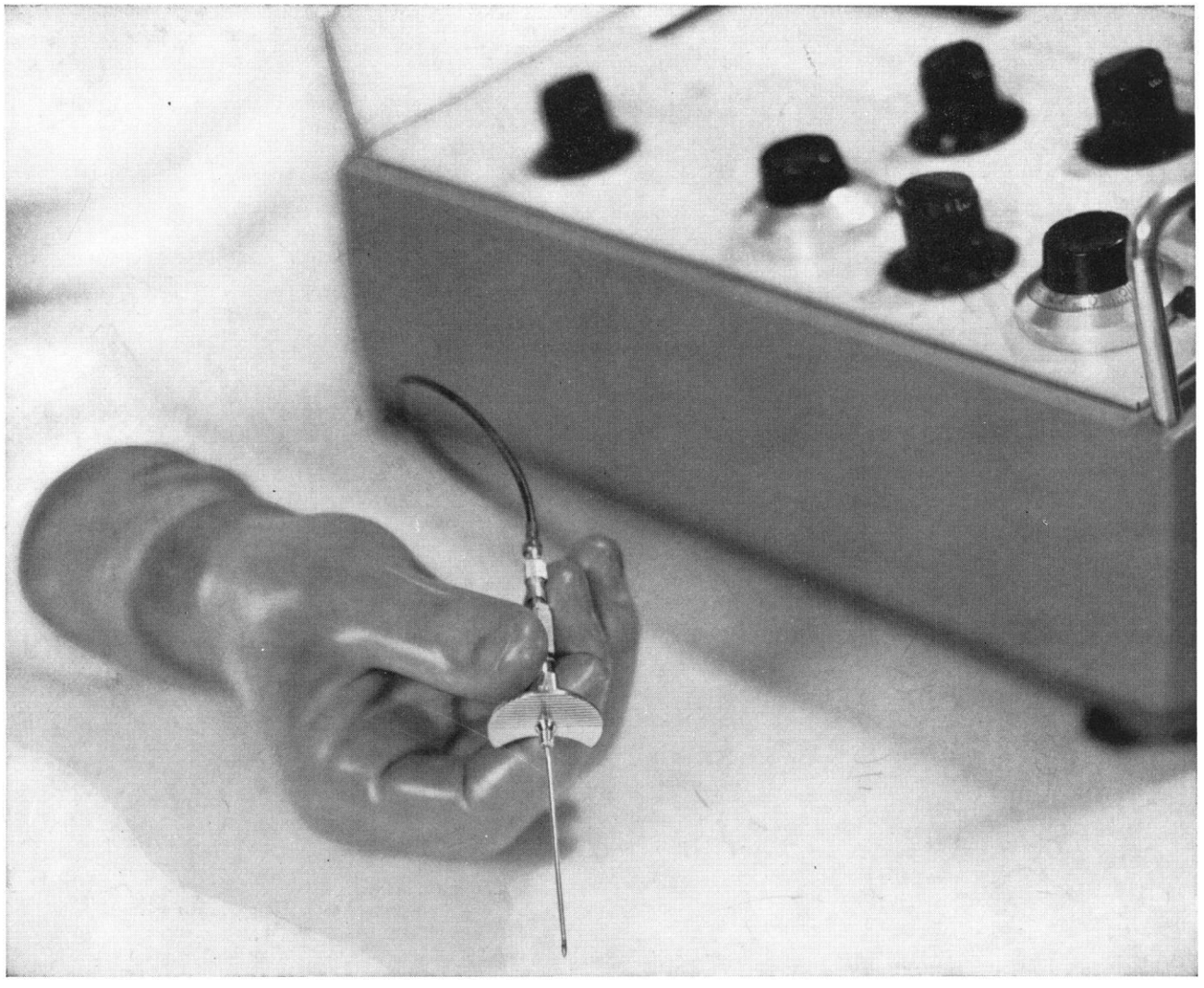
SCIENCE

24 November 1961

Vol. 134, No. 3491

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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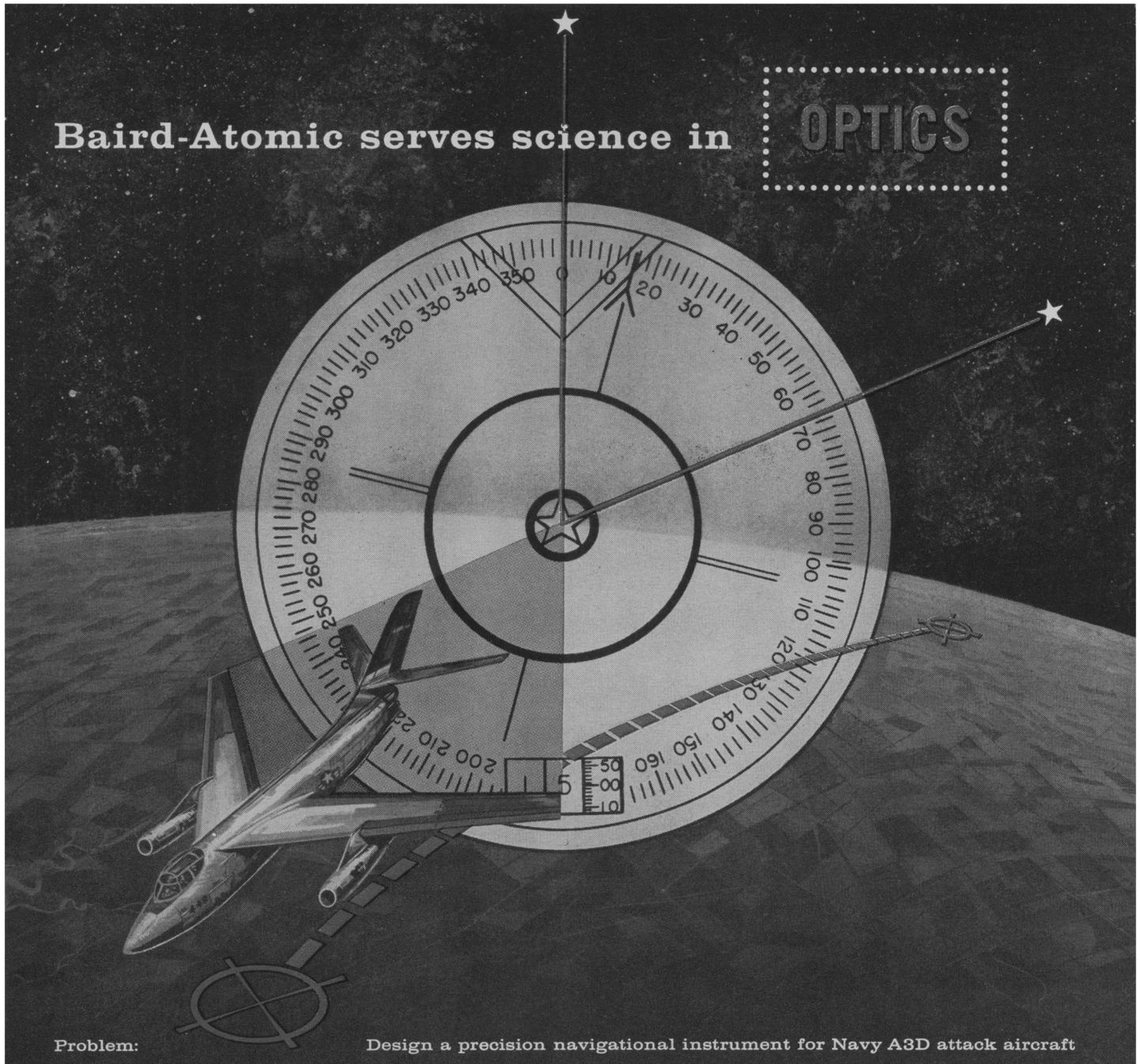

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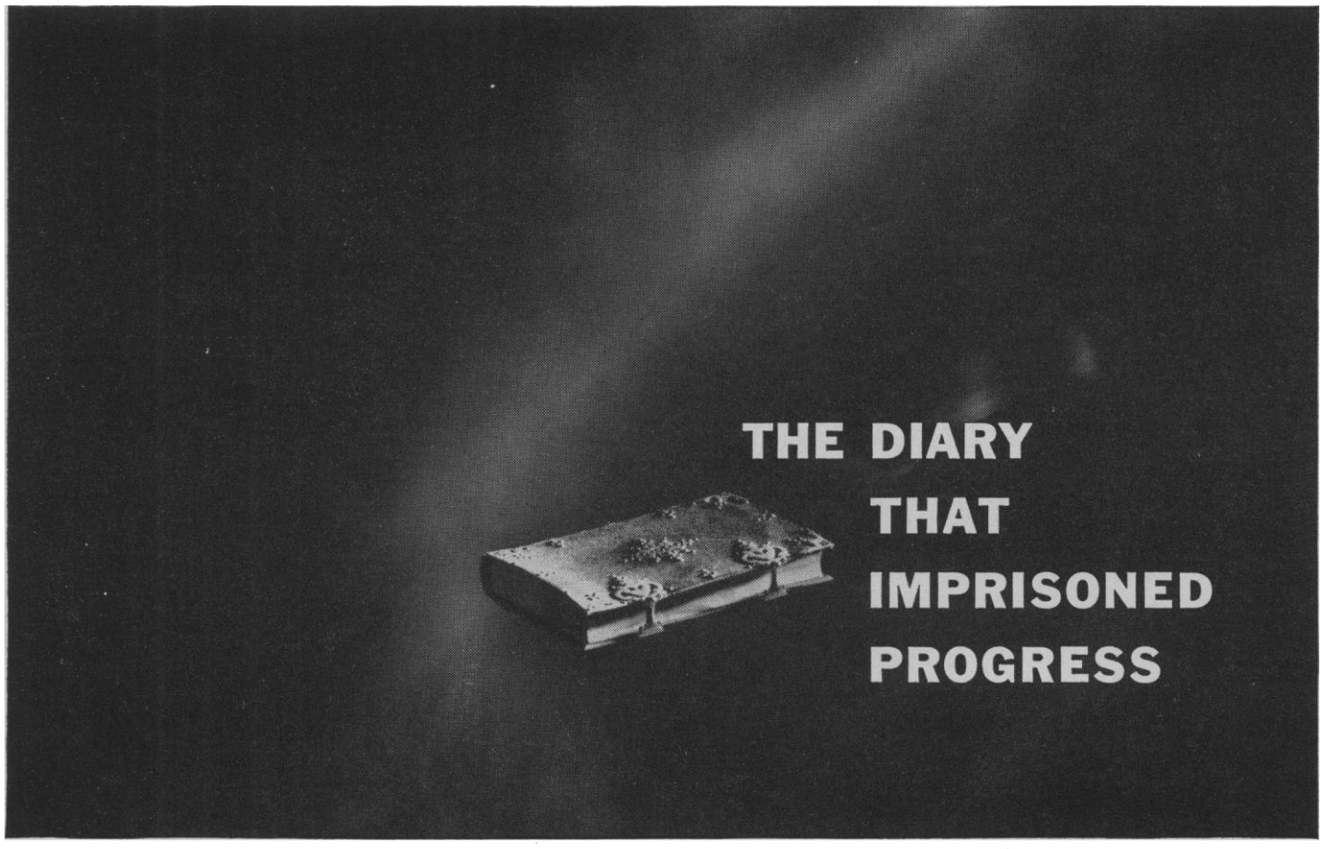
White portion of a human eye showing arteries and veins of the circulatory system. [Harold E. Edgerton, Massachusetts Institute of Technology]



Nearly two centuries ago, Karl Gauss, "Prince of Mathematicians," kept a diary which was destined to become one of the most significant documents in the history of mathematics.

In his diary Gauss jotted down the results of elaborate calculations that had led him to fundamental discoveries in mathematics. But he never published these discoveries, and many of them remained undisclosed during his lifetime.

It wasn't until almost 50 years after Gauss's death that his diary was found and published. Much time and talent, meanwhile, had been spent in duplicating Gauss's efforts. Mathematical progress had been needlessly slowed.

In contrast, today's scientists and engineers are alert to the importance of sharing their findings through publication. In fact, the number of definitive papers published in a scientific or technological field has become a sure sign of the creative effort in that field.

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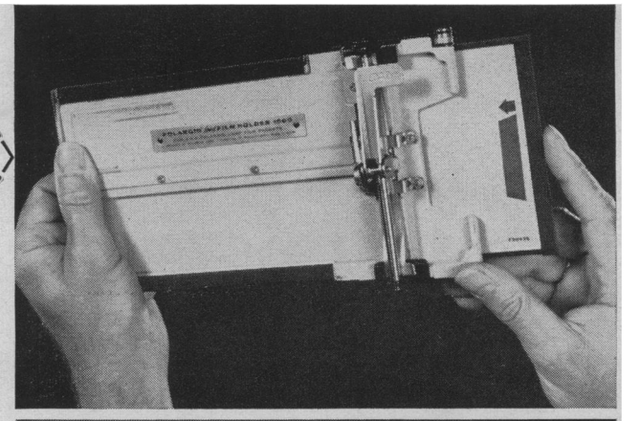

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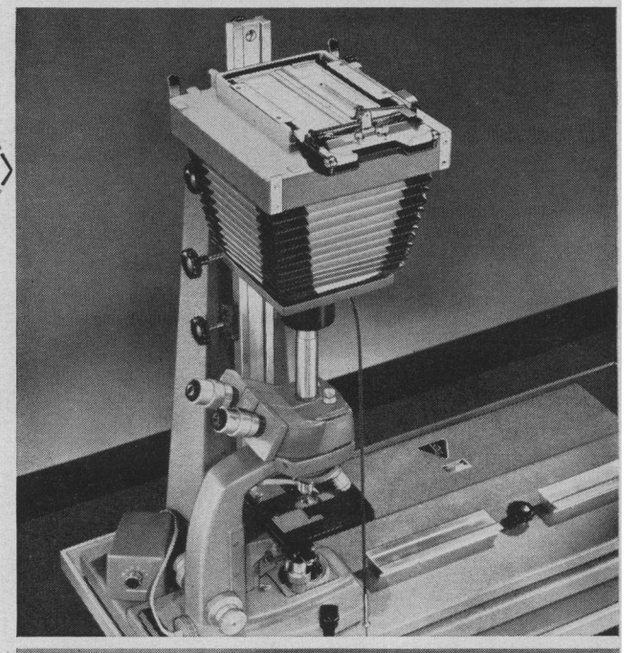

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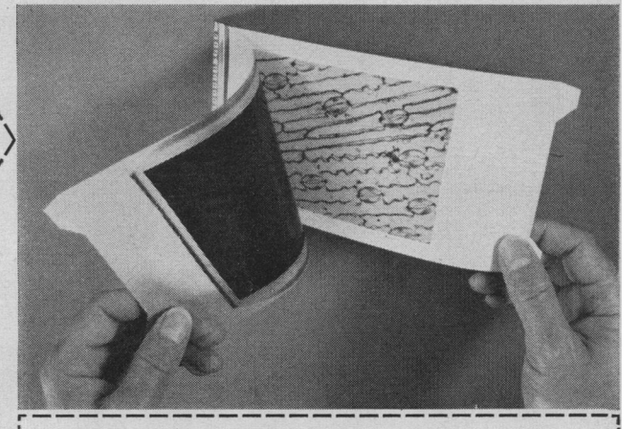
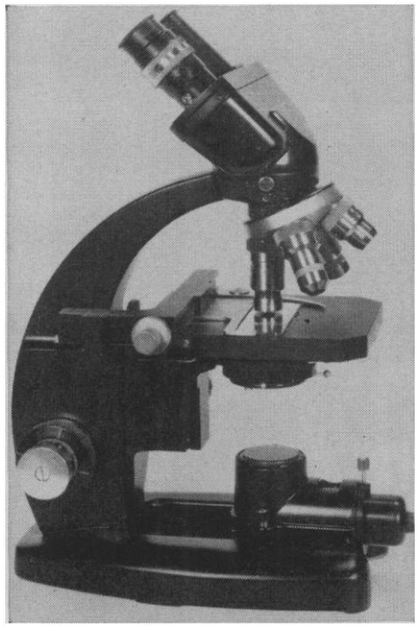


COOKE BRIEFS

Instruments and Applications

An Inexpensive Flat Field High-dry Achromat

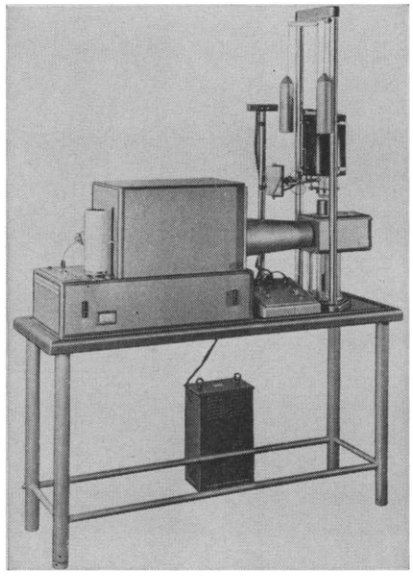
It is inevitable that conventional achromatic objectives have a certain amount of field curvature, if the best central definition is to be obtained. There is, however, a need for high-power dry objectives with flat fields, especially in the more routine laboratory uses of the microscope, and many makers compute their 40X objectives to give a flatter field while sacrificing something in resolution. In these past few years some elaborate designs have given flat fields without this compromise, but these objectives have not been generally adopted because of the very high cost involved.



A new basic approach to this design problem has been taken by Cooke resulting in the development of a new 40X achromatic objective. The Microplan 40 gives an extremely flat field of view, retains the maximum definition of the best N.A. 0.65 conventional achromatic objectives, and costs only slightly more. Because of tube length considerations the objective is most suitably used with the Cooke M15 Biological Microscopes.

Extension of Thermogravimetric Techniques

Many applications for the comparatively new techniques of thermogravimetry (measurement of weight change through a heat-time cycle) have been discovered in the fields of chemistry and metallurgy. In order to extend these studies into the critical areas where high temperatures and high vacuums are required, specialized apparatus has been needed.



The new Chevenard TH59 Thermobalance has been developed for routine and research studies in programmed temperature cycles up to 1500°C with specimens (up to 50 grams in weight) in a high vacuum or any desired controlled atmosphere. Recording is accomplished by a photoelectric spot-follower system of novel design. Very small weight changes can be shown as a function of time or of time and temperature.

A Water Immersion Objective

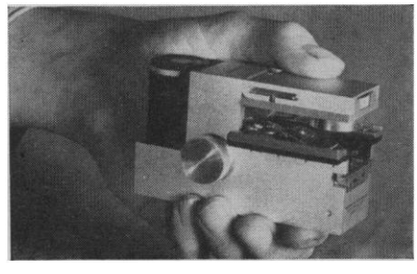
Although water immersion objective lenses are not well known to most microscopists, they do have important advantages for some work. Use of such an objective in place of the normal "high-dry" gives increased resolution and, as this lens is quite insensitive to small differences in cover glass thickness, much improved over-all performance.

Of particular importance is its use for the high-power examination of specimens which are not mounted with a cover glass. In this application the use of water is much more convenient (and, probably, more suitable) than would be the use of an oil-immersion high power objective.

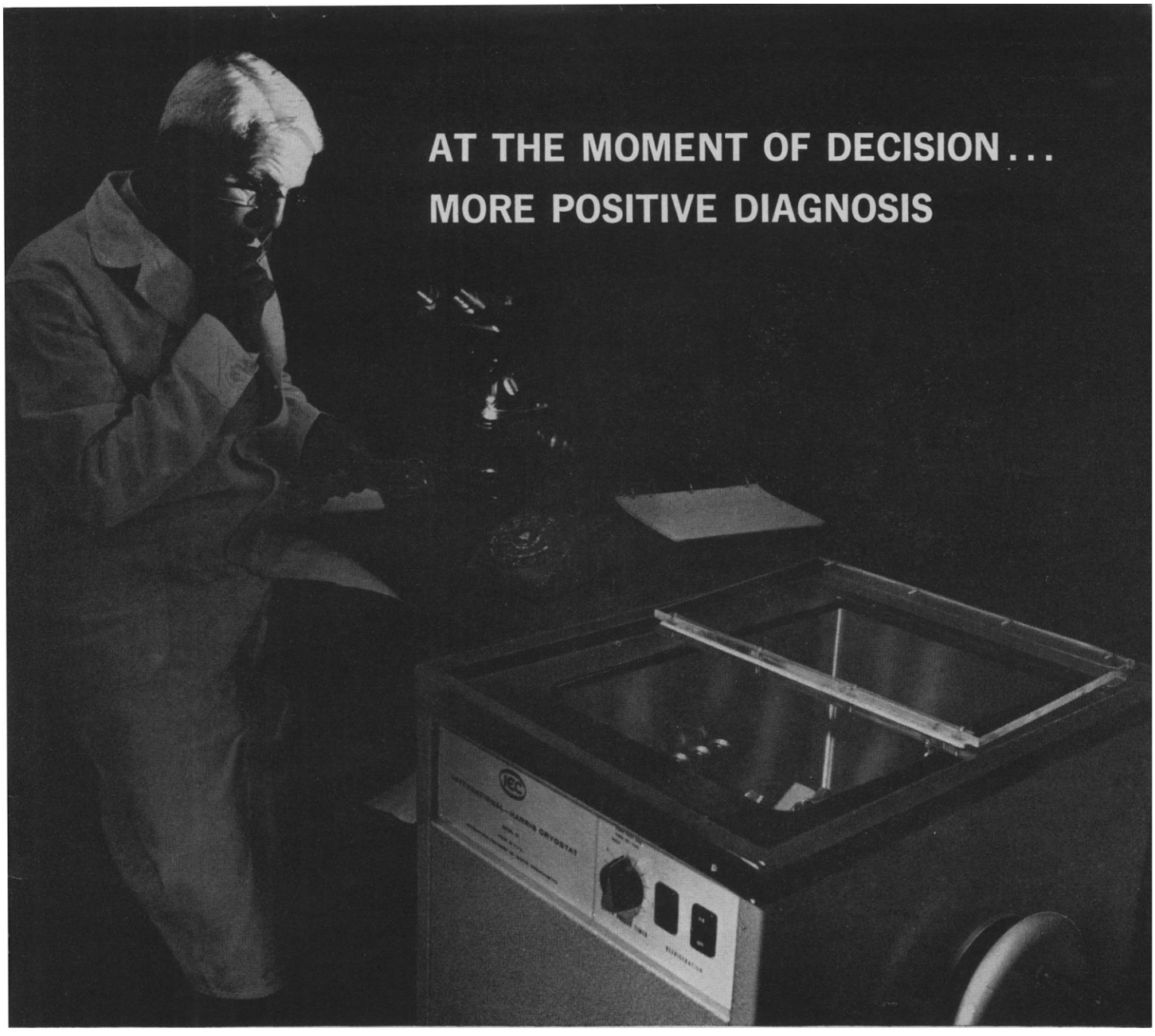
The Cooke objective has an initial magnification of 50, a Numerical Aperture of 1.00 and a working distance of 0.5mm.

The McArthur Microscope

Small microscopes for use in the field have been offered sporadically by many different makers over the years. In such designs it has been usual to obtain the maximum in portability and convenience at the expense of the standard of optical performance ordinarily obtained with the conventional microscope.



The McArthur Microscope shown was originally designed for malaria diagnosis and control work in the field in Southeast Asia. It can be quite easily carried in a coat pocket, but retains all the performance advantages of a full size instrument. A full range of achromatic and fluorite objectives is available as well as dark ground accessories. Illumination can be by mirror or by a battery or transformer operated built-in light source.



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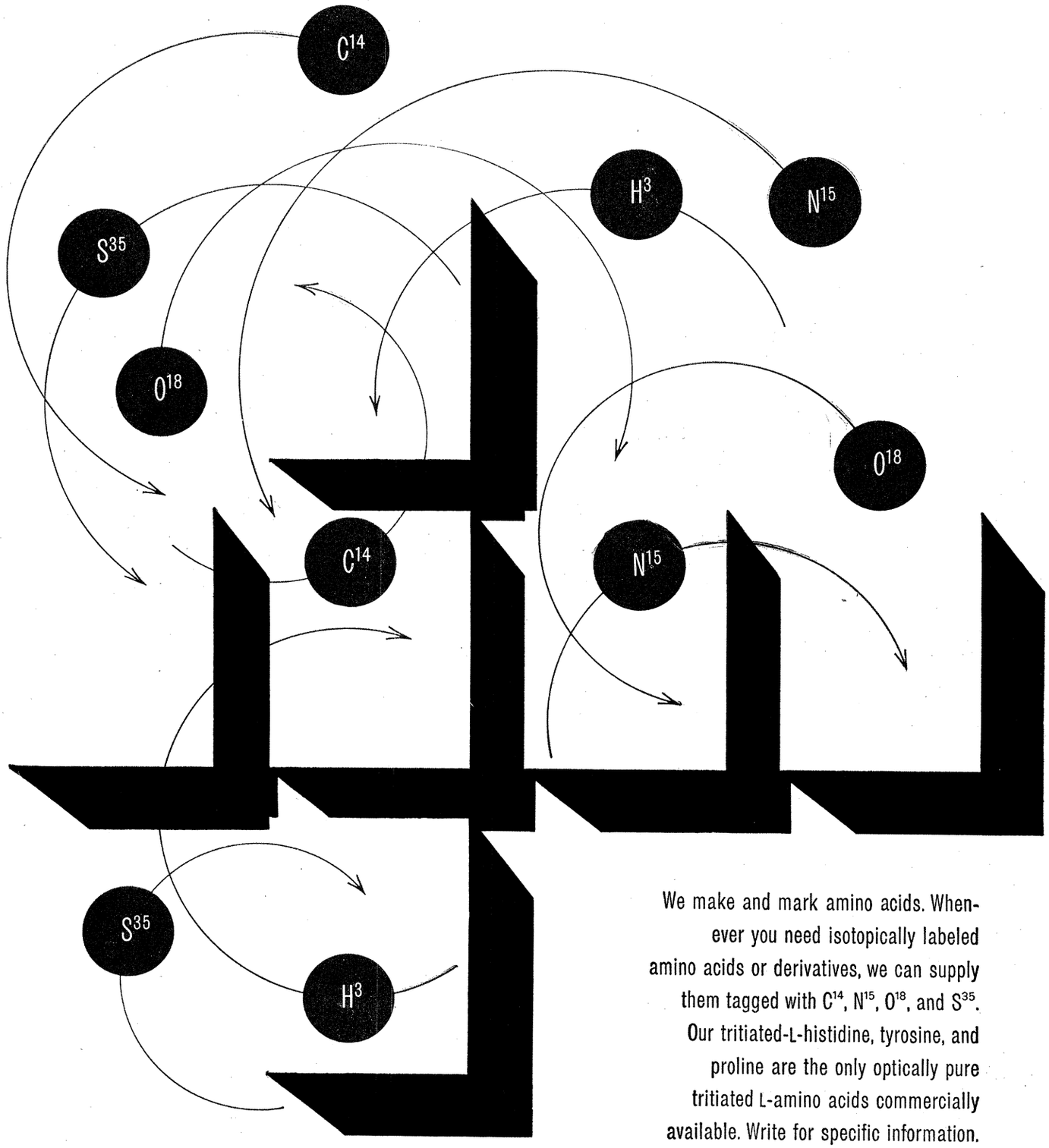

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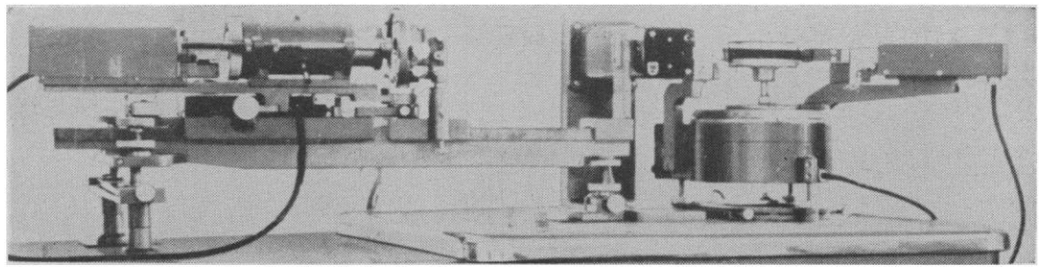
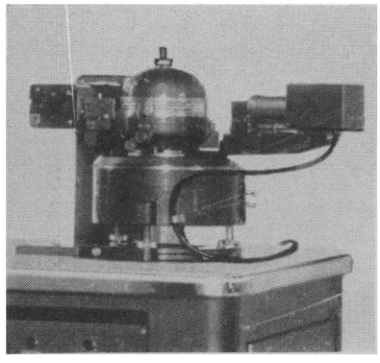
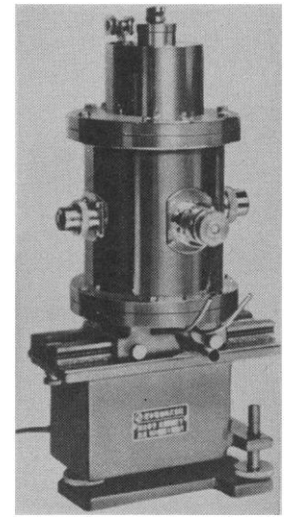


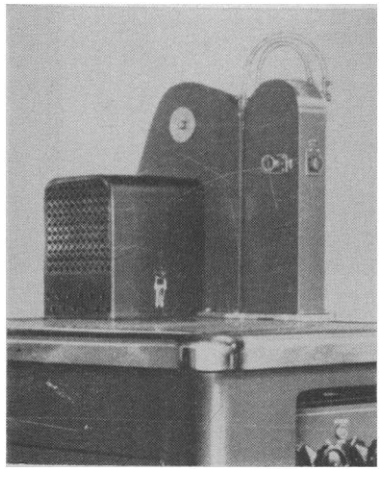
Shown above is the Rigaku Low Angle Scattering Goniometer, one of many fine instruments designed and built by Rigaku Ltd., pioneers in the x-ray diffraction equipment field since 1923. The Low Angle Scattering Goniometer has been designed for use with all standard x-ray diffraction units, to study the size, form, orientation and aggregate condition of fine individual particles of a substance. It is also used in studying the crystal periods of extra-long periodic substances, by either automatic recording or photographic techniques. It is useful in the study of organic and inorganic colloids, protein molecules, fiber micelles, resins, catalysts, clays, metals, etc.



LEFT The Rigaku High Temperature Specimen Holder is used for investigations, at high temperatures, of solubility changes as well as structural changes in the test sample. This precision instrument maintains a temperature gradient of plus or minus 5% at temperatures up to 1500°C. in vacuum or with atmospheres such as air or inert gas.

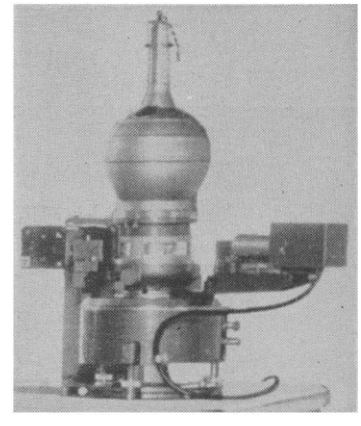
RIGHT The Rigaku Continuous High Temperature Camera has been designed to make a continuous record of x-ray diffraction patterns of crystal specimens, in series, on film. The camera has a unique ability to capture ever-changing x-ray diffraction patterns, and features a high vacuum system, high maximum temperature and simplified operation.





LEFT The Rigaku Rota Unit provides the high power required for rapid analyses. Current of 100 mA at 50 KV are available from various target materials. The water cooled rotating anode is postively sealed to preclude water leaking into the vacuum. This highly reliable research tool can be used with solids. liquids or gases.

RIGHT The Rigaku Low Temperature Specimen Holder is used to investigate, at low temperatures, solubility and crystal structure changes in the specimen under survey. The temperature of the specimen is lowered to —190°C, using liquid nitrogen as the refrigerant. The investigation can be made with the specimen in an atmosphere of air, inert gas, or a vacuum.



BELOW The Rigaku Microflex is a Microfocus X-ray Diffraction Unit, designed to provide a research tool for the analysis of minute areas of a crystal, as well as the crystal structure of micro substances in the specimen, etc. The versatile Microflex can be used as either a projection or reflection type instrument, depending on the specimen being analyzed.

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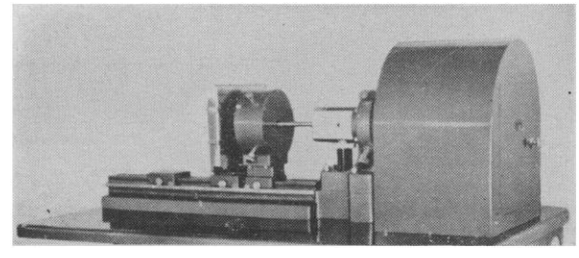

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Model Teaching

One of the more imaginative of the current efforts to improve the teaching of mathematics in elementary school involves the use of a set of wooden rods of differing lengths, sometimes called Cuisenaire rods after Georges Cuisenaire, the Belgian teacher who developed them. The rods serve as a model for work in arithmetic, and certain other parts of mathematics, much as the figures sketched in high school geometry serve as models for the proofs of the theorems. Use of models in the solving of problems has an honorable place in the teaching of mathematics, not to mention the creation of new mathematical ideas. There is the pitfall in such use, however, of becoming so zealous in the manipulation of the model as to loose sight of the mathematics the model is supposed to illuminate.

The wooden rods are square in cross section, 1 cm by 1 cm. They come in ten lengths, from pieces 1 cm long through pieces 10 cm long. In teaching arithmetic, the rods could be used, for example, to represent the equation "$2 + 3 = 5$" by setting a 2-cm rod end to end with a 3-cm rod, and then covering both rods with a 5-cm rod. And the rods could be used to represent the equation "$2 \times 3 = 3 \times 2$" by placing two 3-cm rods side by side, and then covering the resulting rectangle by setting three 2-cm rods crosswise to the first rods. The children learn not only by looking at the rods and seeing that the two sides of an equation are equal, but also from handling the rods and feeling this equality.

Many other, and more ambitious, things can be done with the rods, but the problem the model poses is that even those persons who agree about its effectiveness in teaching disagree on when, for a given problem, that effectiveness ceases. Thus, in the teaching of fractions, some teachers use the rods to represent a given fraction by placing two rods in an ordered arrangement. To represent the fraction "1/2," for example, the 1-cm rod could be placed above the 2-cm rod. Other teachers find, however, that it is in just this kind of use that the rods turn from an aid to thought into a hindrance to thought.

The difficulty with this representation of fractions, it is argued, is that the model begins to lose its one-to-one correspondence with the mathematical work it is supposed to illustrate. Consider, for example, the representation of "1/2" by a 1-cm rod over a 2-cm rod and of "1/10" by a 1-cm rod over a 10-cm rod. In arithmetic there is the inequality "$1/2 > 1/10$," yet, taking the two representations together, the representation of "1/2" appears not larger, but smaller, than that of "1/10." There are now two possibilities, the argument continues. Either this lack of correspondence will confuse the child or it will not. If it confuses him, the model should be abandoned. If it does not confuse him, the model should also be abandoned, because this simply shows that the young scholar is sophisticated enough to use pencil and paper. It will not bother him that the written mark "1/10" looks larger than the written mark "1/2."

Some meaningful work with the rods can still be done on fractions. To obtain a representation of "1/4," for example, let the 4-cm rod represent "1." The 1-cm rod will then represent "1/4"—the rods are not labeled with numbers, but rods of different lengths are distinguished by different colors. The Cuisenaire rods are surprisingly helpful if used properly, but wisdom in introducing a model in teaching mathematics must be matched by equal wisdom in knowing when the model must be abandoned. In using a model, the danger lies in loving it not wisely but too well.—J.T.

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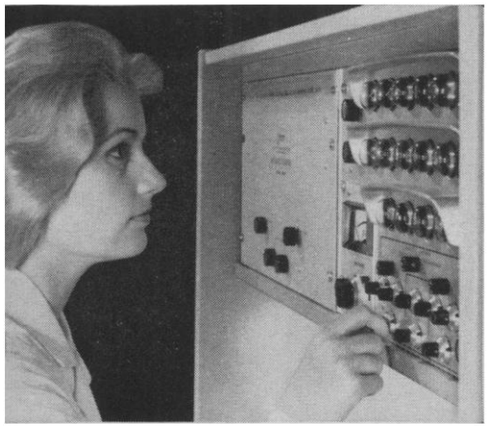

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Program Summary

Anthropology (H)

Program chairman: David M. Pendergast, University of Utah, Salt Lake City.

Thursday 28 December

The Concept of Race. Symposium arranged by Jack Kelso, University of Colorado, who will preside. A history of the concept of race, B. M. Alfred. Race as a problem in classification, Donald R. Ackerman and Jack Kelso. Race as a sociological concept, Edward Rose. Race as an evolutionary episode, Frederick S. Hulse. Geographic and microgeographic races, Marshall T. Newman. Review and comments, Walter Weir.

Friday 29 December

Civilizations in Desert Lands. Symposium arranged by Richard B. Woodbury, University of Arizona, who will preside. Evaluations of dry-land environments by societies at different levels of technical competence, Homer Aschmann. Role of natural forces in the ancient Indus Valley and Baluchistan, George F. Bales, Jr. Synopsis of the historical demography and ecology of the Diyala River basin, central Iraq, Robert M. Adams. Social responses to the problems of the distribution of irrigation water, René Millon.

Early Man in the Western United States: Cultural Continuities. Concurrent symposium arranged by Richard D. Daugherty, who will preside. Early man's utilization of the Great Plains environment, Fred Wendorf. An approach to early cultures in northwestern America, Earl Swanson. The Rawlings, Wyoming, mammoth kill, George A. Agogino and Henry and Cynthia Irwin. Early man in British Columbia, Charles Borden. Cultural relationships between the Plateau and the Great Basin, Richard D. Daugherty. The earliest cultures in the western United States, Alex D. Krieger.

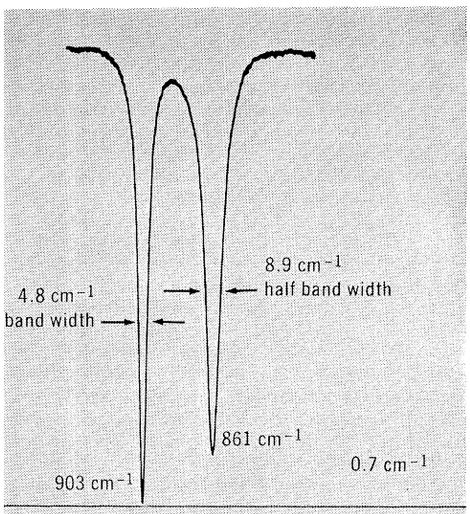
The Wetherill Mesa Project. Concurrent symposium arranged by Douglas Osborne, supervisory archeologist, Wetherill Mesa Archeological Project, Mesa Verde National Park, Colorado, who will preside. History, organization, and program of the Wetherill Mesa Archeological Project, Douglas Osborne. Archeological survey of Wetherill Mesa, Alden C. Hayes. Excavation of Long House, Wetherill Mesa, George S. Cattanach. Excavation of Mug House, Wetherill Mesa, Arthur H. Rohn. Operation of the Wetherill Mesa Laboratory, Richard P. Wheeler. Plant ecological studies on Wetherill Mesa, James Erdman. The environmental measurements program and animal ecological studies, Charles Douglas and Mark Paddock. Palynological studies, Paul S. Martin and William Byers. Dendrochronological studies and sampling, Marvin Stokes and Tom Harlan. Dendrochronological dating of Wetherill Mesa archeological sites, Robert F. Nichols. Soil studies at Wetherill Mesa, Orville Parsons. Agricultural plants of Wetherill Mesa, Hugh Cutler. Nonagricultural plant identification, Stanley Welsh. Trace element studies on Wetherill Mesa fecal material, Bruno Sabels. Mesa Verde surveys, Emma Lou Davis and James Winkler. Oral tradition studies, Keres, Florence Ellis. Oral tradition studies, Tanoan, Mr. and Mrs. Kenneth E. Knudson. Museum studies of early Mesa Verde collections, Carolyn M. Osborne. Physical anthropology of Wetherill Mesa burials, Fred Hulse. Pathology of the Wetherill Mesa burials, James S. Miles. Parasitological studies of Wetherill Mesa fecal material, Robert Samuels. Orthodontic studies of Wetherill Mesa burials, J. M. McCanlies. Petrologic studies of Wetherill Mesa cultural materials, Charles B. Hunt. Entomological studies on Wetherill Mesa, Samuel A. Graham. Animal bones from the Wetherill Mesa excavations, Thomas Mathews. Summary and critique, Richard B. Woodbury, University of Arizona.

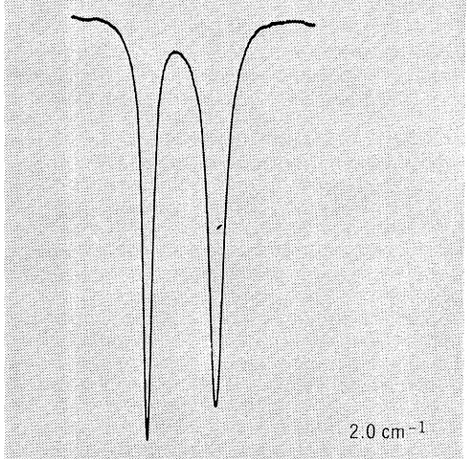
Anthropologists' Dinner. James L. Giddings, Haffenreffer Museum, Brown University, secretary of Section H, presiding.

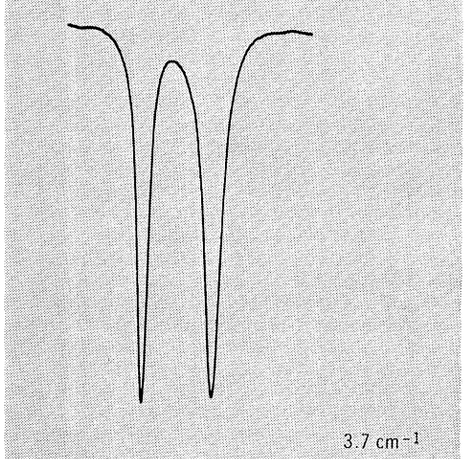
Saturday 30 December

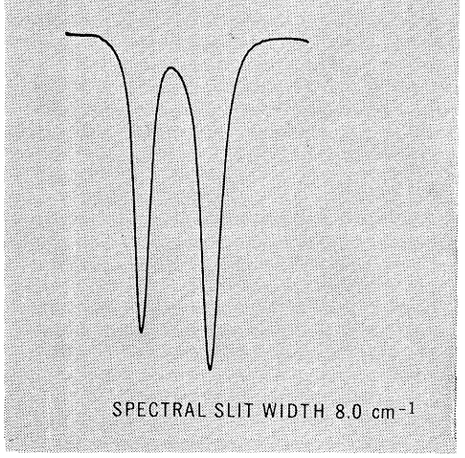
Applied Anthropology. Concurrent symposium arranged by Harold L. Amoss, acting director, Office of International Education, University of Colorado, who will preside. Importance of ethno-historic data for studies of acculturation, Omer C. Stewart. Agricultural extension and sociological reality in Brazil, Sydney M. Greenfield. Successful transiency—some findings from the Page, Arizona, community research project, Henry H. Frost. Some contributions of recent research to applied anthropology, Theodore D. Graves.

Role of Animals in Human Ecological Adjustments. Concurrent symposium







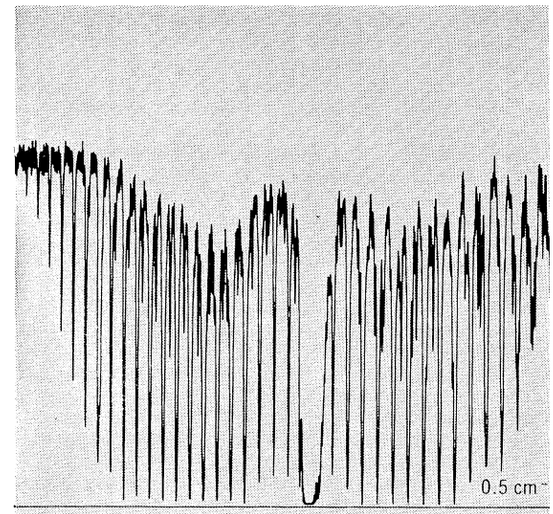


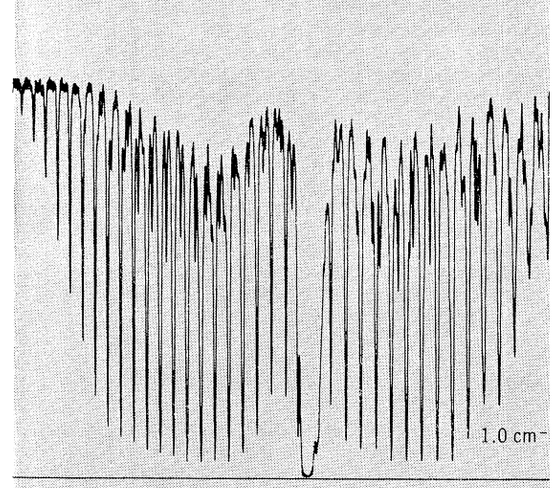
Left, spectrum of a 0.21 mm. thickness sample of spectro-grade cyclohexane demonstrates the importance of high resolution for routine *quantitative analysis.*

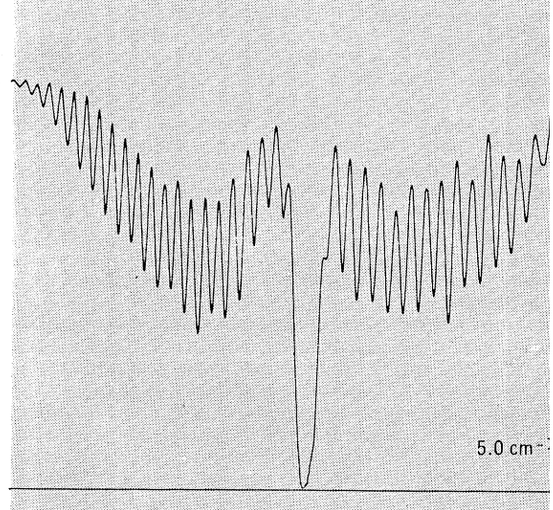
Right, the C-H stretching band of methane illustrates the increased research *data obtainable with high resolution spectroscopy.*

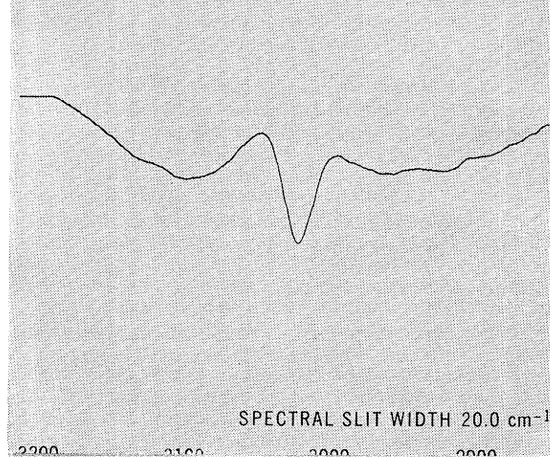
Beckman IR... highest resolution for routine quantitative analysis and advanced theoretical studies.

High resolution of the Beckman IR-7 does more than merely separate closely spaced neighboring bands. Note, for instance, how the apparent intensities of the two cyclohexane bands increase with higher resolution. The relatively greater increase in the intensity of the 903 cm^{-1} band at higher resolutions is the result of its narrower half-band width. These two commonly analyzed samples demonstrate the importance of high resolution in both low and high frequency regions and, for both gas and liquid samples. Comparative spectra were run with identical samples; slit width and resolutions, were varied as noted. ⊠ High resolution is essential for *all areas of spectroscopy;* for studies of molecular motion and structure, for differentiating between substances which exhibit similar spectra, and also for providing increased sensitivity and absolute accuracy for quantitative analysis. A further long-run advantage of high resolution is the increased potential for transferring data from one instrument to another. For more information about high resolution spectrophotometers, including indene spectra, write for Data File 38-47-02









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SCIENTIFIC AND PROCESS INSTRUMENTS DIVISION

Fullerton, California

arranged by Anthony Leeds, research specialist, Pan American Union. Andrew P. Vayda, assistant professor of anthropology, Columbia University, presiding. Introduction, Andrew P. Vayda. Athabaskan horse and sheep herding and contrasting social institutions, Peter Kunstadter. Reindeer herding and Chuckchi social institutions, Anthony Leeds. Pigs, dogs, and children in a Melanesian economy, Anne Chowning. East African livestock, society, and economy, Harold K. Schneider. Llamas in Inca social and political organization, John V. Murra. Camel pastoralism in North Arabia and the minimal camping unit, Louise E. Sweet. Discussion, Homer Aschmann. Conclusion, Andrew P. Vayda.

Incest in Cross-Species Perspective. Concurrent symposium arranged by Margaret Mead, American Museum of Natural History, who will preside. Film: *The Private Life of a Cat*, by Alexander Hammid. Sex dynamics within kinships of free-ranging wild ungulates, Margaret Altmann. Brother and sister in social structure and fantasy in Zuni, Ruth Bunzel. A hypothesis for the genetic basis of the universality of the incest taboo and its relation to kinship organization, Yehudi Cohen. Grounds for incest, Gregory Bateson. Early adolescent friendship patterns as a constructive handling of the incest barrier (film), Rhoda Métraux.

Interdependence of Archeology and Ethnology. Concurrent symposium arranged by Warren L. D'Azevedo, University of Utah, who will preside. The ethno-history of the Eastern Shoshone: a problem in the use of archeological and ethnographic data, Donald D. Fowler. A joint archeological and ethnological approach to the development of southwestern Pueblo social organization, Edward P. Dozier. Archeology and ethno-history in Africa, Creighton Gabel. Trait distribution and archeology in Polynesia, Robert C. Suggs. The interpretation of Paleolithic art: uses and abuses in the methodology of ethnographic comparison, Morton H. Levine. The relations of archeological and ethnological theory, Walter W. Taylor. Discussants: René F. Millon, Richard B. Woodbury, and Jesse D. Jennings.

Section H is a cosponsor of the four-session symposium, Physiological and Biochemical Aspects of Human Genetics, of Section N–Medical Sciences.

Psychology (I)

Friday 29 December

Aspects of Sleep. Symposium arranged by Wilse B. Webb, University of Florida, who will preside. Sleep, environmental control, and timing behavior, Neal M. Burns. Arousal aspects of sleep, Bryce O. Hartman. Current research on sleep and dreams, Chester Pierce. Eye movements and electroencephalograms during sleep in monkeys, Elliott Weitzman. Effects of prolonged sleep deprivation on rats, Wilse B. Webb.

Goals of Psychotherapy—Approaches to Research and Clinical Application. Symposium in two parts. Program of AAAS Section I–Psychology, cosponsored by the Rocky Mountain Psychological Association, the Colorado Psychological Association, and the Colorado Society of Psychologists in Private Practice. Arranged by Alvin R. Mahrer and John R. Thompson, Denver Veterans Administration Hospital. Alvin R. Mahrer, presiding. Speakers: William H. Brown, Victor C. Raimy, Harold D. Locketz, and Morris Parloff. Discussants: Frank J. Rubenstein, Stuart Boyd, John R. Thompson, and Sherman Nelson.

Contributed Papers. Sensory factors related to appetitive behavior and food acceptance. Carl Pfaffmann, Brown University, will preside.

Saturday 30 December

Sensory Factors in Appetitive Behavior and Food Acceptance. Symposium arranged by Carl Pfaffmann, Brown University. Samuel A. Goldblith, Massachusetts Institute of Technology, will preside. Appetitive behavior and chemoreception in invertebrates, David R. Evans. The organization of hypothalamic feeding areas and the role of gustatory factors, P. J. Morgane. Regulation of intake and magnitude of reinforcement, George Collier. Sensory factors in food acceptance in man, Francis J. Pilgrim. Discussants: John Falk, University of Colorado, and Roland Harper, University of Leeds.

Vice Presidential Address. Frank W. Finger, University of Virginia, secretary of Section I, presiding. Physiological and behavioral studies of the sense of taste, Carl Pfaffmann, Brown University, vice president for Section I–Psychology.

Control of Verbal Behavior. Symposium arranged by Israel Goldiamond, Arizona State University, who will preside. Measurable dimensions of vocal behavior, John A. Starkweather. Experimental shaping of the prosodic features of speech with an autoinstructional device, Harlan Lane. Problems related to the acquisition of speech in the mynah bird, Joseph Grosslight. Control of interview behavior, Joseph D. Matarazzo. Verbal behavior in schizophrenia, Ogden R. Lindsley. Verbal conditioning of formal linguistic structures, Arthur J. Bachrach. Effect of drugs on verbal behavior, Kurt Salzinger, Stephanie Pison, Richard S. Feldman, and Pauline M. Bacon. Self- and experimenter-control of disrupted and fluent reading behavior, Israel Goldiamond. Interaction between verbal and nonverbal behavior, Ivar Lovaas.

Section I is the cosponsor of the following programs: the two-session symposium of the American Psychiatric Association, Genetics and Evolution in Relation to Human Behavior; three sessions for contributed papers on animal behavior and sociobiology; and the symposium, Evolutionary Changes in the Hormonal and Neural Bases of Reproductive Behavior, jointly sponsored by the American Society of Zoologists and the Ecological Society of America; and a joint symposium with the Cooperative Committee on the Teaching of Science and Mathematics and Section A: Teaching Machines and Mathematics Programs.

Social and Economic Sciences (K)

Wednesday 27 December

Current Problems in Social-Behavioral Research. Symposium. Program of AAAS Section K–Social and Economic Sciences, cosponsored by the American Statistical Association and the National Institute of Social and Behavioral Science. Arranged by Donald P. Ray, National Institute of Social and Behavioral Science, Washington, D.C. Fitzhugh L. Carmichael, University of Denver and the American Statistical Association, will preside. Vice Presidential Address of Section K. Social statistics and the prediction of human behavior, Frederick F. Stephan. Some notes on sociology in the U.S.S.R., Robert K. Merton, Political science: pure or applied? Duncan MacRae, Jr.

Section K is a cosponsor of the Interdisciplinary Symposium in the Social Sciences: Water and Climate.

American Economic Association

Tuesday 26 December

The Economics of Knowledge and Information. Program of the American Economic Association, cosponsored by AAAS Section K–Social and Economic Sciences. Arranged by Kenneth E. Boulding, University of Michigan. Leslie Fishman, University of Colorado, will preside. Knowledge as a commodity, Kenneth E. Boulding. The productivity and efficiency of investment in education, Fritz Machlup. Information input overload: features of growth in communications-oriented institutions, Richard L. Meier.

American Political Science Association

Wednesday 27 December

International Relations. Invited papers. Program of the American Political Science Association, cosponsored by Section K–Social and Economic Sciences. Arranged by Josef Korbel, Social Science Foundation, University of Denver, who will preside. Soviet policy in the United Nations toward the underdeveloped countries, Richard Rosser. Commentator: Joe R. Wilkinson. Decision-making in international political crises, James A. Robinson. Commentator: George Codding, Jr.

American Society of Criminology

Friday 29 December

Annual Business Meeting of the Society.

Annual Awards and Memorial Meeting. Donal E. J. MacNamara, dean, New York Institute of Criminology, and president, American Society of Criminology, chairman. Presentation of the annual award for 1961. Address, Orlando W. Wilson, superintendent of police, Chicago, Ill. Presentation of the August Vollmer Award for 1961. Address: Pathways to improved sentencing, Sheldon Glueck, professor of criminology, Harvard University Law School.

28 and 29 December

Crime, Police, and Prison Problems in Contemporary Society. A four-session program of the American Society of Criminology cosponsored by the American League to Abolish Capital Punishment, New York Institute of Criminology, and the American Academy of Criminalistics.

Rural Crime Control. Symposium arranged by Gordon H. Barker, chairman, department of sociology, University of Colorado, and vice president, American Society of Criminology. Gordon H. Barker, chairman. Crime and delinquency in rural areas—the difficulties and possibilities of legislation, H. Ted Rubin. Problems in the police control of rural crime, Vernon Hastings, Jr. Examples of Indian criminality, Omer C. Stewart. Problems of judges and prosecutors in rural areas, Charles J. Simon. Crime among minorities in rural areas, W. Thomas Adams. Evaluation, Clyde Vedder.

Problems in Contemporary Penology. James M. Reinhardt, professor of criminology, University of Nebraska, chairman. Discussion leader: C. R. Jeffery. Women in prison, Isabel Gauper. The pre-sentence investigation, Leslie C. Reed. The warden's obligations to prisoners from rural areas, Maurice Sigler. Underworld, conventional, and ideological crimes: three points on a continuum of rejection, tolerance, rejection, Ruth Shonle Cavan. Men in prison, Harry C. Tinsley. Observations on narcotics addiction in Hong Kong, Albert Hess.

Research and Experimentation in Criminology. Marcel Frym, University of Southern California, chairman. Discussion leader: Charles Newman. Toward improving the identification of young delinquents, Eleanor T. Glueck.

Predicting criminal behavior, Alfred C. Schnur. The reinforcement theory and criminal behavior, C. R. Jeffery. Delinquency and mental inferiority, Clara Chassell Cooper. Increases in crimes in the underdeveloped countries, Walter Lunden. Delinquent behavior in currently respectable adult males, Sophia M. Robison. Methodological problems in measuring delinquency, M. E. Wolfgang.

Problems and Controversies in Twentieth-Century Policing. John P. Kennedy, police commissioner, Los Angeles, California, chairman. Discussion leader: Anthon S. Cannon, University of Utah. State standards for local police recruitment, training, and promotion, G. D. Gourley. Role of the police periodical, Lee Lawder. The case against police juvenile bureaus, August Flath. A philosophy of police management training, Ray Galvin. Value conflicts in law enforcement, Jacob Chwast.

Program notes for some sections have appeared in previous issues of *Science*: "Chemistry" and "Mathematics and Related Programs," 27 October, page 1376; "Physics" and "Astronomy," 3 November, page 1438; "Agriculture" and "Geology and Geography," 10 November, page 1534; and "Zoological Sciences," "Botanical Sciences," "Medical Sciences," "Dentistry," and "Pharmacy," 17 November, page 1630.

On page 1710 of this issue appears a coupon which readers can mail in to obtain a complete program of the annual meeting.

American Sociological Association

Friday 29 December

Sociology of Medicine: Problems and Prospects. Symposium. Program of the American Sociological Association, cosponsored by AAAS Section K–Social and Economic Sciences. Arranged by Conrad Taeuber, Bureau of the Census, Washington, D.C. Ozzie G. Simmons, University of Colorado, will preside. Biosocial aspects of disease, Edmund H. Volkart. The relationship of research methodology to problems in the health fields, Odin W. Anderson. Helping medicine fulfill its social functions, Cecil G. Sheps. The place of the sciences of administration in medical care, Nicholas J. Demerath.

American Statistical Association

Friday 29 December

Problems of the American Highway Operation. Symposium. Program of the American Statistical Association, cosponsored by AAAS Section K–Social and Economic Sciences, and the Biometric Society, WNAR. Arranged by the Colorado-Wyoming Chapter of the American Statistical Association. Edward C. Bryant, Westat Research Analysts, Tempe, Arizona, will preside. Statistical design and analysis at the AASHO road test, Paul E. Irick. Problems of national highway allocation study, G. P. St. Clair. Economic problems of the national highway program, Richard M. Zettel. Problems in costing highway service, Clifton M. Grubbs. Critique and discussion, R. E. Livingston.

Saturday 30 December

Government Price Statistics. Program of the American Statistical Association, cosponsored by AAAS Section K–Social and Economic Sciences and the Biometric Society, WNAR. Arranged by James A. Niederjohn, Ideal Cement Company, Denver; president, Colorado-Wyoming Chapter, American Statistical Association. Donald Bentley, Colorado State University, will preside. Significance of urban retail structure for price and welfare indexes, Leland L. Howell. Welfare versus market-basket price indexes, Leslie Fishman.

The ASA is also a cosponsor of the program of the Biometric Society, WNAR.

Institute of Management Sciences

Friday 29 December

Management Science. Symposium. Joint program of the Institute of Management Sciences and AAAS Sections P–Industrial Science and A–Mathematics. Arranged by Merrill M. Flood, Mental Health Research Institute, University of Michigan. James R. Jackson, Western Management Science Institute, Graduate School of Business Administration, University of California, Los Angeles, will preside. New analytical methods in management science, Robert R. Singleton. Econometrics and statistics in management science, Satya S.

Sengupta. Recent mathematical developments of importance in management science, George B. Dantzig.

The Institute of Management Sciences is a cosponsor of the program of the Philosophy of Science Association: Law, Science and Decision Making.

Metric Association

Thursday 28 December

Business Meeting. Arranged by Robert P. Fischelis, president elect, Metric Association.

National Institute of Social and Behavioral Science

The National Institute of Social and Behavioral Science is a cosponsor of Section K's symposium, Current Problems in Social Behavioral Research.

Forthcoming Events

December

6–8. Electrical Furnace Steel Conf., 19th, American Inst. of Mining, Metallurgical and Petroleum Engineers, Pittsburgh, Pa. (Scientific Liaison Office, Natl. Research Council, Sussex Dr., Ottawa, Canada)

6–8. Latin-American Congr. of Pathological Anatomy, 3rd, Medellín, Colombia. (A. C. Henao, Laboratorio de Anatomía Patológica, Rua Botucatu 720, São Paulo, Brazil)

6–8. National Institutes of Health Symp. on Neuroendocrinology, Miami, Fla. (A V. Nalbandov, 102 Animal Genetics, Univ. of Illinois, Urbana)

6–12. American Acad. of Optometry, Chicago, Ill. (C. C. Koch, 1506–08 Foshay Tower, Minneapolis 2, Minn.)

6–16. Food and Agriculture Organization of the U.N. World Health Organization, Nutrition Conf. for the Far East, 5th, Hyderabad, India. (Intern. Agency Liaison Branch, Office of Director General, FAO, Viale delle Terme di Caracalla, Rome, Italy)

6–16. Food and Agriculture Organization of the U.N., Far East Meeting on Animal Production and Health, 3rd, Bangkok, Thailand. (Intern. Agency Liaison Branch, Office of Director General, FAO, Viale delle Terme di Caracalla, Rome, Italy)

7–8. Symposium on Sintered High-Temperature Oxidation-Resistant Materials, London, England. (S. C. Guilan, Powder Metallurgy Joint Group, Inst. of Metals, 17 Belgrave Sq., London)

7–9. American Chemical Soc. Southwest-Southeast regional meeting, New Orleans, La. (P. D. Accardo, California Chemical Co., Oronite Div., Belle Chasse, La.)

7–9. New York Acad. of Sciences Conf.