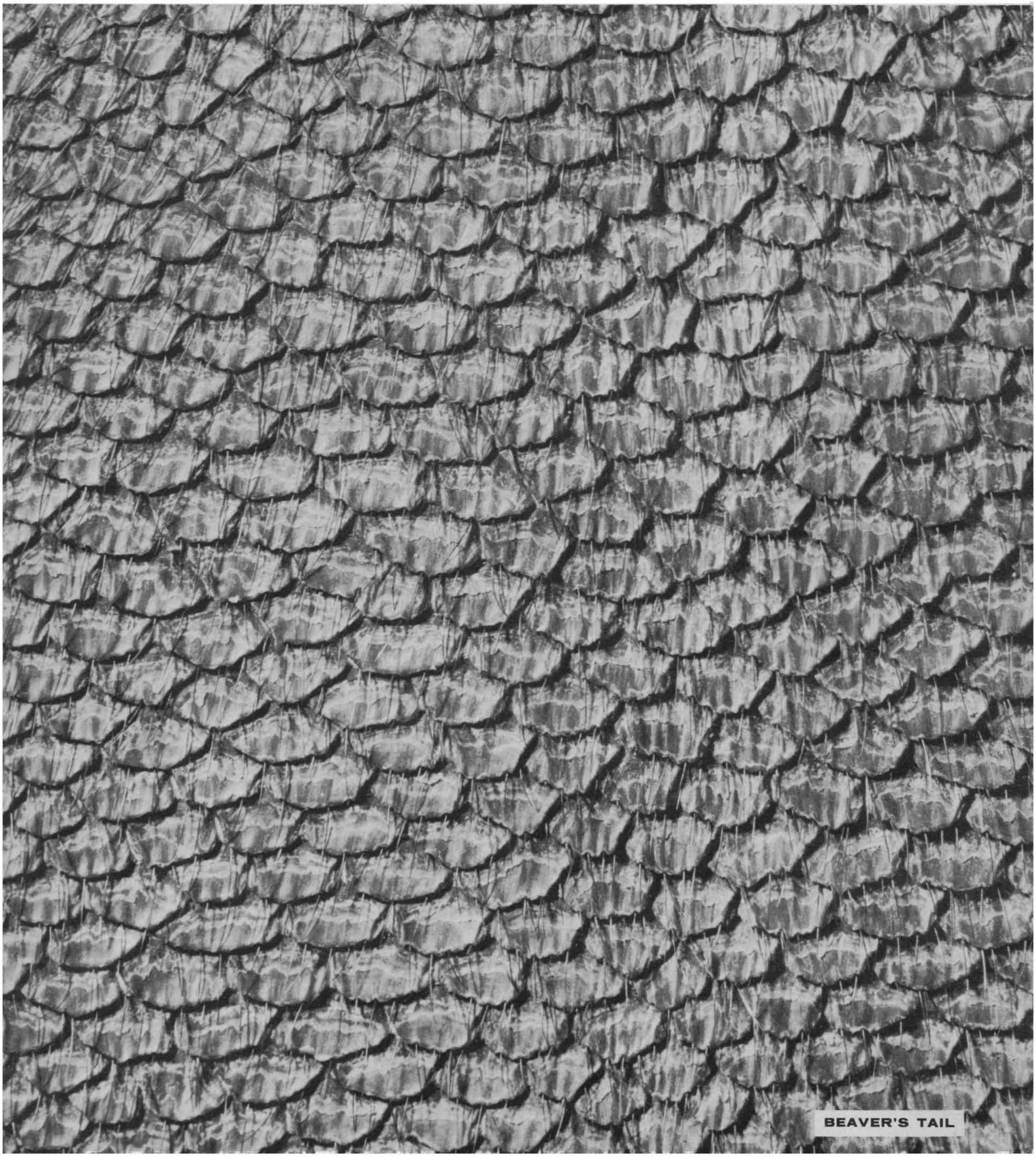
SCIENCE

20 September 1963

Vol. 141, No. 3586

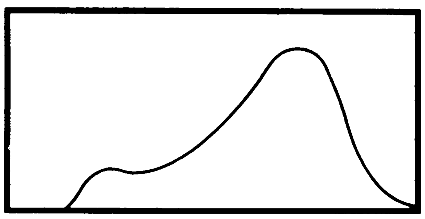
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



The Analytical Ultracentrifuge... *a review of some exciting new measurements*

The Analytical Ultracentrifuge has come a long way from its early days of simply photographing molecules as they sediment in high force fields. It now provides many of the highly sophisticated measurements needed in such rapidly advancing disciplines as biochemistry, biophysics, genetics and polymer chemistry. Three measurement areas are particularly active.

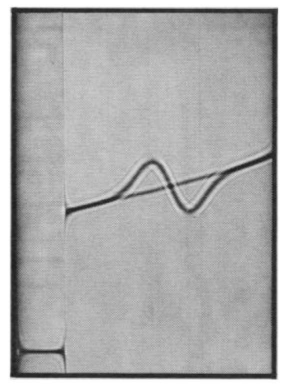
Interacting Systems The analysis of systems containing interacting components is the focus of considerable theoretical interest. An important contribution has been Gilbert's theory for reversibly interacting systems involving a single component. Systems of two components which react to form a complex also have been studied in detail. Bethune and Kegeles have applied a computer to analyze these systems as well as systems involving polymerization. Townend, Timasheff and co-workers have studied molecules which associate in aggregates as large as pentamers, and dissociate into sub-units. Others have examined isomerizing systems in which molecular interactions occur at speeds comparable to the time of separation of the molecular species. Both sedimentation and electrophoresis have provided important measurements in these studies.



Monomer-Trimer Equilibrium Forms Two Boundaries

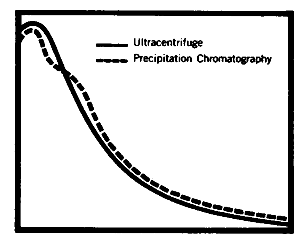
Density Gradients Now established as a powerful and sensitive method to study nucleic acids, equilibrium sedimentation in a density gradient is rapidly finding other uses. Ifft and Vinograd have used density gradients to calculate molecular weights for solvated macromolecules, and have studied in detail the behavior of a protein of known molecular weight in a density gradient. Hu, Bock and Halvorson through use of stable isotopes have distinguished between newly synthesized and pre-existing proteins in a cell-free system. Wales has used density gradients of organic solvents to study extremely small quantities of various synthetic polymers, and Hermans has used density gradients to analyze for molecular weight distribution and density distribution of polymers. Both the analytical ultracentrifuge with ultraviolet and schlieren optics, and the preparative unit with swinging bucket rotors are widely used in density gradient centrifugation.

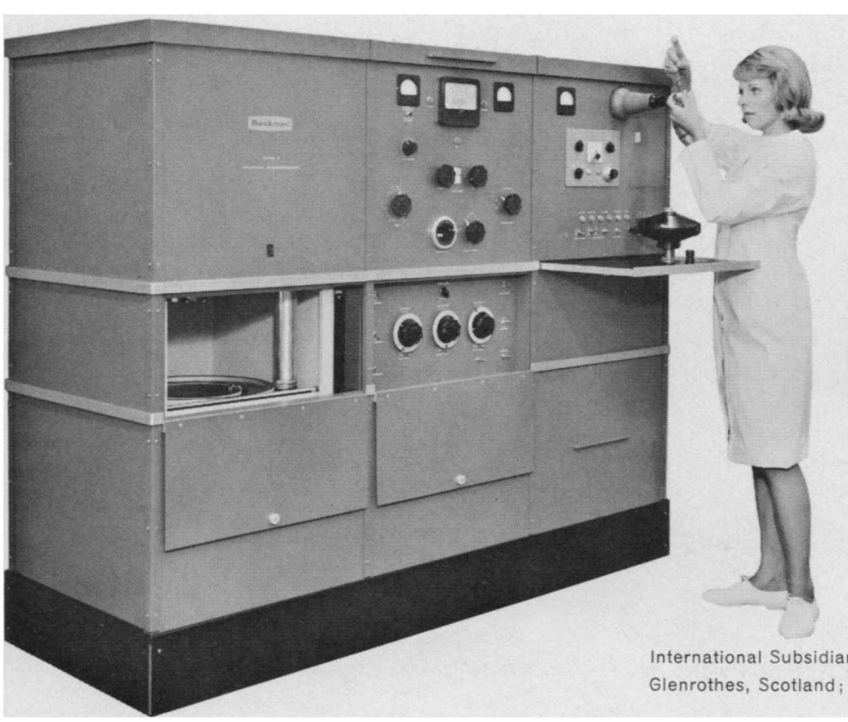
Schlieren Pattern of BMA at Sedimentation Equilibrium in a Density Gradient



Synthetic Polymers The two density gradient studies noted above are only part of the recent surge of research using the ultracentrifuge to study synthetic polymers in organic solvents. Important papers have been published by investigators at the National Bureau of Standards, Esso, Shell Development, Dow, and Chemstrand. Their work covers linear polyethylene, polystyrene, Hevea rubber, and cis-1, 4-polyisoprene. A particularly significant example is the study by Wales and Rehfeld showing excellent results in measuring molecular weight distributions from sedimentation velocity data, and demonstrating clearly that their method did not require calibration with fractions of known molecular weight.

Comparison of Data for Molecular Weight Distribution of Polystyrene





Such developments as these, together with up-to-date information on advances in the instrumentation itself, are reported regularly in our publication "Fractions" which is sent to owners of ultracentrifuges, electrophoresis-diffusion instruments, amino acid analyzers, and other Beckman biochemical instruments. If you would like a copy of "Fractions", we would be happy to send one to you. Please write Beckman Instruments, Inc., Spinco Division, Stanford Industrial Park, Palo Alto 5, Calif.

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SCIENCE

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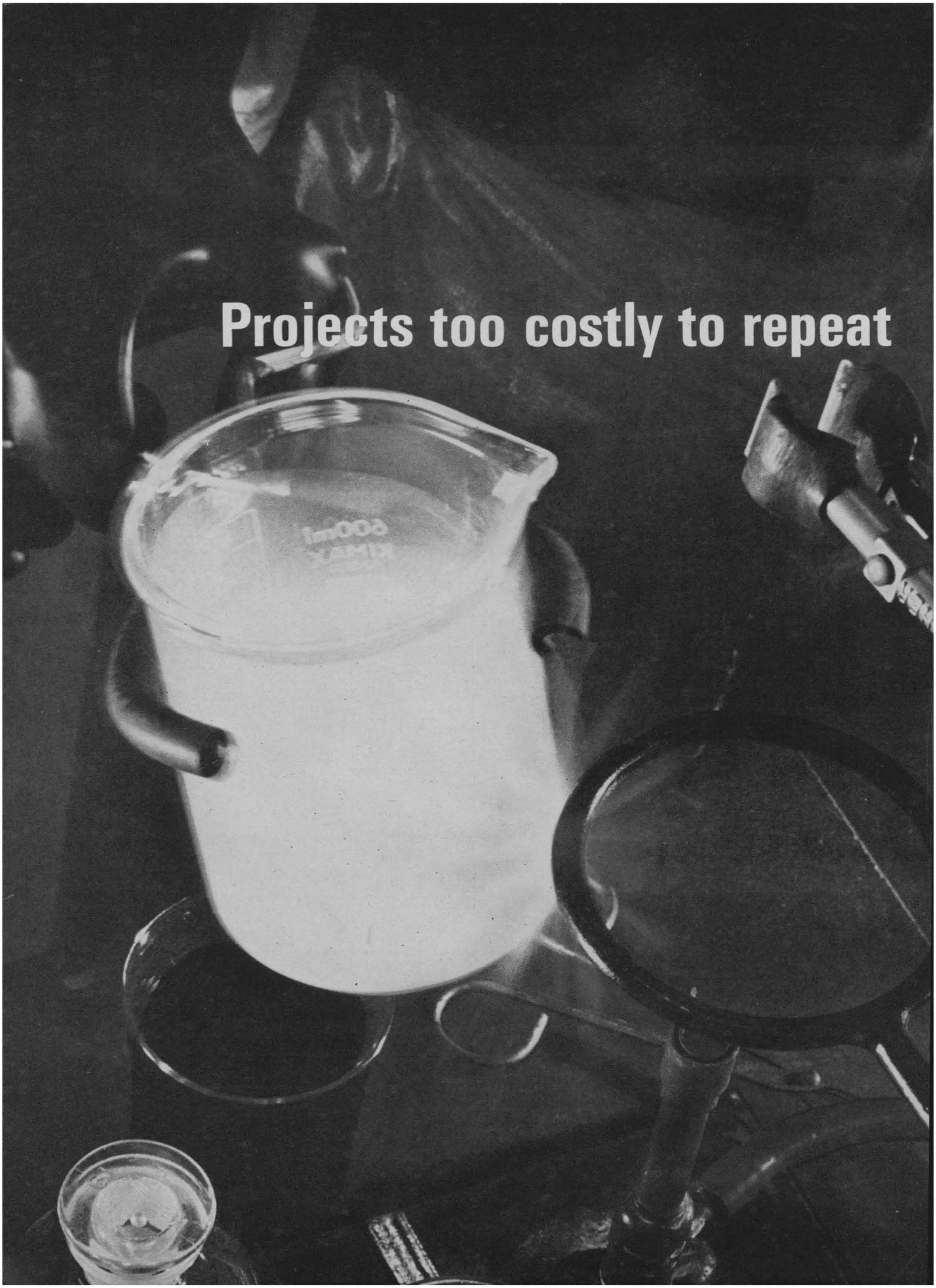
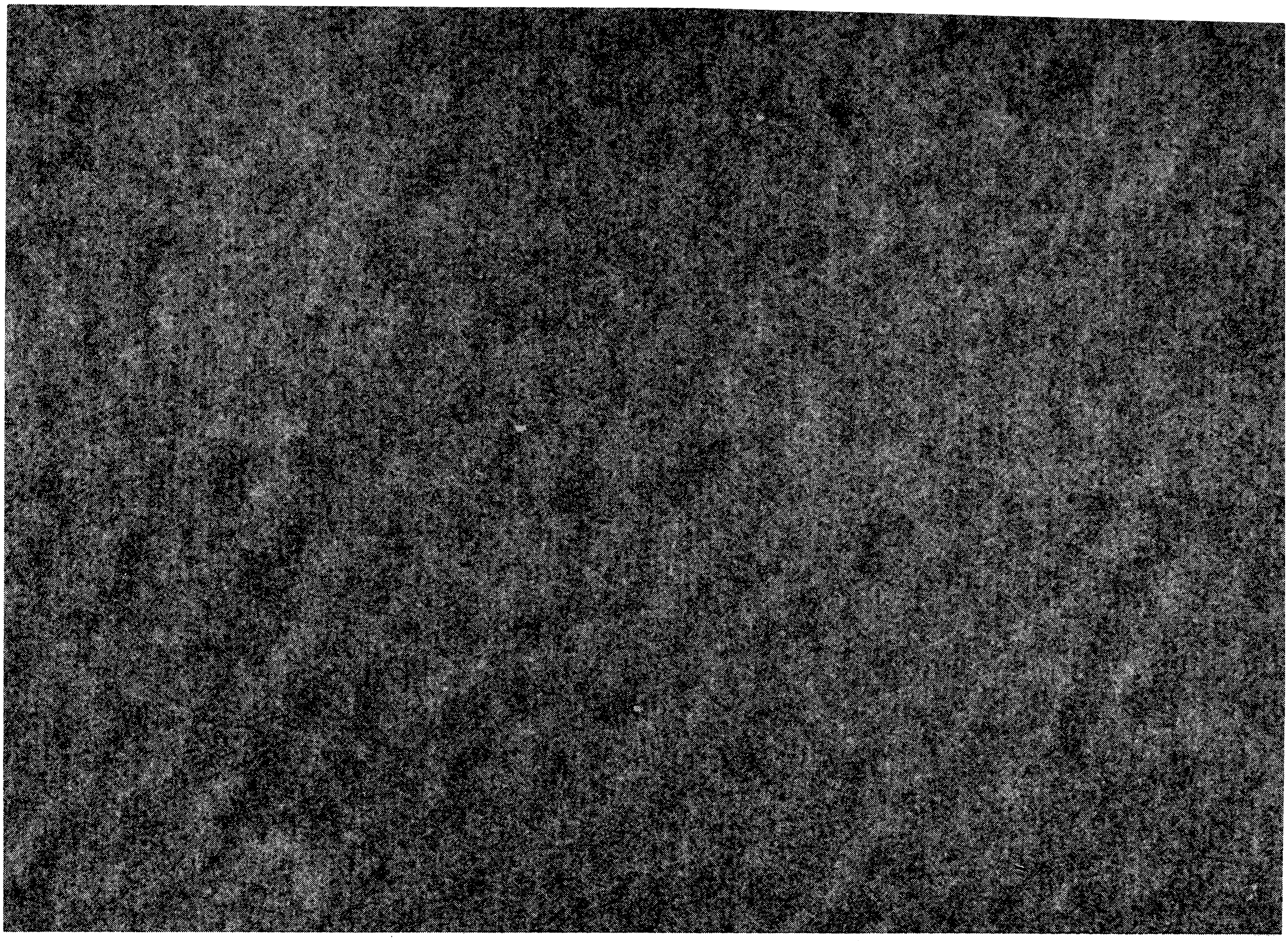
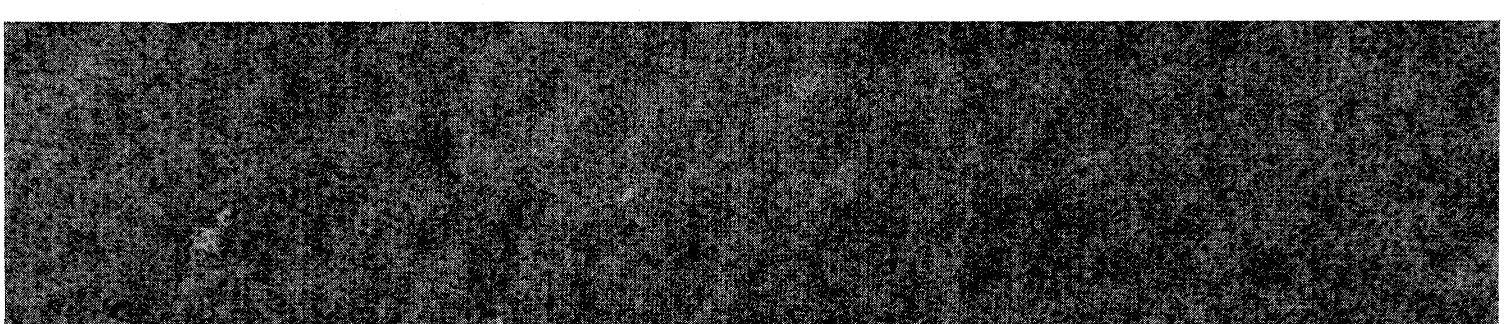
COVER

The dorsal surface of a beaver's tail (*Castor canadensis*). Scales occur on the bodies of relatively few mammals. See review of *The Mammals,* page 1168. [Jack Dermid]

Projects too costly to repeat







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CLEVELAND • 130th AAAS

Order Your General Program

It provides complete, detailed information about all the sessions and symposia scheduled, the Annual Exposition of Science and Industry, and the Science Theatre.

Program Highlights

Moving Frontiers of Science A. M. Gleason on nature and direction of current mathematical research; Gordon J. F. MacDonald on deep structure of continents and ocean basins; A. L. Schawlow on infrared optical masers; V. G. Dethier on biology of behavior.

Interdisciplinary Symposia AAAS day: Uses of lasers and masers; philosophical aspects of present-day cosmogony and cosmology; developmental aspects of immunity; biological and sociological research on the effects of human reproduction control; the federal government, science, and the universities.

Special Sessions AAAS Presidential Address by Paul Gross; the AAAS Distinguished Lecture by J. K. Galbraith; the Joint Address of Sigma Xi and Phi Beta Kappa by Paul Sears; the George Sarton Memorial Lecture by Hudson Hoagland; and the National Geographic Society Illustrated Lecture.

Other General Events Three-session symposium on Japanese science sponsored jointly by the Science Council of Japan and the AAAS. Two symposia sponsored by the Office of Economic and Statistical Studies of the National Science Foundation: Planning and administration of scientific research programs, and nontechnical aspects of instrumentation and equipment in research and development.

AAAS Committees Sessions of the Cooperative Committee on the Teaching of Science and Mathematics, the Committee on Science in the Promotion of Human Welfare, and perhaps others.

Sections and Societies The 20 AAAS Sections and some 70 participating societies are scheduling specialized symposia, and many have sessions for contributed papers.

Science Theatre The latest foreign and domestic films.

Exposition The Annual Exposition of Science and Industry is conveniently located adjacent to the Ballroom on the mezzanine of the Sheraton-Cleveland.

Advance Registration By registering in advance, you avoid delay at the Registration Center on arrival, you receive the *General Program* in time to plan your days at the meeting, and your name is posted in the Visible Directory of Registrants when the meeting opens.

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MEETING • 26-30 DECEMBER

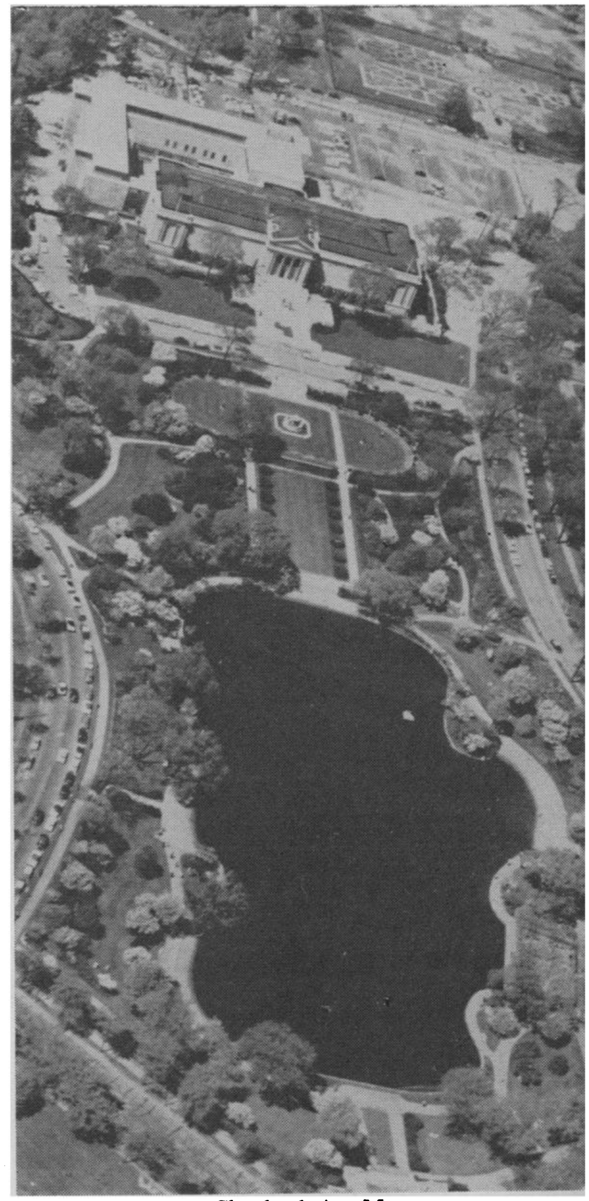
Reserve Your Hotel Room

Make sure you have the accommodations you prefer. A list of headquarters hotels of participating societies appears on page 280, 19 July, SCIENCE. The AAAS headquarters is the Sheraton-Cleveland.

The hotels for the AAAS Cleveland meeting have established special, low flat rates and have reserved large blocks of rooms for the meeting.

Use the coupon below to make your hotel reservation in Cleveland. Send your application to the AAAS Housing Bureau in Cleveland, not to any hotel. Give a definite date and estimated hour of arrival, and also probable date of departure. The Housing Bureau will make the assignment and send you a confirmation in two weeks or less.

A rollaway bed can be added to any room at $3.00 per night. Mail your application now to secure your first choice of accommodations.



Cleveland Art Museum

HOTEL RATES*
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

For a list of the headquarters of each participating society and section, see page 280, *Science*, 19 July.

Hotel	Single Bed	Double Bed	Twin Beds	Suites
Sheraton-Cleveland	$8.50	$14.00	$15.50	$33.00—$60.00
Statler-Hilton	8.50	14.00	15.50	28.00— 59.00
Manger	7.50	13.00	14.50	25.00— 35.00
Pick-Carter	7.50	13.00	14.50	32.50— 60.00
Auditorium	5.50—10.50	8.50—12.50	12.50—13.50	

* All rooms are subject to a 3% Ohio state sales tax.

AAAS Housing Bureau
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Please reserve the following accommodations for the 130th Meeting of the AAAS in Cleveland, 26–30 December 1963

First Choice Hotel .... Second Choice Hotel .... Third Choice Hotel ....

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Number in party..Sharing this room will be: ....

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....

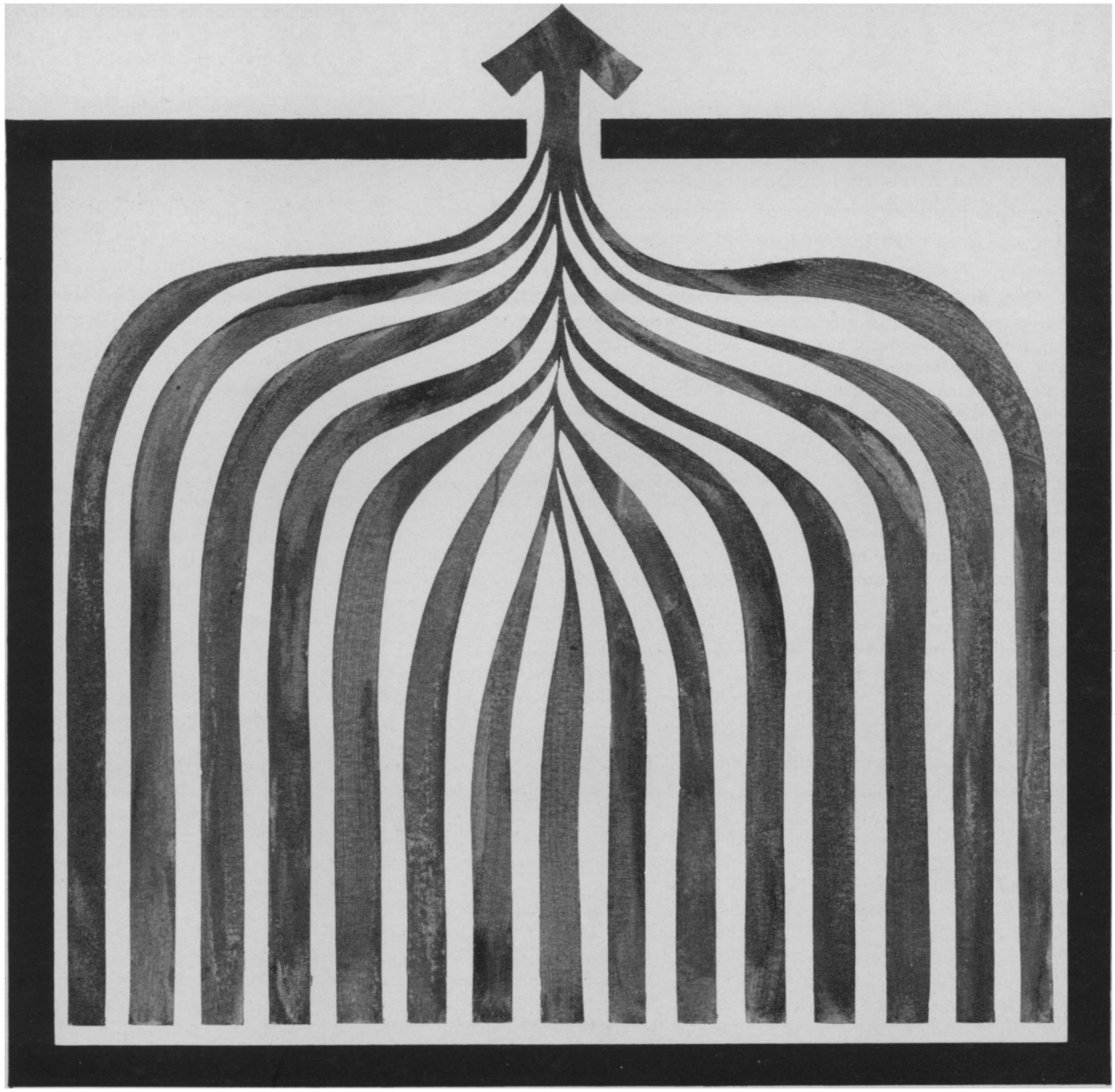
....

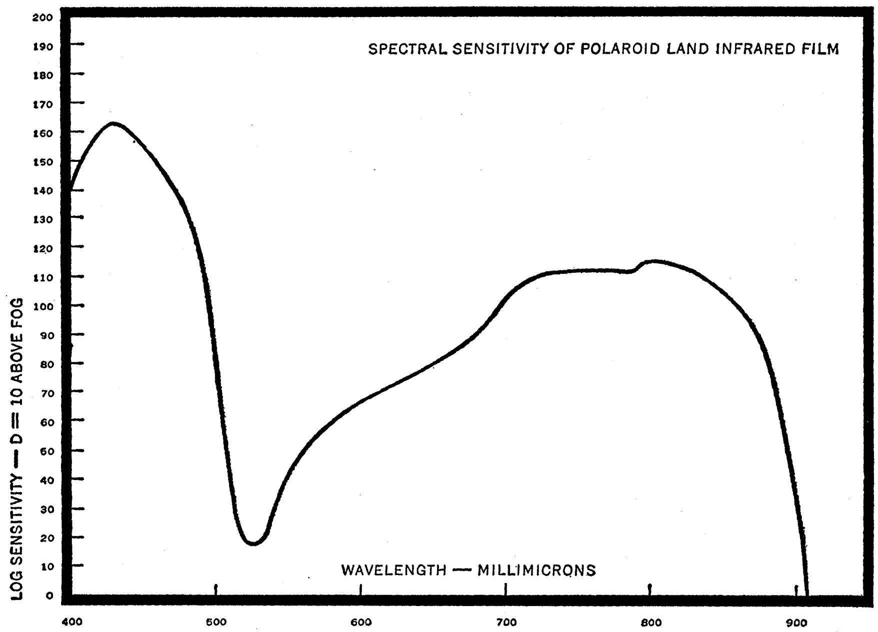
DATES: ARRIVAL .... A.M. ........P.M........DEPARTURE ....
(These must be indicated—add approximate hour, A.M. or P.M.)

NAME ....
(Individual requesting reservation) (Please print or type)

ADDRESS ....
(Street) (City) (State) (ZIP Code)

Mail this coupon now to the Housing Bureau. Rooms will be assigned and confirmed in order of receipt of reservation.





Polaroid Land Infrared Film

A limited quantity of experimental infrared film is now available from Polaroid Corporation. It fits all standard Land cameras and backs using 40-series film and produces a 3¼" x 4¼" print. Development time is 10 seconds, and there are 8 exposures to the roll.

This high-speed material has an ASA equivalent rating of 800 without a filter. With a No. 25 filter, it is 560; with a No. 87 filter it is 200. Contrast is greater than that of the familiar Polaroid Land roll films. The spectral range is illustrated above. Infrared sensitivity extends out to 9000 Å, peaking at about 8000 Å

Applications for this material may be found in laser photography, spectroscopy, heat pictures, medical photography, aerial photography, criminology and other fields.

The film is being offered for sale at this time to determine its potential. No guarantee can be made on future quantities and it will be sold on a first come, first served basis. Price is $5.00 per roll, FOB Needham, Massachusetts. Minimum order is 3 rolls. Order directly from Polaroid Corporation, Technical Sales Department, Cambridge 39, Massachusetts. Polaroid®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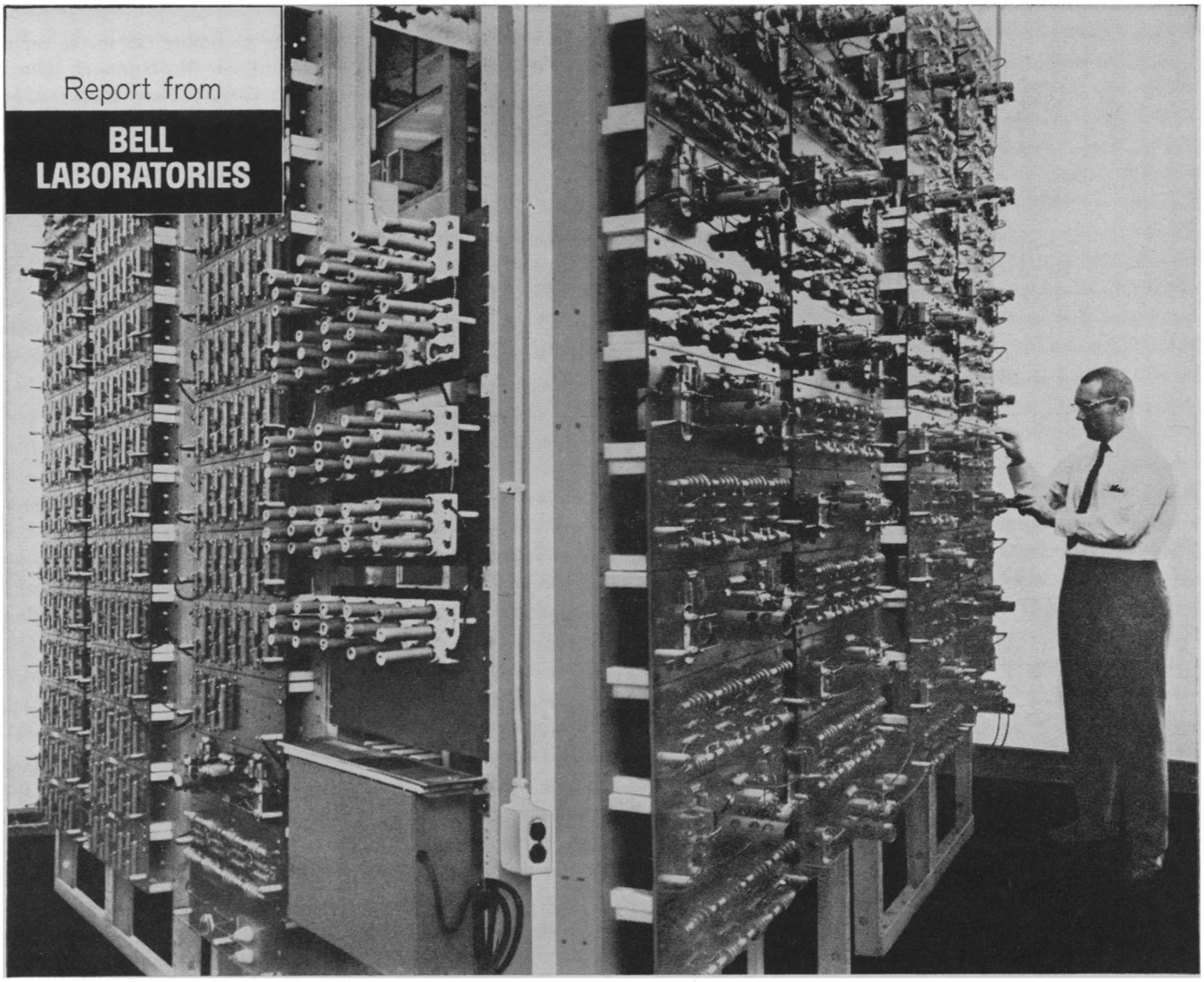

Engineer A. H. Evans measures the effect of voltage surges on Bell Laboratories' simulated undersea telephone cable. Simulating 180 amplifiers and 181 cable sections, with a total length of 3600 miles, the arrangement includes over 1100 electrical components. Photo merges two sides of the simulated cable so that both can be viewed at once.

THE UNDERSEA "CABLE" THAT NEVER GOES TO SEA

In undersea cable systems, electric power for the amplifiers is transmitted along the cable itself. To make this possible, precisely engineered circuits and devices must be designed into the system for protecting electron tubes and other components from sudden voltage surges which may result from accidental damage to the cable.

In systems such as these, the computation of the effects of such surges to establish the needed design parameters is extremely complex. Here, as in many other areas of our work, a solution to the problem has been found through electrical simulation.

Full-scale simulation is achieved by means of networks of electrical components. For the new 128-channel cable scheduled for transatlantic service this year, a network (above) was built to simulate the power path of a 3600-mile cable with its 180 amplifiers.

With the aid of this simulator, engineers can study the effects of voltage surges, the operation of electron tube protectors, and the performance of the power supply in the various contingencies that may occur in active service.

This study of unknown factors by means of electrical simulation is an example of how engineers at Bell Laboratories work to assure the performance and reliability of new communications systems before they are committed to service.

Bell Telephone Laboratories

World center of communications research and development

20 September 1963, Volume 141, Number 3586

SCIENCE

In Memory of . . .

Each year we receive a few letters asking us to contribute to a memorial trust that is being established to honor an eminent scholar or teacher. Occasionally someone writes proposing to use his own estate for this purpose. These letters always pose a problem: the man's memory deserves honor, but there is real question whether there will be effective handling of a fund that almost certainly will be small. If the income is to be used locally—for example, to support a lectureship or a scholarship at a particular institution—and if the management is centralized, as in a faculty committee at that institution, there is reason to hope that the fund will be effectively utilized. But if these conditions are not met, the management may be pretty casual and the income may not be used very effectively, or the time required for thoughtful management may be unreasonably great for the amount of money involved.

Twenty-odd years ago a former president of the AAAS established a trust fund to support research in the field in which he was particularly interested. The fund is small and not widely known. Its grants have therefore been subject to the variable quality and size of the requests received each year. The trustees have been conscientious, and much of the income has been used to carry out the donor's wishes. But in some years the trustees have not found work of suitable merit and character to support. Instead of frittering the money away on work of poor quality, they have in those years added some of the income to capital. This action has led to a new difficulty: the Internal Revenue Service has charged the fund with unreasonable accumulation of income and is threatening to remove its tax-exempt status. This situation may serve as a warning to those who accept responsibility for the management of other small trusts.

This particular trust has partly solved its problem in a fashion that may be of interest to the sponsors or trustees of other small memorial funds: by transferring income to the Sigma Xi–RESA Research Fund. That fund is widely known and thoughtfully administered. Its small grants ($100 to $2000) provide all fields of science with a kind of support that is not likely to be supplied by grants from government agencies or large private foundations. Sigma Xi would welcome additional monies for its Research Fund, and it has in fact recently increased its own contributions because the amount of money available annually has been insufficient to meet all the meritorious requests. The officers of Sigma Xi are willing to take over responsibility for other funds, either by accepting the entire trust or by making grants from annual income. The cost of selecting appropriate grantees and other administrative costs would be borne by Sigma Xi, so all of the income from a transferred fund would be used for research grants.

We commend the idea to those who are proposing to establish new memorial trusts and to those who are finding it difficult to use in satisfactorily constructive ways the income from existing funds of this character. Surely the man whose memory is being honored would want the fund that bears his name to be used as constructively as possible. Sigma Xi offers a convenient and respected means of achieving this end.—D.W.

In June we spent $336,450 for office furniture alone

Just to furnish the 33 new field offices we opened on July 1st. And that's only a portion of the investment necessary to bring you the industry's finest sales and service force. Your Beckman laboratory instrument team. What's more, 11 new stocking warehouses were established—each with a complete inventory—to guarantee you prompt delivery of any laboratory instrument. But investment is still only a portion of our total effort to satisfy your instrument needs. Call us and see.

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The series correlated well with the highest temperatures of the normal environment.

Ushakov described an interesting geographic study on populations of a frog collected over a range from northwestern Russia to central Asia. The populations at the western and eastern ends of the cline are clearly different in thermostability of muscles, those in the central region are intermediate. It is argued that cellular adaptations are important for natural selection only in gametes and that integrative adaptations are dominant in adult animals.

There was general agreement that the tolerance limits of intact animals are narrower than for cells studied in vitro. Also concurred upon was the concept shown by one of Ushakov's experiments with leeches. He postulated that there may be meaningful capacity adaptation of cholinesterase in muscle with no change in thermal tolerance of the enzyme after acclimation to different temperatures. Ushakov generalized that acclimatory changes result from "integrative" effects in whole animals, and that thermoresistance is a "conservative" character, not adaptive for cells. Prosser suggested that perhaps similar tests made on nerve cells might give results close to those with whole animals.

Because the survival-temperature curves for heat death are very steep (Q_{10} approaches 4), it is suggested that heat death of muscle may be due to protein denaturation. A possible explanation of the apparent lack of resistance adaptation in muscle may be that protein primary structure is strictly determined by the genotype, hence there can be no qualitative effects on protein structure induced by the environment. The effects induced by environment which do occur in cells of animals may be in capacity adaptation and may result from quantitative changes in various enzymes, that is, by induction, repression, and inhibition of alternate pathways, or from changes in cofactors, lipids, and so forth. There seems to be no clear case of a direct acclimation effect on primary structure of any cellular protein, and this is to be expected if all protein synthesis is genetically determined. The possibility of effects on tertiary structure is less clear.

That cellular capacity adaptation can occur was indicated by Precht (Germany) in experiments in which the anterior and posterior portions of an eel were cooled or warmed separately. Capacity adaptation in the sense of changes in oxygen consumption of muscle measured at intermediate temperatures occurred. Nervous acclimation was discussed by Prosser. In a report on hormonal factors in fish and earthworms Rao (India) noted a histological increase in height of cells secreting thyroid in Tilapia and inactivity of neurosecretory cells of a tropical earthworm when cold-acclimated. He also reported that body fluids from these cold-adapted animals stimulate oxygen consumption by isolated tissues of warm-adapted ones. The nature of such stimulating agents is unknown.

There were expectations that some vestige of Lysenkoism, in respect to cold adaptation, would be found, but Leningrad and Moscow groups seem to be going to extremes to prove that resistance adaptation in animals is genetic and that variation is fixed only by natural selection. When the question was raised in group discussions, a most emphatic denial of belief in Lysenko's theories was voiced. In fact, the Lysenkoists who are most active in the field of plant hardiness were not even included in the symposium. However, as recently as December 1962, a conference was held in Moscow on the problems of controlling heredity of farm crops.

It is apparent that in several fields Western biologists cannot neglect Soviet research. As an example, though reprints have been exchanged by the plant group for several years, a total of some three dozen new reprints and six books were presented to an American participant during the sessions. There is also an urgent need for more extensive translation of Russian articles.

The symposium was organized by the Institute of Cytology under the auspices of the Academy of Science of the U.S.S.R. with some support from UNESCO. Hospitality of the Soviet scientists to the foreign visitors was most generous and it was evident that there was a real thirst for information about the Western interpretation of research in the fields discussed. The general consensus was that more interchange between the U.S.S.R. and the United States is desirable.

JACOB LEVITT
University of Missouri, Columbia
H. T. MERYMAN
Navy Medical Research Institute, Bethesda, Maryland
C. L. PROSSER
University of Illinois, Urbana

Social Anthropology: Models, Political Systems, Religion, and Urbanization

The relevance of models for social anthropology, political systems and the distribution of power, modern approaches to the study of religion, and the social anthropology of complex urban societies were the chief new developments discussed at a joint Anglo-American meeting of the British Commonwealth Association of Social Anthropology held at Cambridge University, 24–30 June.

In the sessions devoted to models, Ward Goodenough (Pennsylvania) approached the concepts of status and role through the utilization of cognitive theory and Guttman scaling techniques; and David Schneider (Chicago) and I. M. Lewis (University College, London) presented a critical analysis of alliance and descent theory with reference to unilineal descent and prescriptive marriage. Remarks by the latter stimulated comments on the nature of the models used by anthropologists and their relevance to different field and research problems (Edmund Leach, Cambridge; M. N. Srinivas, Delhi; George Homans, Harvard). Marshall Sahlins (Michigan) offered new interpretations on the interrelations between the forms, material conditions, and social relations of exchange in primitive communities; he made a basic distinction between reciprocal exchange and centralized pooling of goods, and related different types of reciprocity to kinship, rank, and wealth differences.

Since the war, anthropologists have become increasingly interested in political systems and the distribution of power. A number of papers were presented by members of the School of Oriental and African Studies, London, on concensus in decision-making (F. G. Bailey), the comparative study of factions (R. Nicholas), and the significance of quasi-groups (Adrian Mayer). Concerned with the typology of African states, L. A. Fallers (Chicago), P. C. Lloyd (Ibadan), and A. Southall (Makerere) drew on the theoretical researches of American political scientists and their own field work to develop more adequate classifications for studies of political change.

The renewed interest in the scientific study of religion was noted by M. E. Spiro (University of Washington) when he argued that an adequate explanation for the persistence of religion requires both psychological and sociological variables and suggested some important areas for investigation. C. Geertz (Chicago), viewing religion as a cultural system, urged a wider conception of religion which would center on the meaning of the symbol systems. A number of papers were concerned more specifically with religion in various African societies, notably V. W. Turner (Manchester) on color symbolism among the Ndembu, R. E. Bradbury (University College, London) on ancestor worship among the Edo, and E. H. Winter (Virginia) on religion and society among the Iraqw. J. Loudon (Medical Research Council, South Wales) presented the results of a pilot study of religious order and mental disorder in a Welsh parish.

Various aspects of complex societies, such as urbanization in both newly developing nations and in Western society, were discussed. Eric Wolf (Michigan) pointed to the role of kinship, friendship, and patron-client relations in making the formal structures of complex societies operate more effectively; and B. Benedict (London School of Economics) analyzed the social characteristics of isolated communities. The theoretical orientations of urban studies in Africa were outlined by J. C. Mitchell (University College of Rhodesia and Nyasaland); and some preliminary hypotheses with regard to society and culture in urban Britain were presented by W. Watson and R. Frankenberg (Manchester).

The general discussions emphasized differences of approach with regard to the strategy and scale of research. Much to the surprise of many participants was the fact that there were no significant differences in American and British points of view, a situation that would not have been true even a decade ago.

Because the conference had been unusually successful, plans were made for future joint meetings; however, it was decided that they would be on a smaller scale, and with a more specific agenda. Participation of the American contingent, which included about 12 anthropologists, was made possible by a grant from the National Science Foundation, administered through the American Anthropological Association. The program was arranged by

Raymond Firth (London School of Economics) and Fred Eggan (Chicago) and was chaired by Max Gluckman (Manchester).

During the conference, participants attended the annual meeting of the Royal Anthropological Institute, and heard the presidential address of I. Schapera and the Huxley Memorial Lecture, delivered by E. E. Evans-Pritchard.

FRED EGGAN

Department of Anthropology, University of Chicago

Forthcoming Events

October

1–3. **Physics and Nondestructive Testing**, symp., San Antonio, Tex. (W. J. McGonnagle, Southwest Research Inst., 8500 Culebra Rd., San Antonio 6)

1–3. **Space Electronics**, 8th annual symp., Miami Beach, Fla. (H. E. Weber, Martin Co., Orlando, Fla.)

1–4. **Animal Care** Panel, Los Angeles, Calif. (A.C.P., Box 1028, Joliet, Ill.)

1–4. **Aerospace Nuclear Safety**, 1st natl. topical meeting, Albuquerque, N.M. (A. J. Smith, Topical Meeting, Box 818, Kirkland Air Force Base, N.M.)

1–4. Electronics Research and Development for **Civil Aviation**, London, England. (Secretary, Inst. of Electrical Engineers, Savoy Pl., London W.C.2)

1–4. American Council of **Independent Laboratories**, Lincoln, Neb. (ACIL, 4302 East-West Highway, Washington, D.C.)

1–5. **Aviation and Cosmonautical Medicine**, 6th intern. congr., Rome, Italy. (Secretariat of the Congress, Centro di Studi e Ricerche di Medicina Aeronautica, Via P. Gobetti 2 a, Rome)

1–6. Microbiology of **Crude Oil**, intern. symp., Greifswald, Germany. (W. Schwartz, Institut für Mikrobiologie, Ludwig-Jahn-Str. 15, Greifswald)

3–4. Physics of **Optical Glass**, conf., Lathom, England. (Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London S.W.1, England)

4–5. **Documentation**, intern. federation, Stockholm, Sweden. [Tekniska Litteratursällskapet (TLS) Ranhaamrsvägen 12, Stokholm-Bromma 11]

4–5. **Muscular Dystrophy**, symp., Houston, Tex. (M. M. Guest, Dept. of Physiology, Univ. of Texas Medical Center, Galveston)

4–6. American Acad. of **Psychotherapists**, New York, N.Y. (H. Rockberger, 44 S. Munn Ave., East Orange, N.J.)

5. **Paleontological Research** Inst., Ithaca, N.Y. (K. Caster, Geology Dept., Univ. of Cincinnati, Cincinnati, Ohio)

7–10. **Instruments and Research Equipment**, symp. and exhibit, 13th annual, Bethesda, Md. (J. B. Davis, National Institutes of Health, Bethesda 14)

7–11. American Soc. of **Civil Engineers**, annual, San Francisco, Calif. (ASCE, 345 E. 47 St., New York 17)

7–11. Biological Effects of **Neutron Irradiations**, intern. symp., Upton, N.Y.

(C. W. Pelzer, Div. of Special Projects, U.S. Atomic Energy Commission, Washington 25)

7–12. **Communication,** 11th intern. congr., Genoa, Italy. (Civico Instituto Colombiano, Palazzo Tursi, Genoa)

8–10. **Analytical Chemistry** in Nuclear Technology, 7th conf., Gatlinburg, Tenn. (C. D. Susano, Oak Ridge Natl. Lab., P.O. Box X, Oak Ridge, Tenn.)

5–6. New England Intercollegiate **Geological Conf.**, Providence, R.I. (J. Rogers, Dept. of Geology, Yale Univ., Box 2161 Yale Station, New Haven, Conn.)

6–9. **Process Engineers**, annual, Hanover, Germany. (German Engineering Assoc., Rheingau Allee 25, Frankfurt-am-Main)

6–10. **Water Pollution** Control Federation, Seattle, Wash. (to be reconvened 13–16 Oct., Honolulu, Hawaii). (R. E. Furman, WPCF, 4435 Wisconsin Ave., NW, Washington, D.C.)

6–12. Clinical **Pathology**, 5th intern. congr., Mexico City, Mexico. (E. Cervera B., Asociacion Mexicana de Laboratorio Clìnico, Durango 213, Mexico 7)

7. **Pediatric Radiology**, Montreal, P.Q., Canada. (R. G. Lester, Box 151, Medical College Station, Richmond, Va.)

8–10. Ciba Foundation Colloquium on **Endocrinology and Aetiology of Diabetes Mellitis** and Its Complications, London, England. (Ciba Foundation, 41 Portland Pl., London W.1)

8–10. **Science and Engineering**, 10th annual symp., U.S. Air Force Academy, Colo. (Maj. J. Shafer, RROND, U.S. Office of Aerospace Research, Washington, D.C.)

8–11. **Electromagnetic Relays,** intern. conf., Sendai, Japan. (C. F. Cameron, School of Electrical Engineering, Oklahoma State Univ., Stillwater)

8–11. American **Roentgen Ray** Soc., Montreal, P.Q., Canada. (American College of Radiology, 20 N. Wacker Dr., Chicago 6, Ill.)

8–12. **Neurological Surgeons**, 13th congr., Denver, Colo. (J. R. Russell, 1815 North Capitol Ave., Indianapolis 2, Ind.)

9. American Acad. of **Arts and Sciences**, Brookline, Mass. (R. W. Burhoe, American Acad. of Arts and Sciences, 280 Newton St., Brookline Station, Boston, Mass.)

9–11. **Aerospace Electronics**, exposition and conf., Los Angeles, Calif. (E. Niles, Aerospace Electrical Soc., 3540 Wilshire Blvd., Los Angeles 5)

9–13. **Cytophotometry** and Interference Microscopy, symp., Giessen, Germany. (W. Sandritter, Pathologisches Institut, Justus Liebig Universität, Giessen)

10–11. Bioassay and Analytical **Chemistry**, 9th conf., San Diego, Calif. (G. Bucolo, General Atomic Div., General Dynamics Corp., P.O. Box 608, San Diego 12)

10–11. **Engineering** conf., Long Beach, Calif. (Natl. Soc. of Professional Engineers, 2029 K St. NW, Washington, D.C. 20006)

10–11. **Kidney**, 15th annual conf., New York, N.Y. (Natl. Kidney Disease Foundation, 342 Madison Ave., New York 17)

10–11. **Lipid Transport**, intern. symp., Nashville, Tenn. (H. C. Meng, Vanderbilt Univ. School of Medicine, Nashville)

10–13. American Soc. of **Clinical Hypnosis**, 6th, San Francisco, Calif. (W. T.

Heron, American Soc. of Clinical Hypnosis, 800 Washington Ave., SE, Minneapolis 14, Minn.)

13. American College of **Dentists**, Atlantic City, N.J. (O. W. Brandhorst, 4236 Lindell Blvd., St. Louis, Mo.)

13–17. **Neurosurgery**, 10th Latin American conf., Buenos Aires, Argentina. (R. Morea, Callao 1685, Buenos Aires)

13–18. Society of **Motion Picture and Television Engineers**, Boston, Mass. (H. J. Hall, Itek Corp., Lexington, Mass.)

13–18. **Plastic Surgery**, 3rd intern. congr., Washington, D.C. (Capt. Joseph Connelly, Bethesda Naval Hospital, Bethesda 14, Md.)

14–16. **Geological Sciences**, intern. union, Rome, Italy. (T. Sorgenfrei, Tranegaardsvej 20, Hellerup, Denmark)

14–16. **Systems and Procedures** Assoc. of America, intern., Milwaukee, Wis. (R. L. Irwin, 7890 Brookside Dr., Cleveland 38, Ohio)

14–18. **Audio Engineering** Soc., 15th, New York, N.Y. (J. Harvey, Harvey Associates, 580 Fifth Ave., New York 36)

14–17. Association of Official **Agricultural Chemists**, Washington, D.C. (L. G. Ensminger, AOAC, Box 540, Benjamin Franklin Station, Washington 44)

14–18. American **Rocket** Soc., 18th annual, New York, N.Y. (ARS, 500 Fifth Ave., New York 36)

14–19. **Anatomical Pathology**, 4th Latin American congr., San Salvador, El Salvador. (F. K. Mostofi, Armed Forces Inst. of Pathology, Washington 25)

15. Oak Ridge Inst. of **Nuclear Studies**, Oak Ridge, Tenn. (W. G. Pollard, ORINS, Oak Ridge)

15–16. **Reactor Operations**, symp., American Nuclear Soc., Ottawa, Ont., Canada. (ANS, 244 E. Ogden Ave., Hinsdale, Ill.)

15–17. Progress in **Metallography**, seminar, Leoben, Austria. (Eisenhütte Osterreich, Eisenhütteninstitut, Montanistische Hochschule, Leoben)

15–18. American **Dietetic** Assoc., 46th annual, Philadelphia, Pa. (ADA, 620 N. Michigan Ave., Chicago 11, Ill.)

16–18. Ballistic **Missile and Space** Technology, San Diego, Calif. (C. T. Morrow, Aerospace Corp., P.O. Box 95085, Los Angeles, Calif.)

16–18. **Calorimetry**, 19th conf., Bartlesville, Okla. (G. T. Armstrong, Natl. Bureau of Standards, Washington, D.C.)

16–18. **Gaseous Electronics**, 16th annual conf., Pittsburgh, Pa. (G. J. Schulz, Westinghouse Research and Development Center, Pittsburgh 35)

16–18. American **Vacuum** Soc., 10th natl. symp., Boston, Mass. (AVS, Box 1282, Boston 4)

17–18. Industrial **Hydraulics**, natl. conf., Chicago, Ill. (E. Hansen, Illinois Inst. of Technology, Chicago 16)

17–18. American Soc. of **Tool and Manufacturing Engineers**, Pittsburgh, Pa. (H. E. Conrad, 10700 Puritan Ave., Detroit, Mich.)

17–19. Society of **Photographic Scientists and Engineers**, Washington, D.C. (E. Ostroff, SPSE, Box 1609, Main Post Office, Washington, D.C.)

17–20. **British Medical Assoc.**, annual clinical meeting, Stoke on Trent, England. (D. Gullick, BMA, Tavistock Sq., London W.C.2, England)

NEWS AND COMMENT

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areas: (i) the setting up of a coordinated weather satellite program; (ii) joint communications experiments with a passive reflector (an Echo satellite); (iii) joint contributions of satellite data to the World Magnetic Survey which will be conducted in 1965.

The August memorandum is regarded as significant by Washington observers because the Soviets followed through with dispatch and thoroughness in settling details and arrangements on equipment, communications links, exchanges of data, and so forth. There had been some who expected the Russians to drag their feet.

Another instance of Soviet-American scientific joint effort was announced earlier this month by the National Science Foundation, which said that the two nations will cooperate in Antarctica on a large-scale cosmic-ray investigation as part of the International Years of the Quiet Sun (IQSY) program. High steel antenna towers will be built at three United States bases and at a still undetermined number of Soviet bases. Other nations may cooperate in the project.

The U.S. and Russia are both signers of the Antarctic Treaty, which, in effect, makes the continent a demilitarized zone. The treaty includes a unique open inspection clause, and last week the United States announced it would exercise its option for the first time and send inspectors to the bases of six or seven countries, including the Soviet Union. The State Department said that the inspections were intended to establish a precedent. Between the lines it was not difficult to read a connection with the Senate debate on the test-ban treaty, where the possibilities of "cheating" have been given much attention. In a rather round-about way the inspections may be an attempt to lay groundwork for further moves in the field of arms control.

The U.N. Committee on the Peaceful Uses of Outer Space is worth watching for action on arms control and disarmament, if only because the members, particularly the smaller nations, are so apprehensive about the nonpeaceful uses of space. And it is not unlikely that, before too long, efforts will be made toward progress in arms control in space.

In general, however, it seems far too early to judge whether the current ice age of diplomacy is actually moderating.—JOHN WALSH