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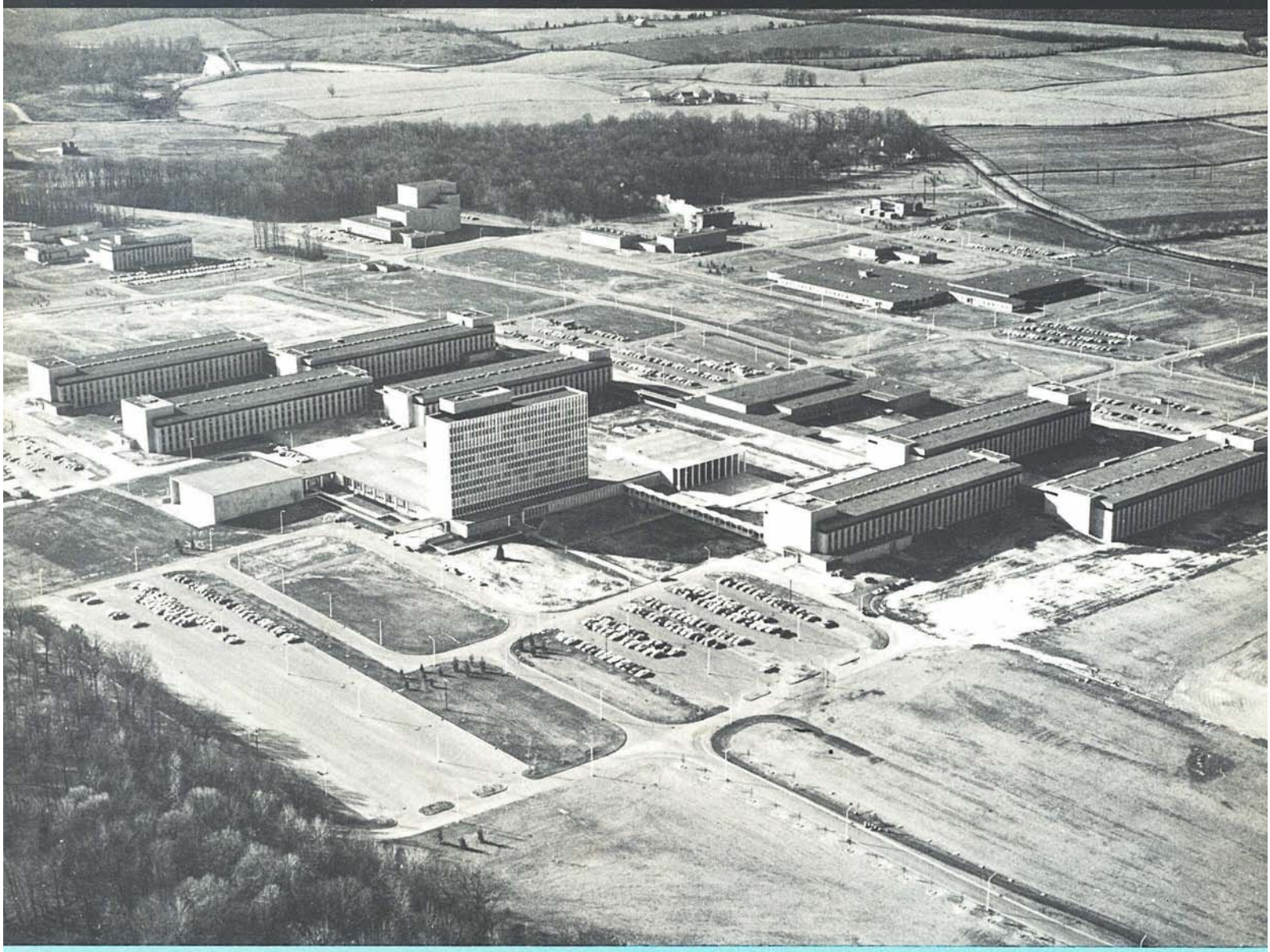
ARCS and SPARKS



NATIONAL BUREAU OF STANDARDS

Gaithersburg, Maryland

Published by the Ultra Carbon Corporation . . . for the advancement of Spectroscopy

What's this issue all about?

COVER STORY

The National Bureau of Standards will host the First Materials Research Symposium from October 3 thru 7. Story and complete program on pages . . . 3, 4

LABORA-STORY OF THE MONTH

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Cover photo identification

NATIONAL BUREAU OF STANDARDS

Gaithersburg, Maryland

(1) Administration Building and Tower
(2) Metrology Laboratory
(3) Physics Laboratory
(4) Chemistry Laboratory
(5) Materials Laboratory
(6) Polymer Laboratory
(7) Instrumentation Laboratory
(8) Building Research Laboratory
(9) Shops
(10) Supplies and Plant
(11) Power Plant
(12) Engineering Mechanics
(13) Radiation Physics Laboratory

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COVER STORY

This is the entrance to "Red" Auditorium where sessions of the Materials Research Symposium will be held. The Auditorium (partially visible at the left) is connected by enclosed walkways to the main section of the Administration Building at the National Bureau of Standards facility.

This issue of Arcs and Sparks is dedicated to the Materials Research Symposium scheduled for October 3-7, 1966, and to its sponsor, the National Bureau of Standards.

The Symposium will be held at the new NBS facility at Gaithersburg, Maryland, shown on the cover this month. The new site, a 560-acre plot, with 15 buildings completed and five more planned, is beautiful rolling prairie land, typical Maryland countryside. Twenty miles northwest of Washington, D. C., it is now in the heart of an area rapidly becoming one of the nation's greatest scientific research complexes.

The Bureau will dedicate its new facilities on November 15, 1966. This will be followed, November 16-17, by a Symposium on Technology and World Trade sponsored by the Secretary of Commerce. This symposium will bring together experts on technology and international commerce from all over the world. On November 19, the Bureau will hold an Open House, with approximately 100 laboratories on public view. As many as 25,000 visitors are expected.

The "new Bureau" continues to suffer moving pains, as the 1,100 Bureau professionals transfer and settle into seven general purpose laboratories (metrology, physics, chemistry, materials, polymers, instrumentation, and building research), and into the three buildings designed especially for the nuclear reactor, engineering mechanics, and radiation physics.

The Bureau was established 65 years ago to develop, maintain and disseminate fundamental standards of physical measurement, and to make systematic and accurate determinations of physical constants and important properties of matter and materials. The Bureau, at its founding, was instructed to provide technical assistance to industry, Government and educational institutions. Approximately three years ago the Bureau was designated by the Secretary of Commerce to serve as the focal point in the Federal Government for assuring maximum application of the physical and engineering sciences to the advancement of technology and commerce. This brought about the organization of the Bureau into three institutes, each institute covering a broad area of research and services: the Institute for Basic Standards provides the research basis for developing and improving measurement standards, and manages the National Standard Reference Data program; the Institute for Materials Research measures and evaluates the properties of materials and manages the Standards Reference Materials program; and the Institute for Applied Technology provides direct service to industry and Government through development of product evaluation criteria, data storage and retrieval, computer technology, and systems analysis.

The Institute for Materials Research is host to the October Materials Research Symposium. A detailed outline of the program, and a picture story of National Bureau of Standards work in spectrochemical analysis follows on the next four pages.

Program

First Materials Research Symposium

Trace Characterization—Chemical and Physical

October 3-7, 1966

National Bureau of Standards

Gaithersburg, Maryland

Sunday, October 2	***Registration***	**Sheraton Park Hotel, Washington, D.C. 4:00-10:00 P.M.**
Monday, October 3	***Morning***	Opening of Symposium – Gordon K. Teal, Director, Institute for Materials Research, National Bureau of Standards, Washington, D.C. General Lecture – Trace Characterization and the Properties of Materials – N. Bruce Hannay, Lecturer, Bell Telephone Laboratories, Murray Hill, New Jersey Electrical Measurements – Leonard Weisberg, Lecturer, RCA Research Laboratories, Princeton, New Jersey
	Afternoon	Electrochemical Methods – Herbert A. Laitinen, Lecturer, University of Illinois, Urbana, Illinois Electrochemical Methods–Discussion–Robert A. Osteryoung, Rapporteur, North American Aviation Science Center, Thousand Oaks, California Electrical Measurements – Discussion – Robert L. Powell, Rapporteur, National Bureau of Standards, Boulder, Colorado
	Evening	Mixer, Sheraton Park Hotel – 8:30 P. M.
Tuesday, October 4	***Morning***	Optical and X-ray Spectroscopy–N. W. H. Addink, Lecturer, Philips Research Laboratories, Eindhoven, Netherlands X-ray Diffraction – Jun-ichi Chikawa and John B. Newkirk, Lecturers, Denver Research Institute, University of Denver, Denver, Colorado
	Afternoon	Optical and X-ray Spectroscopy–Discussion–Heinrich Kaiser, Rapporteur, Institut fur Spektrochemie und Angewandte Spektroskopie, Dortmund, Germany X-ray Diffraction – Discussion – H. Steffen Peiser, Rapporteur, National Bureau of Standards, Washington, D. C.
Wednesday, October 5	***Morning***	Optical Methods – Eugene Wong, Lecturer, University of California at Los Angeles, Los Angeles, California Optical Methods–Discussion Chemical Spectrophotometry–T. S. West, Lecturer, Imperial College of Science and Technology, London, England Chemical Spectrophotometry–Discussion
	Afternoon	Tours of new NBS Facility and other areas
	Evening	Reception–6:00 P. M.–Museum of History and Technology, Smithsonian Institution. Buffet Dinner at Museum
Thursday, October 6	***Morning***	Nuclear Methods–A. A. Smales, Lecturer, Atomic Energy Research Establishment, Harwell, Berks, England Mass Spectroscopy–Arthur J. Ahearn, Lecturer, Bell Telephone Laboratories, Murray Hill, New Jersey
	Afternoon	Nuclear Methods – Discussion – Vincent P. Guinn, Rapporteur, General Atomic Division, General Dynamics Corporation, LaJolla, California Mass Spectroscopy – Discussion – Edward B. Owens, Rapporteur, Lincoln Laboratory, M.I.T., Lexington, Massachusetts
Friday, October 7	***Morning***	Pre-Concentration, Sampling and Reagents – J. Minczewski, Lecturer, Technical University of Warsaw, Warsaw, Poland Electron and Optical Microscopy – S. Amelinckx, Lecturer, Belgium Atomic Energy Center, Mol, Belgium Pre-Concentration, Sampling and Reagents – Discussion – George H. Morrison, Rapporteur, Cornell University, Ithaca, New York
	Afternoon	Electron and Optical Microscopy – Discussion – Heinz G. F. Wilsdorf, Rapporteur, University of Virginia, Charlottesville, Virginia Closing Remarks–W. Wayne Meinke, National Bureau of Standards, Washington, D. C.

LABORA-STORY OF THE MONTH

NATIONAL BUREAU OF STANDARDS

Gaithersburg, Maryland

In the spring of this year the Spectrochemical Analysis Section of the National Bureau of Standards, along with the rest of the Analytical Chemistry Division of the Institute for Materials Research, occupied laboratories on the new NBS "campus" at Gaithersburg, Maryland. Detailed planning for the move started as long ago as 1960. With considerable assistance from field engineers of the manufacturers of the larger instruments, the move was accomplished so efficiently that, for the most part, the laboratory was in operation within two weeks after the move.

The laboratory buildings at the new NBS location are designed with two rows of laboratory rooms adjoining at the center axis of the building. On each side of the building are corridors with spaces at the outer wall for offices and limited purpose laboratories. The rooms are of modular construction with removable steel partitions. The inner basic laboratory module is 11 feet wide by 22 feet long, and the outer modules are 11 feet wide by 16 feet long.

The Spectrochemical Analysis Section occupies 16 laboratory modules and 8 outer modules on the first floor of the Chemistry building. The main instrument laboratories —for optical spectrographs, optical spectrometers, the electron probe, and the mass spectrograph—each occupy a double inner module. Single inner modules are devoted to x-ray fluorescence, atomic absorption, three chemical laboratories (including a clean laboratory equipped for work with radioactive tracers), x-ray preparations, electronics, and a dark room.

The outer modules are occupied by offices as well as laboratories for spectrographic preparations and microphotometry. One of these rooms also contains a teletype terminal connected to a remote, time-sharing computer. The Section staff has found that these new facilities provide an excellent environment for its numerous activities. In each of the fields of spectroscopy mentioned above, the staff performs research studies and analyses. Their work on Standard Reference Materials is a unique feature which distinguishes NBS from other laboratories. The skills and competences of this laboratory are made available to science and industry through these calibration standards and research publications.

SRM Program is for the Whole Country

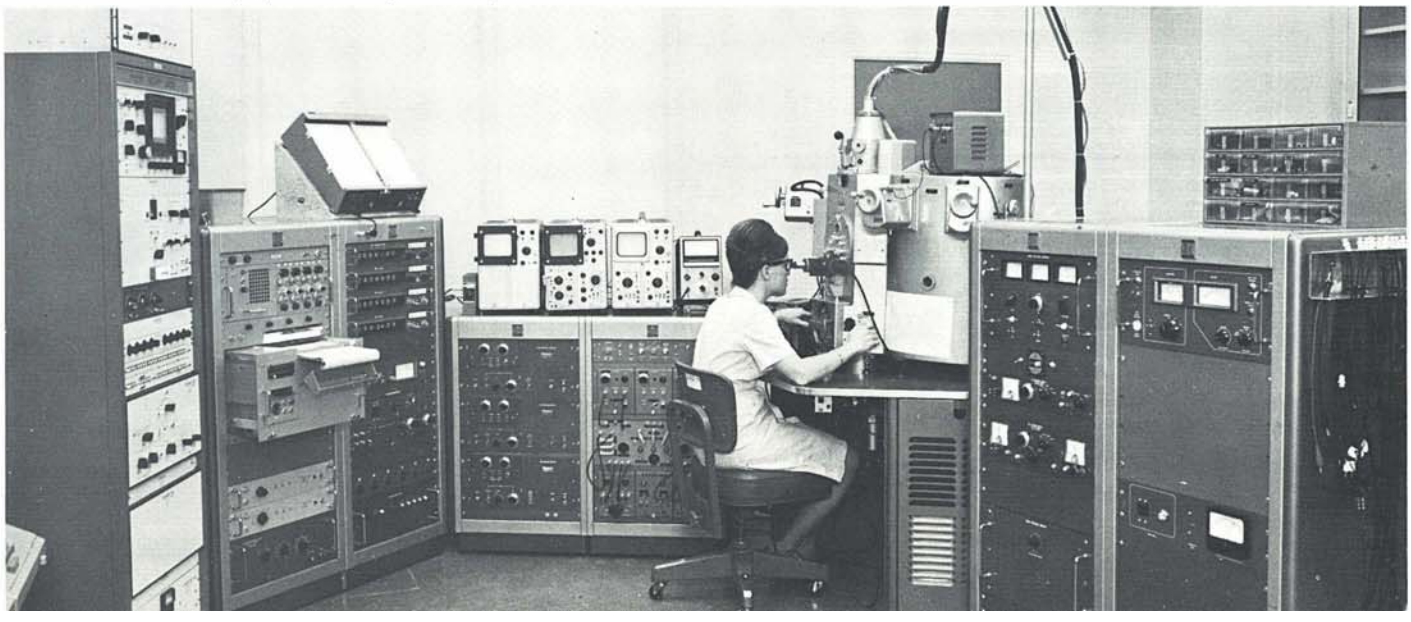
The Standard Reference Materials Program at NBS encompasses a wide spectrum of well characterized materials (numbering more than 600) which can be used to calibrate a measurement system or to produce scientific data that can be transferred readily to a common base, thus assuring uniformity in this area of the national measurement system. These standards are vital to our nation's industries, and contribute significantly to technological and economic growth.

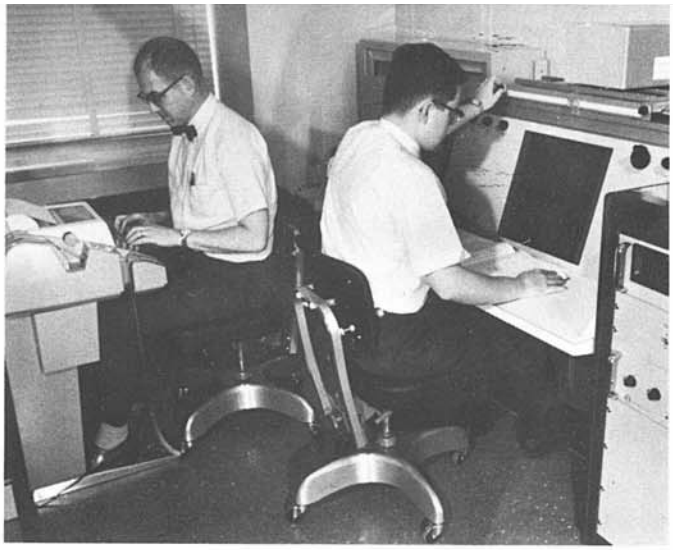
In the period from June 1965 to May 1966, the Section processed 204 samples for the Standard Reference Materials Program. This involved 911 qualitative determinations and 3,899 quantitative determinations. The results were described in 43 reports.

Standard Reference Materials of metals and alloys are prepared in the form of large bars which will be cut up to provide individual specimens. The Section makes large numbers of determinations on samples from carefully selected portions of these bars to assess the homogeneity of the material. In some cases, the electron probe is

(Continued on next page)

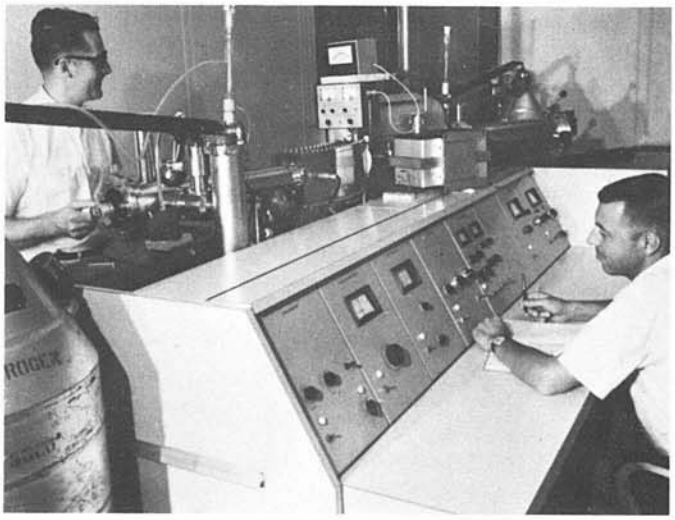
Mrs. Mary Ann Giles examines a sample in the electron probe microanalyzer. This instrument has been extensively modified to improve its capabilities. At the far left is a 1600-channel pulse-height analyzer. The information stored here can be displayed on an oscilloscope or X-Y recorder, or printed out on teletype with tape punch for entry into a computer.





Dr. Marvin Margoshes (left) operates a teletype terminal which is connected to a time-shared computer located 20 miles from the National Bureau of Standards. At right is a microphotometer designed for reading emission spectrographic plates and punching the output onto paper tape for feeding directly into the teletype. This instrument, which seems to be a "first," is being operated by Mr. Stanley Rasberry.

Dr. Paul Paulsen (left) operates a spark source mass spectrometer to analyze high purity gold, while the console is monitored by Mr. Louis Csontos, a science teacher from Phoenix, Arizona, who attended a Government sponsored summer science course for teachers. Most of the work done on this instrument is in checking the purity of reference and research materials, and improving techniques of mass spectrographic analysis of solids.



brought into play to study the homogeneity at microscopic levels. When the homogeneity is established, samples undergo accurate, precise analyses within this and other Sections of the Analytical Chemistry Division by two or more independent techniques to yield reliable information on composition.

The needs of the SRM Program, involving large numbers of determinations and extensive statistical calculations, prompted the Section to pioneer digital readout of spectrometric instruments in computer format. The photographs accompanying this report show several examples of such digital readout units.

Analyses Performed for Other Scientists

The Section is frequently called upon to do analyses for other NBS laboratories and for other government agencies that do not have their own spectrographic facilities. Outsiders occasionally ask for analyses, revealing that one point about the Bureau's work is not clearly understood: the Bureau is not authorized to do analyses for individuals or corporations, and thus is not in competition with private industry.

The analyses done under such arrangements naturally cover a wide variety of materials, including alloys, minerals, research materials and a diversity of industrial products. In this area of the Section's activities the staff processed 269 samples, did 437 quantitative determinations and 7,837 qualitative determinations, and wrote 102 reports in the period mentioned above.

Research is an Important Activity

The extensive analytical activities described above occupy somewhat less of the time of the staff of the Section than does its related research. This research comprises both fundamental and applied studies on x-ray, mass, emission, and atomic absorption spectrometry and the electron probe. An area of research common to most of these fields is the development of techniques for isolating trace contaminants from high-purity materials prior to their determination. Other areas of research include studies directed toward the improvement of instrumentation and methods for analysis, and the measurement of such fundamental data as x-ray absorption coefficients. The results of these research activities were described by the staff in 26 talks and 20 papers published between July 1965 and June 1966. The Annual Report of the Section, NBS Technical Note 401, covering this period is nearly 100 pages long; it gives a much more detailed description of activities than can be done here.

A Glance Backward Reveals Famous Names

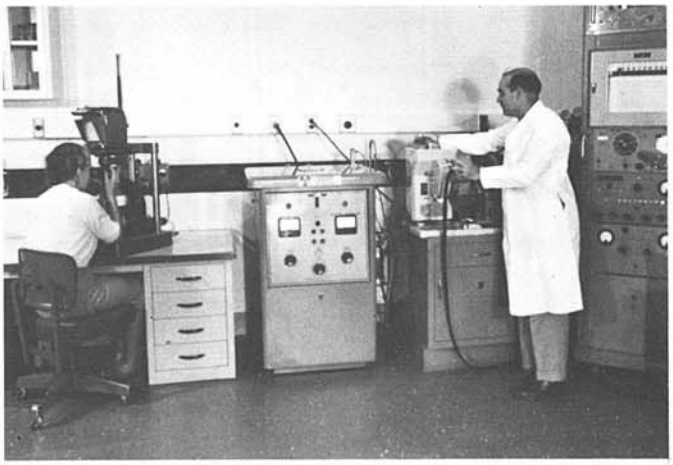
Spectrochemical analysis at NBS goes back more than 40 years—to work done by the "dean" of spectrochemistry, Dr. William F. Meggers, as well as by Dr. C. C. Kiess and others. Their work laid the foundation for spectrochemical analysis, not only at the Bureau but in the country as a whole.

The amount of such work done at the Bureau was, however, limited until the time of World War II. Then, NBS became heavily involved in the analysis of uranium for the Manhattan Project. The carrier distillation method was developed at the Bureau during the war by Bourdon F. Scribner, along with Harold R. Mullin, now at the AEC. At the same time a program in the development of Standard Reference Materials for spectrochemical analysis was initiated under Charles Corliss, and latter ably carried forward by Robert Michaelis, who is now one of the co-ordinators for the Standard Reference Materials Program.

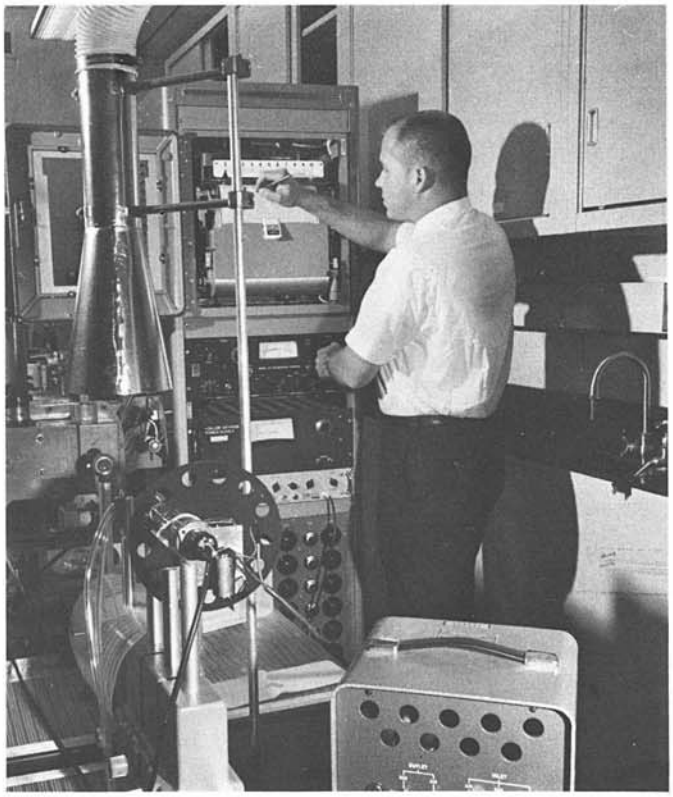
These activities led to the establishment of the Spectrochemistry (now Spectrochemical Analysis) Section in 1948, with Bourdon Scribner in charge. He has continued to guide the Section into such new areas as x-ray spectroscopy, atomic absorption, spark-source mass spectrometry and electron microprobe analysis. The staff is now made up of 15 regular members, including nine chemists, two physicists, three technicians and one clerical assistant, and, in addition, two summer workers this year. The staff members not shown in the photographs include Dr. Kurt Heinrich, in charge of the x-ray and electron probe activities, Mrs. Virginia Stewart, Paul Branch and Mrs. Frances Hilten, secretary.

Mrs. Elizabeth Hubbard examines plates on the microphotometer for qualitative analysis. Back of Mrs. Hubbard are some of the reference samples and pure materials in the Section's collection. These materials provide comparison standards for the great variety of samples submitted for qualitative or quantitative analysis.

Mr. Gerald Wolfson (left) studies the discharge pattern of this large emission spectrometer. Mr. Doward Bouchette checks results as they are printed at the readout. This complex of equipment at NBS pioneered in completely computerized emission spectrometry.



Mrs. John Darr (left) uses a microscope to examine samples which will be analyzed in the laser probe. At right, Mr. Robert Alvarez is seen analyzing an alloy on an X-ray spectrometer. This complex of equipment is often used for developing new methods of X-ray analysis. The Section also has a multichannel X-ray spectrometer for repetitive work.



Dr. Claude Veillon, an NRC-NBS Postdoctoral Research Fellow, adjusts the amplifier on an atomic absorption spectrometer. At the time this picture was made, the instrument was being used for analysis of samples of beryllium copper which will be issued as Standard Reference Materials.

Mr. Daniel Marcellus, a college student and a participant in the Bureau's summer research program, uses a laser probe as the light source in the process of anaylzing a micro-sample. The laser is mounted on a 3.4-meter Ebert Spectrograph. The Section also has two other large spectrographs.

5th NATIONAL MEETING

SOCIETY FOR APPLIED SPECTROSCOPY

June 13-17, 1966 Chicago, Illinois

The Fifth National Meeting of the Society for Applied Spectroscopy was held at the Sheraton-Chicago Hotel during the week of June 13-17, 1966. It can truly be described as one of the most successful technical events of the year.

The 1,272 registrants, who traveled from the four corners of the earth, set an all-time attendance record for a National SAS Meeting. Furthermore, all 63 exhibitor booths were filled with the latest developments of 43 nationally known manufacturers from the fields of spectroscopy, gas chromatography and related laboratory equipment. Concurrent with the meeting, there were a total of 16 well attended seminars given by various exhibitors in the form of movies, lectures and instrumental demonstrations.

A total of 262 technical papers were presented. Approximately 20 were delivered by our spectroscopy friends from Germany, Italy, France, England, Scotland, Canada, Australia and Japan. All phases of theoretical and practical spectroscopy and chromatography were explored.

The employment bureau, operating for the first time, offered 53 positions from 32 of the nation's leading industries. Although it is impossible to determine the number of positions actually filled, it is believed that the employment center was an asset in making the meeting a success.

The 1965 SAS Journal Award, the annual award for the best contributed article to Applied Spectroscopy, was presented to Dr. Joseph B. Urenovich for his paper: "Infrared and Raman Spectra of some Penta-Methyldisilanyl Compounds." For outstanding service to the journal, upon their retirement, honoraria were presented to H. M. Hyman, R. W. Loofbourow, W. J. Poehlman, and I. L. Simmons of the Editorial Staff, and to V. A. Cirillo, R. H. Curry and J. Hansen of the Business Staff.

Mr. Christopher Brown (right) was presented the third annual Chicago Section SAS Award, a $500 stipend, for his outstanding work in the field of spectroscopy at the Chemistry Department of the University of Minnesota. Elwin Davis is shown congratulating the lucky winner.

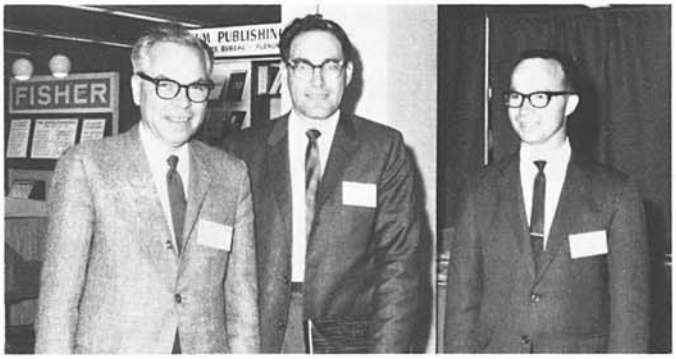
JOB WELL DONE — Elwin Davis (right), President of the Chicago Section, and his wife (left), relax a few minutes with Dr. Elma Lanterman, Co-Chairman of the Program Committee for the meeting, and Dr. H. A. Szymanski, President-elect of SAS.

SPEAKERS — Those attending the sessions on Applications of Spectroscopy in Biological Studies heard interesting lectures by (left to right): Moshe Ben-Porath, Veterans Administration Hospital, Hines, Illinois; Fred Losee, Eastman Dental Dispensary, Rochester, New York; Herta Spencer, VA Hospital, Hines, Illinois; George Alexander, University of California Medical Center, Los Angeles; and John T. McCall, Mayo Clinic, Rochester, Minnesota.

INGREDIENTS FOR A BARBERSHOP QUARTET — From left to right: E. L. Tungate and Chester Hastings, both of Bridgeport Brass Company; Walt T. Barnes, Convair Corp.; and Roby Hott, Naval Avionics Facility.

POPULAR BOOTH — Gene Musinski (right) of Ultra Carbon is ever-eager to explain more about the message on the sign behind him. The camera caught him chatting with George Beck of Reynolds Metal Company.

A LOVELY SIGHT — Wives of members of the Chicago Section SAS — from the left: Nancy Baer, Leah Wilson, Mary Hansen and Lorry Murphy.



SURROUNDED — Two Ultra Carbon representatives, Carl Leistner (left) and Ray Baney, surround C. L. Chaney, General Atomics, during the Fifth National Meeting.

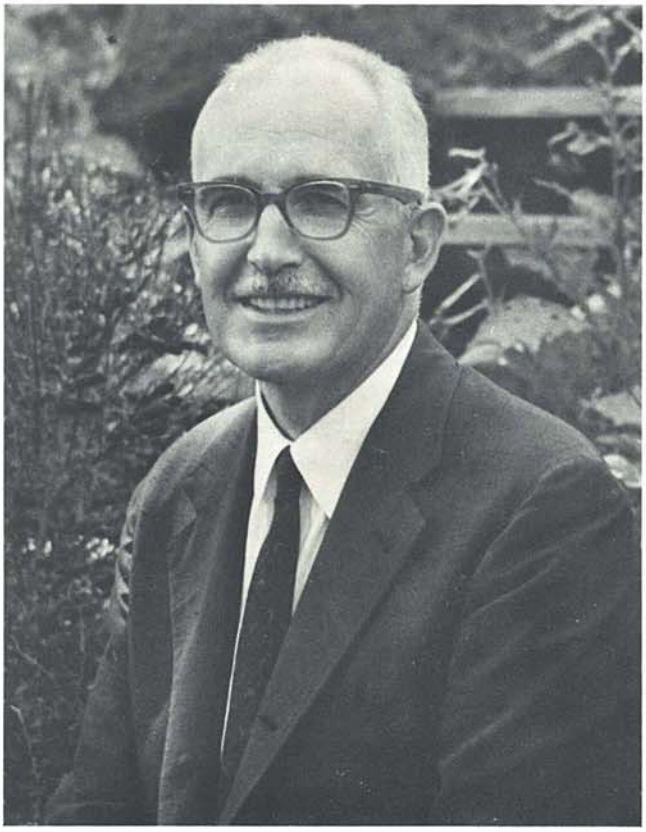
FIVE TAKING FIVE — Dr. James Robinson, Louisiana State University; Joan Steffen, American Zinc Company; Joan Westermeyer, National Lead Company; Dr. Charles Belt, St. Louis University and Mrs. Belt.

THE WINNER — Chris Brown (right) University of Minnesota and winner of the Chicago Award and his professor, John Overend (second from right), having an exchange of ideas with A. J. Perkins (left), University of Illinois, and Walter Edgell, Purdue University.

A FUNNY THING HAPPENED — Too bad we missed it. Sharing laughs are John Ferraro, Argonne National Laboratories and Kazuo Nakamoto, Illinios Institute of Technology.

WELL REPRESENTED — International Harvester was represented by J. M. Stice (left) of the Solar Division, and D. J. Pluhar of the Research Laboratories.

SPECTROSCOPIST of-the-month



Dr. George R. Harrison

Dr. George Russell Harrison certainly needs no introduction. His many, many years of activity in the field of spectroscopy have generated countless warm friendships. His contributions in the form of papers, books, lectures, research and development have reached scientists around the world. It is with deep respect and much pride that we salute Dr. Harrison with this brief story of his life.

Dr. Harrison was born in San Diego, California, on July 14, 1898. His father, Ernest Harrison, was an English dry goods merchant who went to California in the 1890's. His mother, Magda Lincke Harrison, was an immigrant from Leipzig, Germany. Dr. Harrison graduated from high school in Arroyo Grande Valley, California, as salutatorian of his class, which was an early indication that important things were to be expected of him.

From an early age he was determined to attend college, and in 1915 appeared at Stanford University without previous notification or admittance. In his pocket was $65 earned picking fruit for a Japanese farmer. He planned to attend college for one year and take a year off to earn enough money for the second year, thus requiring eight years to complete the undergraduate course in physics. However, by first waiting on table in the servants' dining room of the women's dormitory at Stanford and later finding more remunerative jobs, at the end of seven years he ended up with a B.A., M.A. and a Ph.D., plus an instructorship.

During World War I Dr. Harrison, a private in the Stu-

dents' Army Training Corps, was just ready to enter officer candidate school when the armistice intervened. In World War II, he served as Chief of the Instruments Section, and later of the Optics Division, of the National Defense Research Committee in the Office of Scientific Research and Development. Near the end of the war he became Chief of the Physics Section of the NDRC also.

In 1943 Dr. Harrison was sent to Australia and New Guinea as Scientific Advisor to General MacArthur, and set up a "research section" for the introduction of new weapons at GHQ. He was also Assistant Director of the Office of Field Service of the OSRD, as well as representative to the Australian Government in aeronautics and in medicine of that organization. For contributions in this war Dr. Harrison received the Presidential Medal of Merit and the War Department Medal of Freedom.

For his scientific work, Dr. Harrison has received the Rumford Medal of the American Academy of Arts and Sciences, the Ives Medal and the Mees Medal of the Optical Society of America, the Cresson Medal of the Franklin Institute, the Medal of the Society of Applied Spectroscopy, and the Pittsburgh Spectroscopy Award. He has received honorary doctorates from Northeastern University, St. Lawrence University, Middlebury College and Drexel Institute.

After teaching physics at Stanford as an instructor from 1919 to 1923, Dr. Harrison was named a National Research Fellow at Harvard University for two years, while his wife continued her undergraduate career at Radcliffe. In 1925 they returned to California and Dr. Harrison became an Assistant Professor of physics at Stanford, soon being promoted to Associate Professor. In 1930 he moved his growing family East again to become professor of physics and Director of the Research Laboratory of Experimental Physics at M.I.T. In 1942, Dr. Harrison became Dean of the School of Science at M.I.T., a position held until his retirement in 1964. He is now devoting half his time to the continuation of his research in the M.I.T. Spectroscopy Laboratory, which he founded in 1931, and spends the remainder of his time attending to a number of other part-time jobs, including acting as director of and scientific consultant to several corporations.

During his 22 years as Dean, he was responsible, to a considerable extent, for the emergence of the School of Science at M.I.T. as a leading center for education and research.

Although an administrator, Dr. Harrison continued to be active as a scientist in his field of specialization, spectroscopy, which has a wide range of applications, from the study of the structures of atoms and atomic nuclei to analysis of the light of stars. The fundamental tool of spectroscopy is the diffraction grating, which breaks light waves into a spectrum, and under Dr. Harrison's direction, the Spectroscopy Laboratory at M.I.T. has produced some of the finest gratings in the world.

In 1958 the laboratory completed a number of ten-inch gratings of unusual power and quality. This was made possible by a new process involving control by means of light waves of a very precise engraving machine.

Dr. Harrison has been a leading spokesman for more rigorous education and greater scientific effort in the United States. Although he has warned of the consequences of an American failure to achieve leadership in science, his expectations for the future have been more optimistic than those of many scientists. In his books for the layman, such as "Atoms in Action" and "What Man May Be," he has sought to explain the many changes in the world which are produced by scientific progress.

Dr. Harrison has been a professor of physics since 1930. In 1932 he organized the first of ten annual Summer Conferences in Spectroscopy which brought to the Institute leading scientists from this country and abroad and greatly influenced the development of applied spectroscopy. These conferences marked the beginning of self-awareness of the analytical spectroscopists as a group, and were the forerunner of a number of modern societies of spectrographic analysts.

He developed six ingenious instruments which have contributed notably to progress in the field of spectroscopic research, and invented echelle spectroscopy. One machine automatically measures and computes wavelengths of spectrum lines, while another rapidly determines the energy of atoms and molecules from their spectrum lines, and is capable of making 50,000 subtractions a minute. These devices made possible the compilation of the M.I.T. Wavelength Tables, an encyclopedic work standard since 1939 in many fields of science and industry. Through the development of such instruments, Dr. Harrison has provided modern physics with tools of great value for the investigation of scientific problems of fundamental importance.

Dr. Harrison's book, "What Man May Be," has been widely quoted and appeared in German, French, Spanish, Chinese and British editions. His "Atoms in Action," published in 1939, has since been translated into 16 languages. A simplified version of this book, "How Things Work," was published for children and also has been widely translated. In 1948 Dr. Harrison with two of his colleagues, R. C. Lord, a chemist, and J. R. Loofbourow, a biologist, published "Practical Spectroscopy," a text and reference book which is still widely used by spectrographic analysts. From 1940 to 1950 he was editor of the Journal of the Optical Society of America.

Many spectrographers and other members of the Optical Society of America will remember the "feud" developed between Dr. Harrison and Dr. W. F. Meggers when they were successively presidents of the Optical Society, with the object of increasing attendance at the banquets held during the Annual Meetings of this society. Most of those present knew that Dr. Harrison and Dr. Meggers had been fast friends since 1921, but following the example of two well-known comedians on television, they developed an artificial feud which caused much merriment and soon resulted in attendance at the annual banquets being more than doubled.

Dr. Harrison, a widower, was married in 1957 to the well known author of books for girls, Betty Cavanna. With his wife he has produced twelve travel books for children, for which he provided the photographs. Among his hobbies Dr. Harrison includes the raising of orchids, a hothouse job in the New England climate, and photography. The Harrisons, who live in Concord, Massachusetts, also have a summer home on Cape Cod.

at the Eighth Annual

Rocky Mountain Spectroscopy Conference

August 1966 ***Denver, Colorado***

NOTABLES — Among those attending the meeting at The Albany Hotel in Denver were (left to right) Professor Alex Volborth, University of Nevada; Mrs. Volborth; and Alfred T. Meyers, U.S. Geological Survey, Denver.

HANDSOME GROUP — Tall one in the group is S. L. Russak, featured speaker at the banquet. Title of his talk was, "Experiments for the Apollo Telescope Mount." Mrs. Russak is shown at his left. Also shown are (left to right): Robert Brennan, U.S. Geological Survey; Mrs. Brennan; R. C. Reinke, The Dow Chemical Company, Golden, Colorado; Mrs. Reinke; and Mr. and Mrs. Russak; and Mrs. Del Hughes, whose husband is General Manager of Ultra Carbon.

LOOKS GOOD ENOUGH TO EAT — Counting calories are (left to right): Carl Leistner, Ultra Carbon; Dr. Frank L. Chan, Aerospace Research Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio; Charles H. McKinney, Continental Oil Company, Ponca City, Oklahoma; and Frank Marlow, Jr., ACF Industries, Indianapolis.

MORE NOTABLES — From the left: L. J. Higgins, Lucius Pitkin, Inc., Grand Junction, Colorado; Karmie Galle and T. C. Waugh, both of Kansas Geological Survey, University of Kansas; Dave Conway and A. L. Schalge, both of Research Laboratories, Marathon Oil Company, Littleton, Colorado; and Carl Leistner.

at the BALTIMORE-WASHINGTON LADIES NIGHT MEETING May 1966

It was Ladies Night for members of the Baltimore - Washington Section of SAS on May 24, 1966. Held at the Royal Arms Restaurant in Hyattsville, Maryland, the meeting attracted 52 members and their wives. Highlighting the evening was a talk by Mr. Wallace F. Jansseu, Director of Office of Public Information, U.S. Food and Drug Administration. His subject was, "Fraud Fighters—Famous Cases of Medical Quackery."

Officers of the Section are: front row — Mel Hess, General Refractories Co., Secretary; Andrew Rekus, Baltimore Gas and Electric Co., Delegate; Harry Rose, U.S. Geological Survey, Chairman; back row — Maurice J. Peterson, U.S. Bureau of Mines, Alternate Delegate; Richard Knauer, Armco Steel Co., Alternate Delegate; Richard Dye, Pemco, outgoing Chairman; and B. F. Scribner, National Bureau of Standards, Chairman-elect. (Next year let's have a picture of the ladies.)

at the
TENTH ANNUAL CONFERENCE
CLEVELAND SECTION
SAS - ACS *May 1966*

MR. & MRS.—Front row (left to right) are Allan Gordon, Lincoln Electric Company, Education Committee Chairman of the Cleveland Section; Nita Stone, General Electric, Secretary of the Cleveland Section; and Mrs. Don Lewis. Don, of Alloys & Chemicals Corporation, was Publicity Chairman of the conference and is in the back row, far left. Next to him are Mrs. Allan Gordon and Mr. Gene Stone, husband of Nita. Co-hosts for the meeting were Western Reserve University and Case Institute of Technology.

AWARD WINNER — Dale Wingeleth, pictured with his wife, was presented the Ernest B. Yeager Award at the meeting. The annual award is presented to an undergraduate from one of 13 Northeastern Ohio colleges. Mr. Wingeleth, of Cleveland State University, presented an award-winning paper on "The Thermal Decomposition of Trisoxalatocobaltate III Complex." He studied the kinetics in aqueous acid solutions spectrophotometrically. From his calibrations he computed energies and entropies of activation for the process. The award consists of a certificate and $100.

at the
Xth Colloquium Spectroscopicum Internationale
ORGANIZING COMMITTEE ANNIVERSARY PARTY
March 1966

Dr. and Mrs. Ellis Lippincott (he's with the University of Maryland) entertained the organizing committee of the Xth Colloquium Spectroscopicum Internationale at their home at Vienna, Virginia, on March 21, 1966. The party marked the fifth anniversary of the organizing committee of the Xth Colloquium, held at the University of Maryland in 1962.

Included in the organizing committee were (left to right): Bourdon F. Scribner, NBS; Mrs. Scribner; Andrew Rekus, Baltimore Gas and Electric; Mrs. Rekus; Mrs. Isadore Adler; Dr. Leopold May, Catholic University; Mrs. May; Dr. Isadore Adler, NASA-Goddard Space Flight Center; Alvin Bober, U.S. Customs Laboratory; Mrs. Bober; Carl Leistner, Ultra Carbon; and Dr. Lippincott.

GRACIOUS HOSTESS — Mrs. Lippincott was proud to show off their 8-month old, Neal.

WORLD SADDENED BY DEATH OF DR. HARMON

Members of SAS and OSA throughout the world were sorry to hear of the death of Dr. Daniel L. Harmon. He died on April 16, 1966, in Detroit at the age of 70.

Dr. Harmon was honored at a retirement banquet in May, 1965 (Arcs & Sparks, October, 1965), after 22 years of teaching physics at the University of Detroit.

A native of Pennsylvania, Dr. Harmon earned his B.S. and M.A. degrees at Pennsylvania State University, and his Ph.D. at Indiana University. He taught at Penn State and St. Mary of the Woods, Indiana, before his assignment at Detroit.

He was active with the Boy Scouts of America and received the highest honors that organization bestows: the Silver Beaver and the St. George Awards. He was a commissioner of the BSA. A pioneer in the field of electronic physics, he was conversant with all progress along the lines of inter-atomic energy release, including the discovery of fission in 1939. He lectured frequently to what he called "the laymen" on atomic energy, its development and uses.

He was a founder and first national treasurer of Theta Kappa Phi fraternity, past secretary of the Detroit Section of the Optical Society of America, and held membership in the American Physical Society, The Acoustical Society of America, Phi Kappa Phi, Sigma Xi and Alpha Epsilon Delta.

Loss of Friend and Scientist:
Dave Richardson

Our friend and highly respected scientist, David Richardson, died August 1, 1966. He leaves behind him a heritage in the David Richardson Grating Laboratory at Bausch & Lomb, dedicated in his honor on February 15, 1966. (See *Arcs and Sparks*, June 1966.) We shall all miss him.

Memorial Fund Established For Dr. Van Zandt Williams

A great loss has been felt with the death of Dr. Van Zandt Williams, President of the Optical Society of America. He died May 13, 1966, at the age of 50, while in London attending conferences to establish an international information system for the advancement of physics.

A former vice president of Perkin-Elmer Corporation, Dr. Williams was director of the American Institute of Physics.

Born in Providence, Rhode Island, in 1916, Dr.Williams received his A.B. from Brown University and his Ph.D. at Princeton. His professional interests were in infrared techniques and chemical analysis instrumentation.

LOOKING AHEAD

THIRTEENTH CANADIAN SYMPOSIUM on Applied Spectroscopy, being held this year for the first time outside Ottawa, will open October 24 at the Holiday Inn, 420 Sherbrooke Street West, Montreal. This symposium has long been known as The Ottawa Symposium, but now the annual meeting will rotate from year to year among various Canadian cities. The Montreal Section of the Canadian Association for Applied Spectroscopy is arranging interesting tours of the site of the 1967 World's Fair, EXPO 67, now under construction. For information contact: Norman S. Morris (Secretary-Treasurer), Northern Electric Company, 1261 Shearer St., Montreal, Quebec; or, Dr. Silvio Barabas (Program Chairman), Noranda Research Centre, Pointe Claire, Quebec.

NORTHERN CALIFORNIA Society for Spectroscopy, the California Section of the American Chemical Society and the Optical Society of America will sponsor a joint meeting and equipment exhibit during the week of October 17. Officially called the San Francisco Science Symposium, the meeting will take place at the Jack Tar Hotel. Monday, Tuesday and Wednesday will be devoted to technical sessions of regional meeting of the ACS and NCSS, and the Annual Fall Meeting of the Optical Society will be held on Wednesday, Thursday and Friday. Joint sessions will be held on Wednesday.

CINCINNATI SECTION of SAS now has its 1966 Continuing Education Program on Instrumentation Methods underway. Held each Wednesday evening from 7 to 9:30, the series began September 28 and runs for eight consecutive weeks.

ANACHEM CONFERENCE will be held on October 11, 12 and 13, 1966, at the McGregor Memorial Conference

Gatlinburg was Great

GATLINBURG, TENNESSEE is still buzzing after the Tenth Conference on Analytical Chemistry in Nuclear Technology. Held September 27-29 at the Mountain View Hotel, the conference was sponsored by the Analytical Chemistry Division of the Oak Ridge National Laboratory, operated by Union Carbide Corporation for the U.S. Atomic Energy Commission at Oak Ridge, Tennessee. Also assisting were staff members of the Phillips Petroleum Company, Idaho Falls, Idaho; E. I. du Pont de Nemours and Company, Savannah River Plant, Aiken, South Carolina; and the Brookhaven National Laboratory, Upton, Long Island, New York.

Center on the Wayne State University campus in Detroit. That means you'll have to move fast if you want to attend. As usual, an outstanding program is planned, featuring nationally known analytical chemists discussing subjects of wide interest. The program includes special symposia, an exhibit of new instruments and equipment, and the presentation of the ANACHEM AWARD to an outstanding analytical chemist. Symposia are planned on the following subjects: Analysis in Air Pollution, Analysis in Water Pollution, Thin Layer Chromatography, Molecular Weights, Clinical and Biological Analysis, Optical Sessions, and Advances in Atomic Absorption Analysis. Roger E. Marce will be most happy to supply additional information. His address is: Allied Research Products, Inc., 400 Midland, Detroit, Michigan 48203.

MOSSBAUER SPECTROSCOPY INSTITUTE is planning a course to be held in June of 1967 at Catholic University of America, Washington, D. C. An introduction on the theory and interpretation of Mossbauer Spectroscopy, the course will be presented by leading investigators in the field. Topics to be covered include the theory, instrumentation, and application to biology, chemistry, metallurgy, nuclear physics and solid state physics. Various types of spectrometers will be available to the participants. For information please contact: Dr. Leopold May, Department of Chemistry, Catholic University of America, Washington, D. C.

1966 EASTERN ANALYTICAL SYMPOSIUM will be held in New York City on November 16, 17 and 18 at the Statler-Hilton hotel, New York City. For details contact Mr. Ivor L. Simmons, M & T Chemicals, Inc., P.O. Box 471, Rahway, New Jersey 07065.

New Publication

COMPILATION OF MASS SPECTRAL DATA—This new book of 617 pages by A. Cornu and R. Massot is now available. The compilation has been sorted and arranged by computer techniques from a punched card index containing about 5,000 mass spectra, collected over a period of years at the laboratory of Mass Spectrometry, Centre of Nuclear Studies, Grenoble, France. The 5,000 spectra have been sorted and indexed four ways: by reference number, molecular weight, molecular formula and fragment ion values (including the molecular ion). $42. per copy. Order direct from publisher, Heyden & Son, Limited, Spectrum House, Alderton Crescent, London NW4 England.

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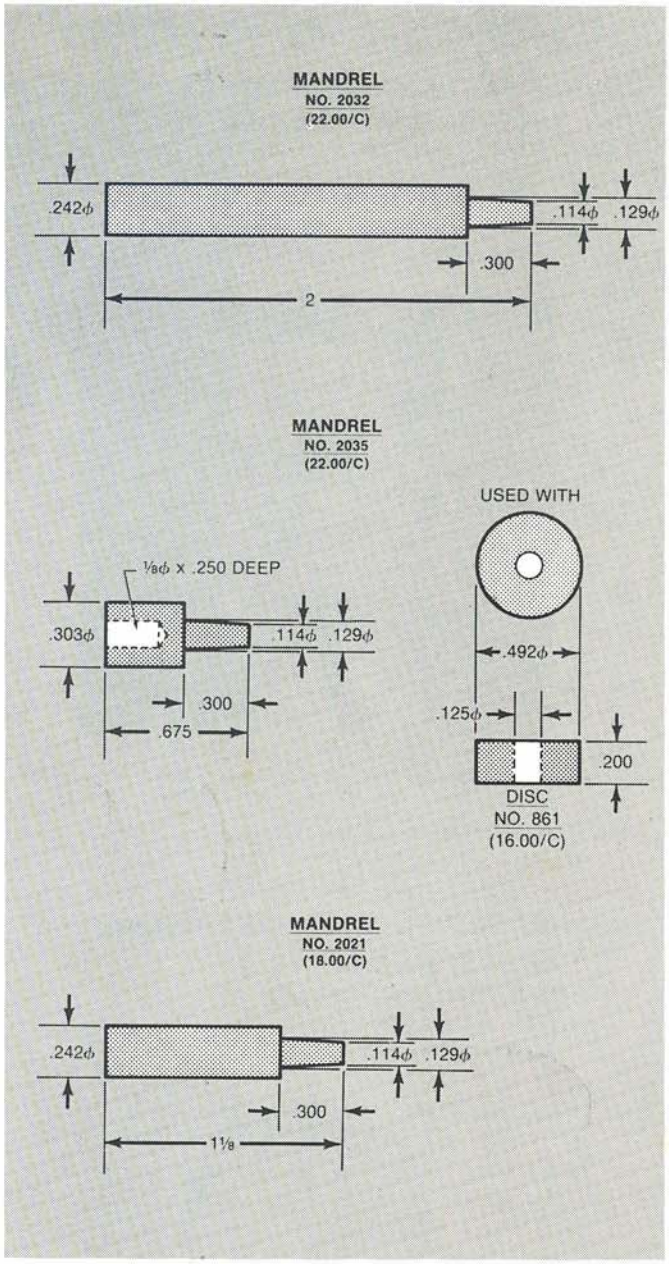

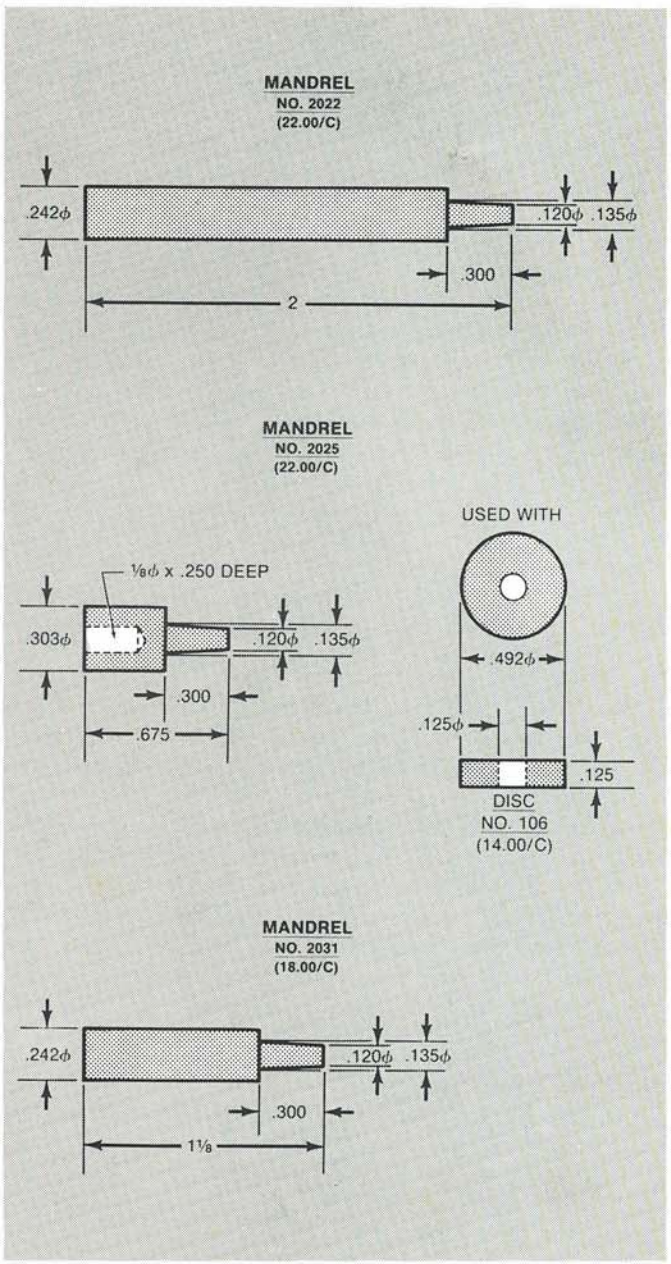

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