their students in more modest programs. Many graduate schools teach no courses in solar astronomy at all. We daily receive requests for Ph.D.'s in solar astronomy which we simply cannot fill. The space program has made especially heavy demands on our meager supply of solar astronomers.

2) There is a particular need in solar astronomy for instruments in the 10- to 15-inch aperture class, both for research and instruction. Not one such instrument has been built in the United States since 1954.

3) A good observing site is of particular importance for solar astronomy because of the extreme variability of daytime seeing. No existing solar observatory has been located as a result of an exhaustive site survey; the Kitt Peak National Observatory, for instance, was chosen as the result of a hunt for a site for night-time observations. Great rewards would certainly be realized from a thorough search for an ideal solar observatory site.

We hope that the virtual absence of comment on solar astronomy in the Whitford Report will not impede efforts to solve such problems.

ROBERT HOWARD
ROBERT LEIGHTON
HAROLD ZIRIN
Mount Wilson and Palomar Observatories, Pasadena, California

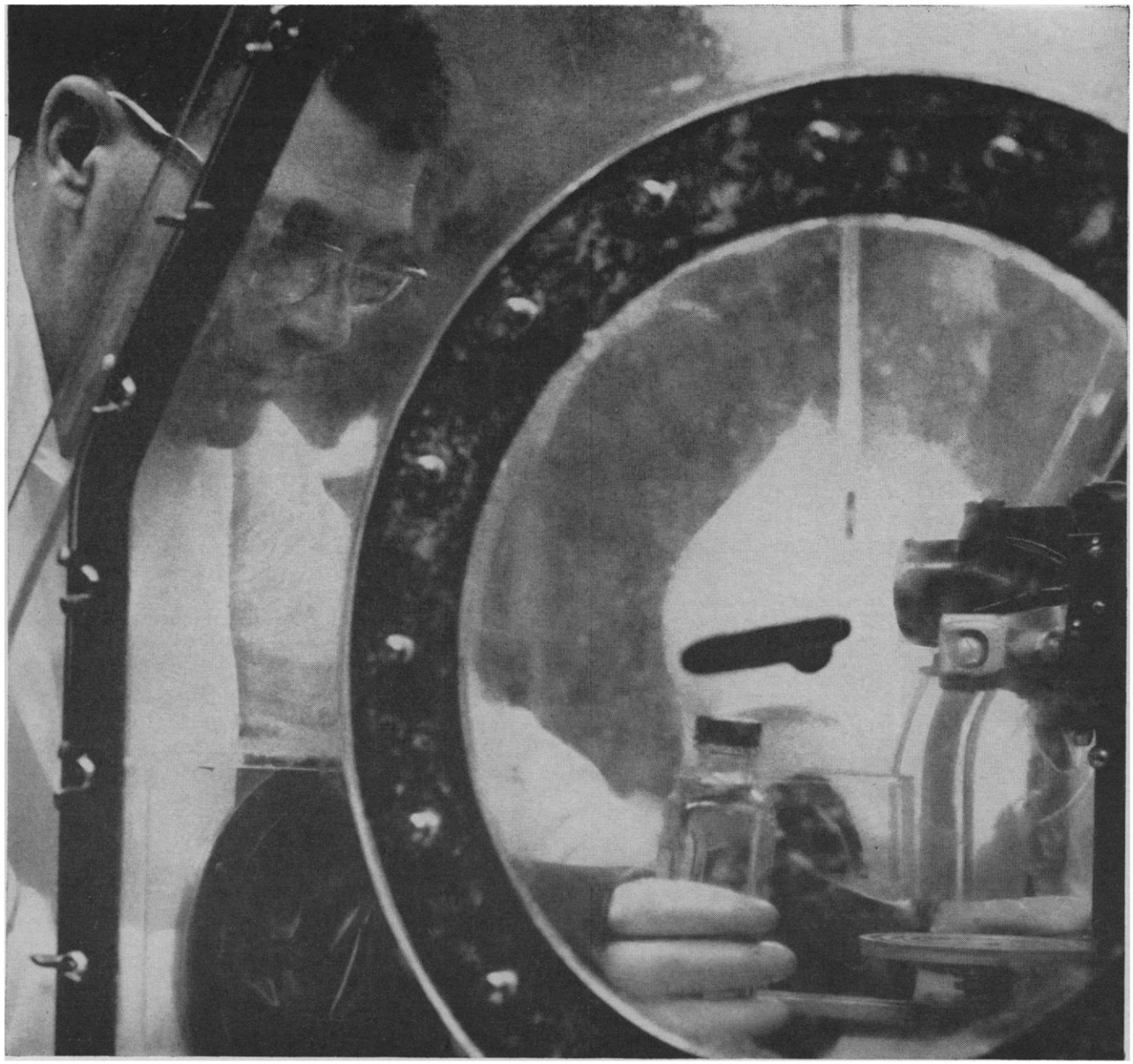
The members of the Panel on Astronomical Facilities had hoped that its report would stir up vigorous discussion, both among working astronomers and among university and government administrators. The foregoing letter may therefore be welcomed as a very proper statement of one group's position that the needs of solar astronomy were slighted in the report. I should like to point out, however, that the lack of positive recommendations regarding solar astronomy was not entirely the result of the makeup of the panel or its insensitivity to the needs of this sector of the astronomical community. The solar astronomer who was a member of the Committee on Science and Public Policy of the National Academy of Sciences, which established the panel, met with the group during the sessions when the basic positions were formulated. In the spring of 1963 the panel addressed a letter to every member of the American Astronomical Society inviting comments on new developments in ground-based astronomy and statements as to needed facilities. The response from solar astronomers in the United States was remarkably small and included no letters from the members of the Pasadena group which now thinks there is a clear need for instruments to meet the current upsurge of interest.

The panel was aware that any 10-year blueprint would be out of date in some respects on the day it was published, and that unforeseen developments would inevitably call for review or revision within two to five years. If other solar astronomers in the United States join the authors of the foregoing letter in the opinion that there is a case for support of instrumentation beyond the major facilities just completed or under construction (mentioned on page 39 of the report), it is to be hoped that some mechanism can be found for the formulation of a comprehensive statement to the scientific community setting forth current new directions in solar astronomy, the intrinsic interest of this field of research, and its relation to other branches of astronomy, physics, and geophysics.

Finally it may be pointed out that the solar astronomers suddenly required by the nation's space effort cannot be generated simply by the granting of funds to universities to build instruments for solar research. Such instruments will come into being as a result of the specifically expressed needs of active groups of university-connected solar astronomers whose current research is already attracting the interest of graduate students.

A. E. WHITFORD
Lick Observatory, University of California, Mount Hamilton

Why Do Big Ideas Keep Coming From Castle?



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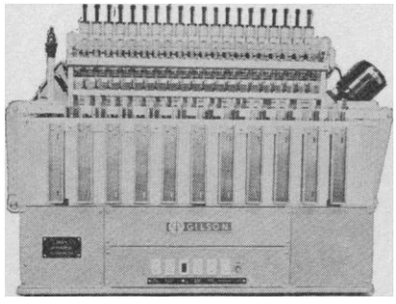

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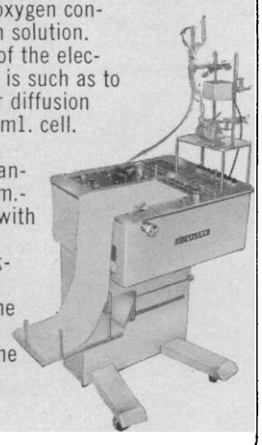

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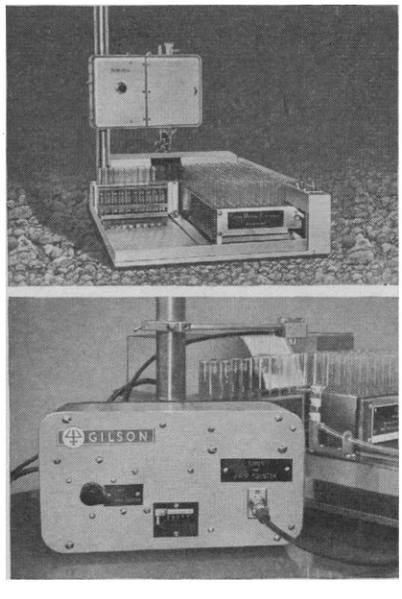

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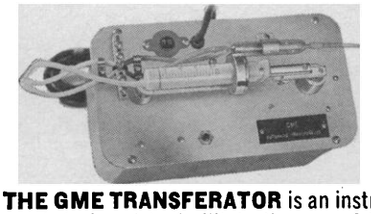

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5 March 1965, Volume 147, Number 3662

SCIENCE

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Fields of Scholarship

Well over 100 congressmen have sponsored bills to establish a national foundation to support the humanities and the arts. The bills differ in some important respects, but in general they propose establishment of a new foundation, very similar to the National Science Foundation, that would support the humanities through grants, loans, scholarships, fellowships, and similar devices, and would support the performing and other arts, through matching grants to the states, by assisting nonprofit groups in the arts to produce or display meritorious artistic work that cannot be supported in other ways, and by related means. House and Senate committees have started to hold hearings on these bills, and the President and an array of executive agency leaders have spoken in their favor. Thus it would now seem to be a good working assumption that some such legislation will be enacted. The unexpected speed of action gives urgency to the problem of deciding upon the form of organization that will best serve higher education generally, as well as the fields directly concerned.

Science has benefited greatly from government support, but one unfortunate, and quite unintended, outcome of the methods used (a variety of federal agencies, each relying primarily upon individual project grants, and each often dealing directly with individual investigators) has been to encourage a shift in faculty loyalties away from the university and toward the government agencies and the organizations that serve individual fields of science. Although federal assistance to the humanities and the arts appears to be desirable, it seems likely that a new foundation to support work in these fields would be an additional move in the direction of separating the several fields of scholarship and would further erode the responsibilities of universities as integrated institutions.

One means of reversing this trend would be for the government to support all fields of university scholarship through a single foundation. This is not the intent of the proposed legislation, and there will surely be vigorous objections to the suggestions. Some scientists would not want the NSF to be "diluted" by being required to attend to all fields of scholarship. And some humanists would prefer even a small foundation of their own to being low man on the totem pole in a foundation devoted to the sciences and the humanities. Nevertheless, the sciences and the humanities are both parts of "the seamless web of learning" and, administratively, there are sufficient similarities in the problems of supporting scholarly work in all fields, and sufficient differences between these problems and those of supporting a community orchestra, an art gallery, or a ballet, to suggest that the humanities belong with the sciences rather than with the performing and exhibition arts. Grants to universities, publication of results so that they become available to all workers in the field, close relations with teaching—these features characterize scholarly work in philosophy and history as well as in physics and physiology.

Plurality of support has advantages, and clearly there will continue to be a number of federal agencies that support work in the nation's universities. But if the federal government is now prepared to support scholarly work in the humanities as it does in the sciences, there is an opportunity that did not exist when the NSF was established: to create an agency to foster advanced scholarship and education of high quality, not by segments but in their totality.—DAEL WOLFLE

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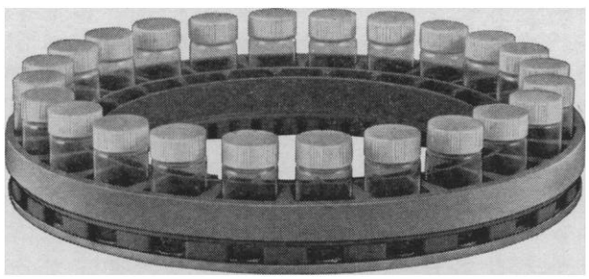

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SAMPLE		TIME	COUNTS			COUNTS PER TIME			QUENCH DETERMINATION		
DESCRIPTION	NO.	MIN-SEC	RED	GREEN	BLUE	RED	GREEN	BLUE	R/G AUTO STD G/R	R/B AUTO STD B/R	G/B AUTO STD B/G
	12101	2.000	41538	24	36	20769	12	18	62353	83144	90110
	12102	2.000	6188	41878	46	3094	20939	23	45104	101749	90748
	12103	2.000	20	10	30	10	5	15	42100	83299	93189
	12104	.130	32154	100000	5	247338	769230	38	276837	837960	76285
	12105	.131	40812	100000	1	311541	763358	7	344852	841846	67970
	12106	.857	100000	38	10	116686	44	11	161607	94408	73570
	12107	2.000	36012	80	38	68006	40	19	111940	92526	68941
	12108	2.000	48594	126	16	24297	63	8	71024	97008	64811
	12109	2.000	54756	136844	32	27378	68422	16	77093	175075	64798
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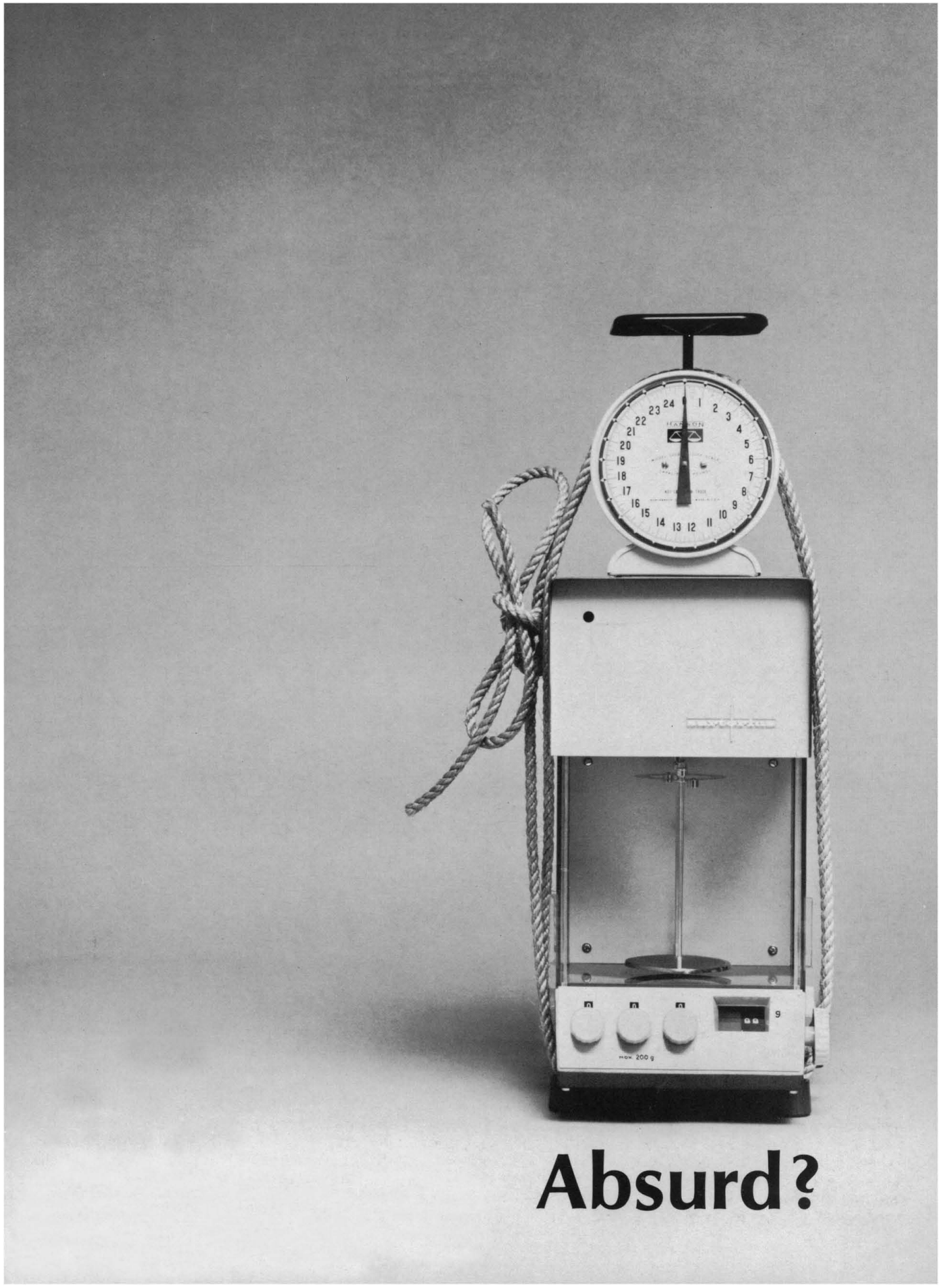

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WEIGHS ANY SAMPLE IN TEN SECONDS OR LESS

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Moving the release lever into what is normally the half-release position activates the torsion system, giving you instantaneous weight to the nearest gram. (Fig. 1) Then dial in this macro-weight, switch to the full release position (knife edge) and read the weight to 0.1 mg. on the optical scale. (Fig. 2) Weighing even a totally unknown sample takes 10 seconds or less. When used for fast coarse-weighing only, the second stage is eliminated.

OTHER SIGNIFICANT ADVANTAGES

Model 2642 has another exclusive advantage—maximum protection for the knives and bearings—still the most critical components of any analytical balance. A load (weight) is never applied to the beam when the knives are on the bearings, unlike all other currently available balances. And as with every Sartorius Analytical Balance, there is a 1000 mg. optical range with full digital readout to 0.1 mg.; easy-to-operate table-level controls; pan, scale, and controls in a single field of view; convenient dual release levers on both sides of the housing; a more accessible weighing chamber with a completely smooth base plate for simpler cleaning. Stainless steel weighing boat and matching tare ring are provided for taring up to 20 grams.

Fig. 1—Macro reading: 14.0 grams plus

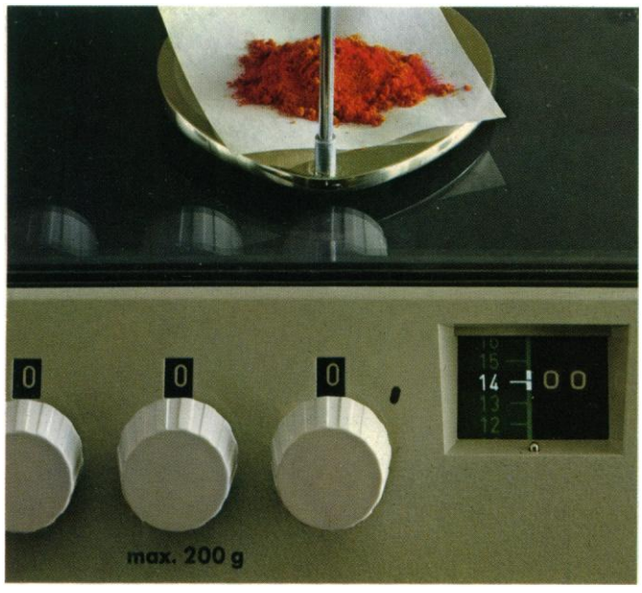
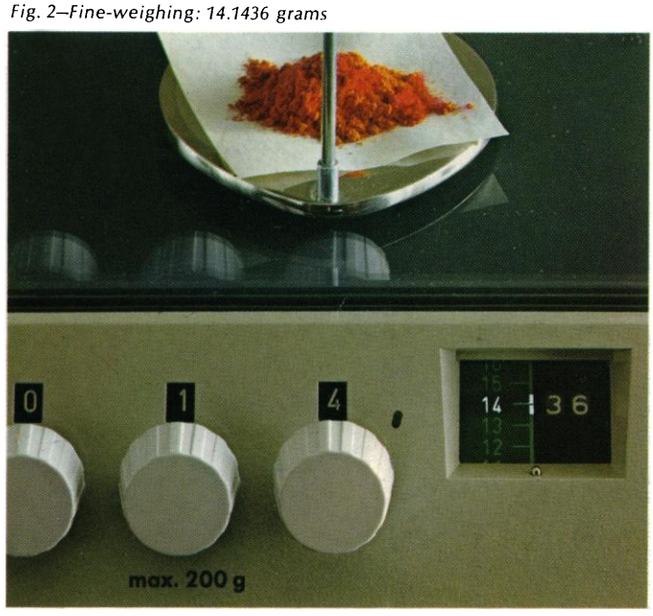


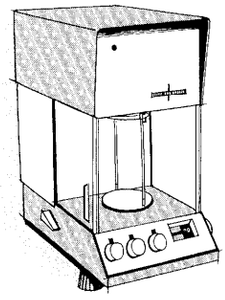
Fig. 2—Fine-weighing: 14.1436 grams



sartorius model 2642

There is a Sartorius weighing instrument for every laboratory need

THE FINEST QUALITY ANALYTICAL BALANCES AVAILABLE TODAY

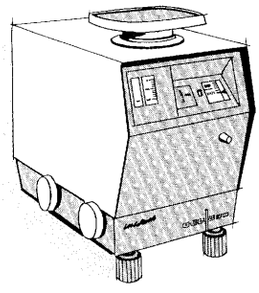


2600 Series Research Balances

Single pan, built-in weights, digital reading with counter for last two places, aluminum housing.

	2602	2603	2604
Capacity (*)	220 g	150 g	120 g
Tare Range	20 g	50 g	20 g
Optical Range	1 g	1 g	100 mg
Readability (digital)	0.1 mg	0.1 mg	0.01 mg
Reproducibilty	±0.05 mg	±0.05 mg	±0.01 mg

(*) Capacity with standard tare. Mechanical capacity (built-in weights) is without tare.



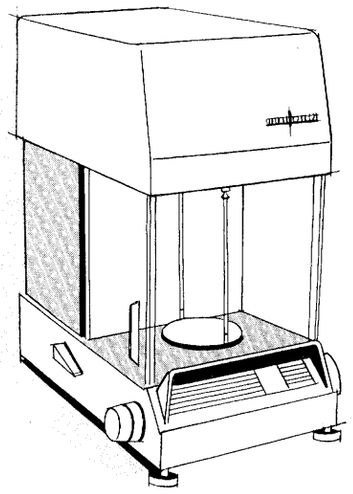
FOR THE MOST RAPID, CONVENIENT COARSE-WEIGHING

2100 top pan balances

Feature exclusive tare indicator plus loading scale, magnetic damping, large optical readout and built-in weights.

	2103	2113	2106	2116	2118
Capacity (without tare)	3000 g	3000 g	1000 g	1000 g	160 g
Tare Range	–	500 g	–	100 g	10 g
Optical Range	1000 g	1000 g	100 g	100 g	10 g
Scale Division	1 g	1 g	0.1 g	0.1 g	0.01 g
Readability (1/5 scale div.)	0.2 g	0.2 g	0.02 g	0.02 g	0.002 g

SERVICEABLE LOW-PRICED ANALYTICAL BALANCES FOR EDUCATIONAL AND GENERAL LABORATORY USE



2400 Series Laboratory Balances

Single pan, built-in weights, digital reading, plastic housing – low cost (from $525) has made these balances especially popular with smaller laboratories, schools, and colleges.

Manual Taring Models

	2401	2402	2403	2405	2408
Capacity (max.)	220 g	220 g	150 g	150 g	220 g
Built-in Weights	10-190 g	1-199 g	1-99 g	10-90 g	1-199 g
Optical Range	10 g	1 g	1 g	10 g	1 g
Readability (digital)	1 mg	0.1 mg	0.1 mg	1 mg	*
Reproducibility	±0.3 mg	±0.05 mg	±0.05 mg	±0.3 mg	±0.3 mg

*Estimate 1/10 optical division = 1 mg

Mechanical Taring Models

	2401-T	2402-T	2403-T
Capacity (max.)	220 g	220 g	150 g
Built-in Weights	10-190 g	1-199 g	1-99 g
Optical Range	10 g	1 g	1 g
Mechanical Tare Range	10 g	1 g	1 g
Readability (digital)	1 mg	0.1 mg	0.1 mg
Reproducibility	±0.3 mg	±0.05 mg	+0.05 mg

sartorius

Brinkmann Instruments, Inc., Cantiague Road, Westbury, L. I., New York 11590

Please send me additional information concerning:

☐ Series 2400 Laboratory Balances ☐ Series 2100 Top Pan Balances

☐ Series 2600 Research Balances ☐ 2642 Rapid Pre-Weighing Balance

☐ I would be interested in having a demonstration of the Sartorius Model_____ in my laboratory.

Name_____

Position or Title_____

Address_____

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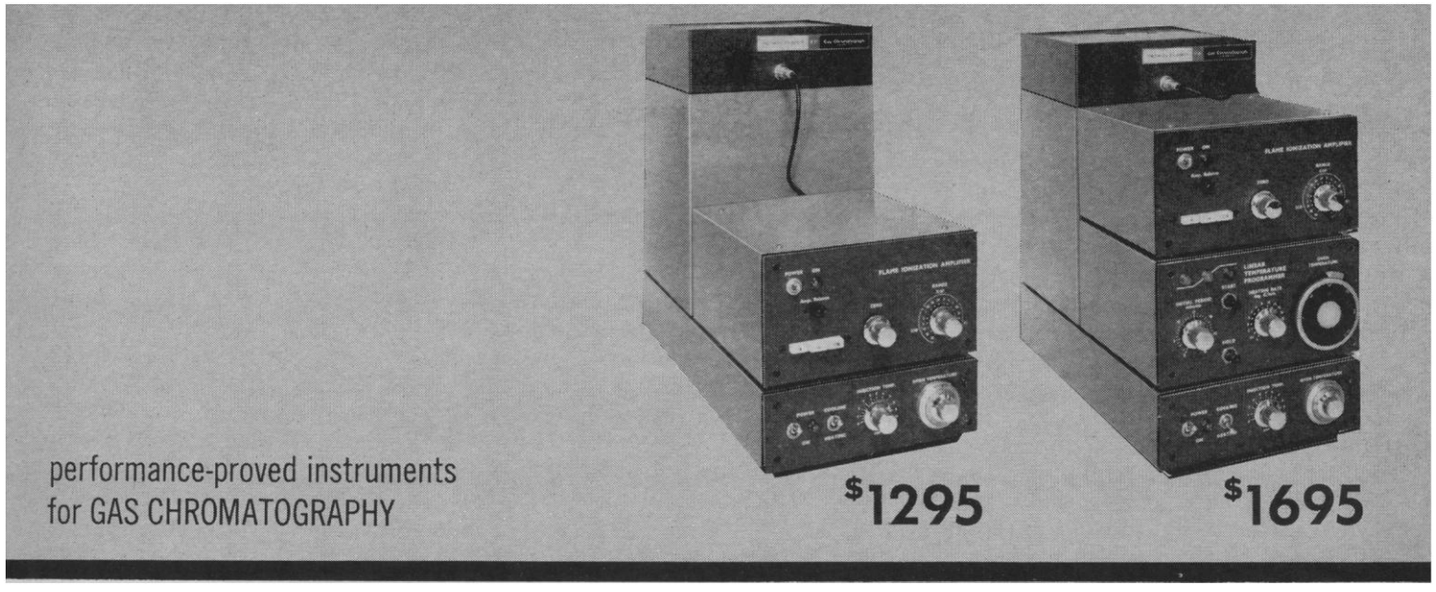
For more complete information please fill out and return this coupon— or write us a postal card



YOUR NEXT GAS CHROMATOGRAPH –THE PERKIN-ELMER MODEL F-11

Compact in size and low in cost, the new Perkin-Elmer Model F-11 Gas Chromatograph offers basic laboratory versatility with features found only in instruments costing much more.

With fully proportional temperature control to 0.1°C, flame ionization detector, and packed or capillary columns, the instrument is priced at $1,295. Add to these the linear temperature programmer and the price is only $1,695.

For ordering information, write Perkin-Elmer Corporation, 723 Main Avenue, Norwalk, Connecticut.

(Prices subject to change without notice.)

of Gordon M. Barrow (Case), Robert C. Brasted (Minnesota), David N. Hume (M.I.T.), L. Carrol King (Northwestern), Leonard K. Nash (Harvard), and Charles C. Price (Pennsylvania), and the Japanese were Shizuo Fujiwara, Taro Hayashi, Teruichiro Kubo, Tamon Matsuura, Hiroshi Minato, Takashi Mukaibo, Ryohei Oda, Hisateru Okuno, Kengo Shiomi, Matsuji Takebayashi, and Bun-ichi Tamamushi; they represented various fields of chemistry as well as various kinds of institutions.

B. TAMAMUSHI
Tokyo Woman's Christian College, Tokyo, Japan

Medicine in the Year 2000

By the end of this century academic and nonacademic medicine will be confronted with a variety of problems related not only to medical care, research, and education, but also to sociology, urban planning, data processing, and architecture. Under the sponsorship of the University of Pennsylvania and the Merck, Sharp and Dohme Post-Graduate Program, the sixth annual conference on graduate medical education (Philadelphia, 3–4 December 1964) was devoted to speculation on the nature and solution of some of these problems.

To demonstrate that the 36 years between now and the beginning of the next century is sufficient time for tremendous changes to occur, Henry Tumen (University of Pennsylvania) reviewed the remarkable changes in the patterns of diseases which have occurred since 1928. However, he emphasized that diagnosis, treatment, and prevention must still depend upon the skill of the individual physician dealing with the individual patient, and he predicted that the need for complete knowledge of the individual patient will never be eliminated. His suggestion that the knowledge, effort, and interests of physicians must be related to the health of the community and, indeed, to human society as a whole was reinforced by Irving London (Albert Einstein Medical College, Yeshiva University), who eloquently predicted that clinical investigators in the year 2000 would have to know not only about the natural sciences but also about the social sciences, for physicians must be made to realize that Hygieia's concept of the fostering of health should be considered at least as important as Aesculapius's concept of the therapy of illness.

Otto Schmitt (University of Minnesota) predicted that by the year 2000 the development and use of conventional digital processing techniques will have reached a plateau and that expansion in data processing will be in the realm of development and production of computers, which will substitute the more natural "gray thinking processes" for the present artificial "black-white processes." Schmitt predicted that infallibility may be sacrificed for the sake of more memory and more hybrid and parallel logic. He also predicted that different data-processing equipment for pattern recognition and pattern discovery will be developed.

The status of the various classes of diseases in the year 2000 was the subject of much speculation. Seymour Kety (NIH) predicted that the number of mentally disturbed individuals and the public costs of their care will not be reduced but that there will be a shift from institutional care to individual care near the patient's home. By 2000, Kety predicted, the prevention of senile dementias resulting from arteriosclerosis and diminished blood flow may be a reality; many of the basic problems in mental retardation will still be unanswered; and, of major mental disorders, the depressive illnesses will be most nearly understood. In the discussion following Kety's talk, it was brought out that by 2000 there may be many more lay psychotherapists, who will carry out therapeutic procedures under the direction of medically trained psychiatrists.

In surveying the field of neoplastic diseases from Alley Oop's famous time capsule, Joseph Burchenal (Sloan-Kettering Cancer Institute) found that

> In the year 2000 cancer is no longer the serious problem it was in 1964 as attested to by the fact that many of the larger research institutes, which were devoted to the solution of the cancer problem, have in the past decade, 1990–2000, turned their interests to problems in degenerative diseases and mental illness. The progress since 1964 has been made in several areas: prevention; detection with the development by 1975 of a serum test to discover the preclinical stages of cancer and reagents which differentially stain cancer cells; surgery and radiation therapy; the development of chemotherapeutic agents, that attack specific types of cancer, which even in 1964 was recognized to be biochemically heterogeneous; and the greater knowledge of host defense mechanisms.

Robert Austrian (University of Pennsylvania) discussed the status of the infectious diseases in 2000, and Nathan Shock (NIH) pointed out that the problems of degenerative diseases are not identical to those of aging. Shock, Tumen, and Vincent Whitney (University of Pennsylvania) all pointed out that the number of persons over 65 will have jumped from the present 16.5 million to over 20 million by the turn of the century. Shock, however, did not suggest that there should be a new medical specialty of geriatrics but rather concluded that all physicians should be trained to care for the needs of the elderly and that the elderly patient should be considered both a diagnostic and therapeutic challenge. Like Kety, Shock believed that the great breakthrough will be in the advance in our knowledge of arteriosclerosis, which will allow, if not prevention, at least a slowing of the process. Shock, William Mellman (University of Pennsylvania), Irving London, and Robert Davies (University of Pennsylvania), spoke of ethical problems, which will become more acute as the use of artificial organs, transplants, and genetic knowledge becomes more widespread.

George Koelle (University of Pennsylvania) pointed out that the present environmental chemical hazards could be classified into air pollution from radioactive fallout, from nonradioactive fallout, and from metals and other contaminants; water and soil contamination by insecticides and herbicides; and drugs, cosmetics, and food additives. The major portion of his talk was concerned with the effects of insecticides and herbicides. Koelle suggested that by the year 2000, we may know the effects of chronic small doses of the insecticides and herbicides upon man and their relation to cirrhosis, sterility, teratogenesis, and neoplastic diseases. He believed that the writings of Rachel Carson, despite the criticisms which have been heaped upon them, should not go unheeded and that there should be adequate legislative controls against indiscriminate mass spraying, together with the development of truly selective, safe poisons and biological controls. After reviewing human genetic disorders, Mellman pointed out that we will surely know more about the genes responsible for human variation in the year 2000 and that this knowledge should permit us to further manipulate the process of natural selection, making it essential that the physician consider the ethical problems, not only of who shall live and who shall die, but also of who shall be born. The problems confronting man in his journeys into space and under the water were reviewed by George Ruff (University of Pennsylvania) and Hermann Rahn (State University of New York, Buffalo), respectively.

The discussion following talks about the training of the physician and the nature of clinical investigation in the year 2000 by Dewitt Stetten, Jr. (Rutgers), and Irving London was lively. Stetten predicted that there would be a greater number of women in medicine. London believed that the family physician would come from the ranks of the general internist and pediatrician and that the number of internships may decrease as only those internships dedicated to training will be retained. Both Stetten and London predicted that in the year 2000 there will be closer association between medical schools and universities. Robert Mitchell (University of Pennsylvania) concurred with Whitney's population profile for the year 2000, which indicated that our ways of living would change with respect to hours of work and leisure and distribution of income among the population. As a result he predicted that one or more completely new transportation systems will overlay those systems which seem so modern today, and in discussing the logistics of getting patients and physicians together, he pointed out that a transportation system must have individual flexibility, appropriate speed, and adequate safeguards against accidents. Some of the systems which are technically possible even now are freeways with vehicles electronically controlled with regard to destination and spacing; trains which operate a fraction of an inch above steel rails on air pads, capable of making the 90-mile (144-km) run between New York and Philadelphia in 38 minutes; vertical and short take-off and landing aircraft; hydrofoil and air cushion transit over water; the separation of kinds of traffic, vehicular from pedestrian and passenger vehicles from goods vehicles; moving sidewalks and Carveyors, where small automated cars move on a grade-separated system at an average of 15 miles per hour and passengers can enter or leave the transit cars by stepping from a parallel slow-speed belt at stations.

In discussing hospital building in the year 2000, Louis Kahn (University of

Pennsylvania) expressed the opinion that a hospital should be recognizably different from all other types of structures and illustrated some of his ideas by pointing out characteristics of buildings being constructed at the Salk Institute at San Diego, California, and in Karachi, Pakistan.

In pointing out that one must "distinguish the inevitable from the circumstantial," Kahn could well have been speaking of what must be done in the field of medical care, as Osler Peterson (Harvard) pointed out the alternative courses which this country may follow with regard to who will be treating the patients and who will be paying the bills for medical care and medical education in the year 2000.

In summarizing what he believes will be the relation of biology, medicine, and society in the year 2000, Robert Davies described several genetic and eugenic experiments which are now being carried out in subhuman species. Two examples of such experiments are those dealing with the viability of bull sperm, which has been kept in the frozen state for years, and the rapid establishment of good stock in remote regions. The latter experiments involved air transportation of rabbits, into which fertilized ova of a highly desirable strain of sheep had been transplanted. On arrival, the fertilized sheep ova were then transplanted into sheep of a less desirable strain, thereby establishing, in a short time, a flock of sheep with highly desirable characteristics.

The consensus was that the conference served the purpose for which it was organized, that is, to focus attention upon and discuss the problems in medicine which might be present at the beginning of the 21st century because of the thoughts and actions in 1964 of physicians and those responsible for the training of physicians.

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Division of Graduate Medicine,
University of Pennsylvania
Medical School, Philadelphia

Forthcoming Events

March

9–10. **Arms Control**, first West Coast conf., Los Angeles, Calif. (R. D. DeLauer, TRW Space Technology Laboratories, Redondo Beach, Calif.)

9–11. **Wildlife Management** Inst., Las Vegas, Nev. (C. R. Gutermuth, 709 Wire Bldg., Washington, D.C.)

10–12. **Particle Accelerator**, conf., Washington, D.C. (R. S. Livingston, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

13. Experimental Basis for the Current Management of **Portal Hypertension**, Philadelphia, Pa. (B. Sigel, Woman's Medical College of Pennsylvania, 3300 Henry Ave., Philadelphia 19129)

13–18. **Proctology**, 17th annual teaching seminar, New Orleans, La. (A. J. Cantor, 147-41 Stanford Ave., Flushing, L.I., N.Y. 11355)

14–16. Society for the Study of **Development and Growth**, southeastern regional, Univ. of Georgia, Athens. (D. T. Lindsay, Dept. of Zoology, Univ. of Georgia, Athens 30601)

15–17. **Plant Protection**, 2nd intern. conf., Naples, Italy. (Intern. Anti-Parasitic Centre, Via Barberini, 86, Rome, Italy)

15–17. **Solar Energy** Soc., intern. symp., Phoenix, Ariz. (SES, Arizona State Univ., Tempe 85281)

17–19. **Instrumentation** in the Iron and Steel Industry, 15th natl. conf., Pittsburgh, Pa. (R. P. Trauterman, Allegheny-Ludlum Steel Corp. Research Center, Alabama Ave., Backenridge, Pa.)

17–20. **Medical Schools and Teaching Hospitals**: Curriculum, Programming and Planning, New York Acad. of Sciences, New York, N.Y. (NYAS, 2 E. 63 St., New York 10021)

17–20. American **Orthopsychiatric** Assoc., New York, N.Y. (E. Harrison, 477 FDR Drive, New York, N.Y.)

18. American **Vacuum** Soc., midwestern section, Houston, Tex. (J. H. Kimzey, Manned Spacecraft Center, 2101 Webster-Seabrook Rd., Houston 77058)

18–19. **Zinc Metabolism**, symp., Detroit, Mich. (A. S. Prasad, School of Medicine, Wayne State Univ., Detroit 48207)

18–20. **Michigan Acad.** of Science, Arts, and Letters, Univ. of Michigan, Ann Arbor. (I. J. Cantrall, Museum of Zoology, Univ. of Michigan, Ann Arbor)

19–20. New York **Microscopical** Soc., biennial symp., New York, N.Y. (T. G. Rochow, American Cyanamid Co., Room 467A, Stamford, Conn. 06904)

19–20. British Assoc. of **Physical Medicine**, annual, London, England. (J. P. Mitchell, 21 St. John St., Manchester 3, England)

19–21. American Soc. of **Internal Medicine**, Chicago, Ill. (A. V. Whitehall, 3410 Geary Blvd., San Francisco, Calif.)

20. **Identification of Drugs and Poisons**, symp., Pharmaceutical Soc. of Great Britain, London. (PSGB, 17 Bloomsbury Sq., London, W.C.1)

22–25. **Thermophysical Properties**, 3rd symp., Purdue Univ., Lafayette, Ind. (S. Gratch, Ford Motor Co., P.O. Box 2053, Dearborn, Mich. 48121)

22–26. **Medical Film**, intern. congr., Paris, France. (Dr. Beauchesne, 22, rue Micheli-du-Crest, Geneva, Switzerland)

22–26. Institute of **Electrical and Electronics Engineers**, intern. convention, New York, N.Y. (E. L. Harder, IEEE, Box A, Lenox Hill Station, New York 10021)

22–26. American College of **Physicians**, Chicago, Ill. (E. C. Rosenow, Jr., ACP, 4200 Pine St., Philadelphia, Pa. 19104)

22–26. Physics and Chemistry of **Fission**, symp., Salzburg, Austria. (J. H. Kane,

Intern. Conferences Branch, Div. of Special Projects, U.S. Atomic Energy Commission, Washington, D.C. 20545)

23–24. Progress in **Biochemistry and Therapeutics**, 2nd symp., New York, N.Y. (C. Neuberg Soc. for Intern. Scientific Relations, 600 Lafayette Ave., Brooklyn, N.Y. 11216)

23–25. **Asthma**, world conf., Eastbourne, England. (Secretary, Chest and Heart Assoc., Tavistock House North, Tavistock Sq., London, W.C.1, England)

24–26. Society of the **Plastics** Industry, 22nd conf., western section, Coronado, Calif. (SPI 611 S. Catalina, Los Angeles, Calif.)

24–26. National Federation of **Science Abstracting and Indexing Services**, Columbus, Ohio. (C. J. Wessel, Prevention of Deterioration Center, NAS–NRC, 2101 Constitution Ave., Washington, D.C.)

24–27. American **Physical** Soc., Kansas City, Mo. (R. G. Sachs, P.O. Box 344, Argonne, Ill. 60440)

24–27. Society for Research in **Child Development**, biennial, Minneapolis, Minn. (W. Hartup, Inst. for Child Development, Univ. of Minnesota, Minneapolis 55455)

25–26. Advances in **Tracer Methodology**, 10th symp., Zurich, Switzerland. (E. Landegren, New England Nuclear Corp., Ave. de Chailly 28 c, P.O. Box 31, Lausanne 12, Switzerland)

25–27. **Heart and Circulation in the Newborn and Infant**, Chicago, Ill. (D. E. Cassels, Chicago Heart Assoc., 22 W. Madison St., Chicago 60602)

25–27. Mid-Central States **Orthopaedic** Soc., 12th annual, Hot Springs, Ark. (Mrs. P. Lovan, 4101 Westport Lane, Wichita, Kan.)

26. **Marine Environment**, symp. and NDEA workshop, Fullerton, Calif. (M. D. Brown, Fullerton Junior College, Fullerton)

26–27. Association of **Industrial Medical Officers**, spring meeting, London, England. (Joint Secretariat, 47 Lincoln's Inn Fields, London W.C.2)

26–27. **Louisiana Acad.** of Sciences, Natchitoches. (S. M. Weathersby, Dept. of Zoology, Louisiana Polytechnic Inst., Ruston)

26–27. **Rural Health**, 18th natl. conf., Miami Beach, Fla. (B. L. Bible, 535 N. Dearborn St., Chicago, Ill. 60610)

26–2. **Rehabilitation**, natl. conf., Melbourne, Australia. (Intern. Soc. of Rehabilitation of the Disabled, 701 First Ave., New York, N.Y. 10017)

27–31. National **Science Teachers** Assoc., natl. convention, Denver, Colo. (NSTA, 1201 16th St., Washington, D.C. 20036)

27–3. **Developmental Biology**, U.S.–Japan Cooperative Science Program seminar, Tokyo, Japan. (Office of International Science Activities, National Science Foundation, 1951 Constitution Ave., NW, Washington, D.C.)

28. American College of **Apothecaries**, Inc., Detroit, Mich. (R. E. Abrams, Hamilton Court Hotel, 39th and Chestnut Sts., Philadelphia, Pa. 19104)

28–30. American Assoc. of **Colleges of Pharmacy**, Detroit, Mich. (C. W. Bliven, AACP, 1507 M St., NW, Washington, D.C. 20005)