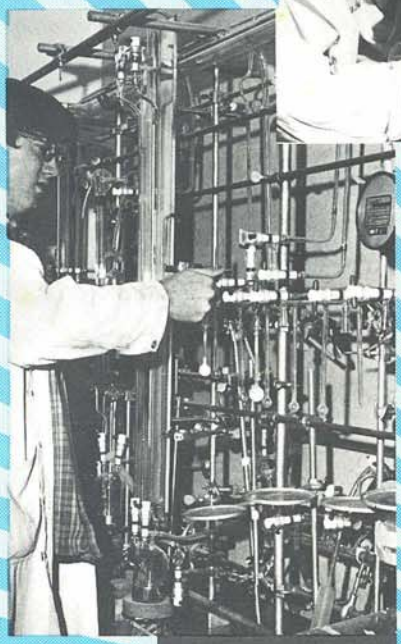
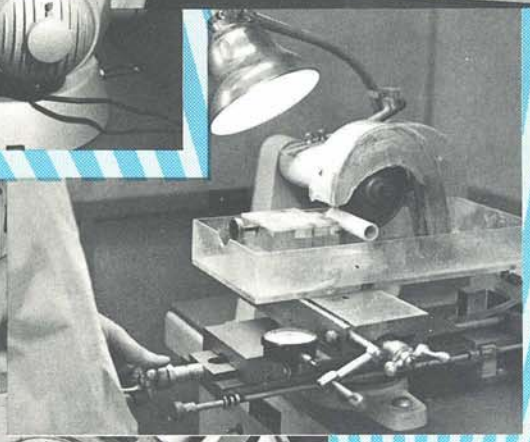
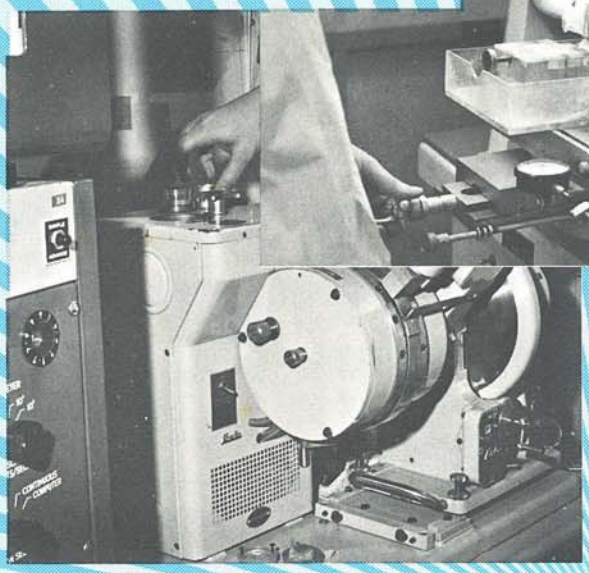
ARCS & SPARKS

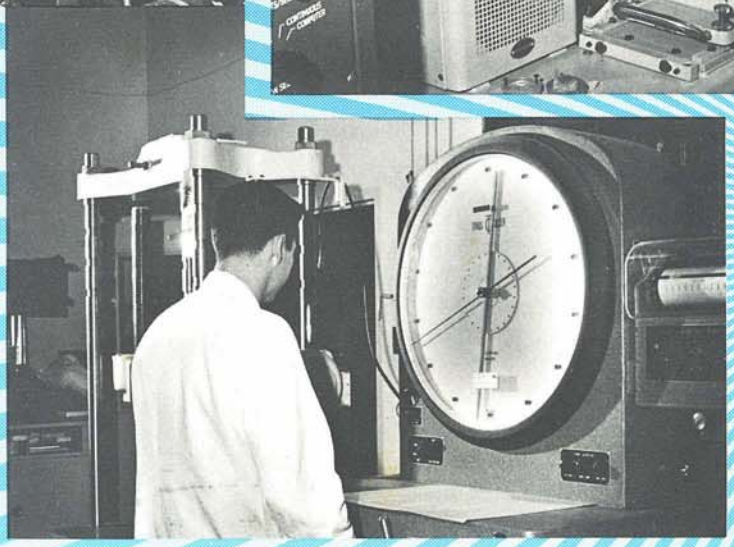
Published by the
Ultra Carbon Corporation
for the advancement of Spectroscopy

SPRING-SUMMER 1971 VOLUME 16 NO. 1









IN THIS ISSUE

Coors SPECTRO-CHEMICAL LABORATORY

ARCS & SPARKS
Spring - Summer 1971 Issue

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PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

13th Annual Rocky Mountain Spectroscopy Conference August 9-10, 1971 Denver, Colorado

The Rocky Mountain Section of the Society for Applied Spectroscopy announces the 13th Annual Rocky Mountain Spectroscopy Conference to be held August 9 and 10, 1971 at the Albany Hotel in Denver, Colorado.

Original papers are invited in all fields of theoretical and applied spectroscopy including: atomic absorption, flame, arc-spark emission, activation analysis, nuclear particle, gamma ray, x-ray, ultraviolet, visible, infrared, far infrared, Raman, NMR-EPR, mass spectrometry, and laser microprobe. Send abstracts of less than 300 words by May 20, 1971.

Send abstracts and requests for further information to:

George M. Pachelo
Conference Chairman
Dow Chemical Company
Building 559
P. O. Box 888
Golden, Colorado 80401

COMMITTEE CHAIRMEN: put Arcs & Sparks on your mailing list. We want to publish any information and photos which you feel will be of interest to your fellow spectroscopists.

Deadline—October 15, 1971 for Fall-Winter issue.

Address: *Miss Marion M. Tamblyn, Editor*
Arcs & Sparks
Ultra Carbon Corporation
P.O. Box 747
Bay City, Michigan 48706

Arcs & Sparks is published by Ultra Carbon Corporation, P.O. Box 747, Bay City, Michigan 48706, for the advancement of the profession of spectroscopy. News stories, changes of address and other pertinent correspondence should be directed to the Editor.

LOOKING AHEAD

June 2-3	Second All-Industry Conference on Pollution Control. Pick Carter Hotel, Cleveland, Ohio. *Contact:* William M. Mueller, Director of Education, ASM, Metals Park, Ohio 44073
June 14-17	International Symposium on Identification and Measurement of Environmental Pollutants. Ottawa, Ontario, Canada. *Contact:* M. K. Ward, National Research Council of Canada, Ottawa 7, Ontario. 613-993-1421.
June 14-18	26th Annual Symposium on Molecular Structure and Spectroscopy. Ohio State University. *Contact:* K. Narahari Rao, Dept. of Physics, 174 W. 18th Ave., Ohio State University, Columbus, Ohio.
June 16-18	24th Annual Summer Symposium, Division of Analytical Chemistry, ACS. NBS, Gaithersburg, Md. Topic: Analytical Chemistry: The Key to Progress in National Problem Areas. *Contact:* W. W. Meinke, National Bureau of Standards, Washington, D.C. 20234.
July 25-30	XXIIIrd International Congress of Pure and Applied Chemistry. Boston, Mass. *Contact:* Secretariat, XXIIIrd IUPAC, c/o American Chemical Society, 1155 16th St., N.W., Washington, D.C. 20036. 202-737-3337
August 9-10	13th Annual Rocky Mountain Spectroscopy Conference. Albany Hotel, Denver, Colo. *Contact:* George M. Pachelo, Dow Chemical Co., Bldg. 559, P.O. Box 888, Golden, Colo. 80401.
August 16-19	8th Australian Spectroscopy Conference. Clayton, Victoria, Australia. *Contact:* J. E. Kent, Dept. of Chemistry, Monash University, Clayton, Victoria 3168, Australia.
September 12-17	162nd National ACS Meeting. Washington, D.C. Includes Analytical Chemistry Division sessions. *Contact:* J. C. White, Analytical Chemistry Div., Oak Ridge National Laboratory, Oak Ridge, Tenn. 37830. 615-483-8611, ext. 3-1472
October 5-8	International Symposium on Nuclear Research Materials. Gatlinburg, Tenn. Sponsor: AEC-ORNL. *Contact:* E. H. Kobisk, Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, Tenn. 37830.
October 4-9	16th International Spectroscopy Colloquium. Heidelberg, Germany. *Contact:* Herrn Dr. W. Fritsche, p.A. Gesellschaft Deutscher Chemiker, 6 Frankfurt/Main 8, Postfasch 119075, Germany.
October 16-18	Pacific Conference on Chemistry and Spectroscopy. Disneyland Hotel, Anaheim, Calif. *Contact:* Lee Kalbus, California State College, San Bernardino, Calif. 92407. 714-887-6311.
October 18-21	18th Spectroscopy Symposium and Exhibit Ontario Science Centre, Toronto, Ont. Canada. *Contact:* G. F. Biesinger, Phillips Electronics Industries Ltd., 116 Vanderhoof Avenue, Toronto, Ont. Canada. 416-425-5161.
October 18-22	10th National Meeting of the Society for Applied Spectroscopy. St. Louis, Mo. *Contact:* E. F. Kaelble, Monsanto Co., Inorganic Research Dept., 800 N. Lindbergh Blvd., St. Louis, Mo. 63166.
November 10-12	Eastern Analytical Symposium. Statler Hilton Hotel, New York City. *Contact:* A. Z. Conner, Hercules, Inc., Research Center, Wilmington, Del. 19899.

ADELAIDE SYMPOSIUM

The Inaugural Symposium of the Royal Australian Chemical Institute, Analytical Chemistry Division, is to be held at the University of Adelaide, May 25-28, 1971

The announcement of this first Symposium has received enthusiastic response. Advance information indicates that participation and attendance will surpass expectations. The aim of this first meeting is to bring together people interested in analytical chemistry to share knowledge of modern methods and techniques. Particular emphasis is being placed on the important role analytical chemistry plays in industry.

The theme, the economical advantages of using modern analytical techniques, will stress production, quality control and product standards. Prominent speakers from Australia and overseas with experience in these areas will read approximately 75 papers. There will also be a display of the latest developments in analytical equipment. For further information: Mr. R. B. Lower, Analytical Chemistry Div., C/- Adelaide and Wallaroo Fertilizers Ltd. Box 80, P.O., PT Adelaide, S. Australia 5015.

10th NATIONAL MEETING — SOCIETY FOR APPLIED SPECTROSCOPY

Program Development Progress Report

Substantial progress has been made by Dr. Emmett F. Kaelble, Program Chairman, and the organizing chairman for the various general sessions and special symposia. A few of the highlights from the program in store for attendees at the 10th National Meeting of the SAS are given in the following paragraphs.

The program for the Spectroscopy in Space symposium is complete. Dr. Herbert Gursky, American Science & Engineering Company, Cambridge, Massachusetts, and Dr. Werner Neupert of the Goddard Space Flight Center at Greenbelt, Maryland will be presenting papers on solar and galactic X-rays. Infrared spectroscopy in space will be discussed in a paper by Dr. Rudolph A. Hanel who is also at the Goddard Space Flight Center at Greenbelt, Maryland. Dr. Richard Tousey of the U.S. Naval Research Laboratory will be presenting a paper on ultraviolet spectroscopy in space.

A symposium of interest to applied spectroscopists in the electronics industry will cover Analysis and Characterization of Electronic Materials. Already Mr. G. B. Larrabee, the head of the Radiochemistry Branch at Texas Instruments, Inc., is scheduled to present a paper on Activation Analysis. The Raman Effect on Semi-conductors will be discussed by Dr. A. Mooradian of the Massachusetts Institute of Technology. An interesting paper on X-ray Topography may also be included in this symposium.

Meeting attendees will have an opportunity to hear a discussion of European practices in X-ray and/or optical emission spectroscopy in a paper by Dr. Franz Rosendahl. Dr. Rosendahl is on the staff of Titangesellschaft, MBH in Leverkusen, West Germany.

Professor Velmer A. Fassel of Iowa State University will receive the second annual Maurice F. Hasler Award sponsored by the Bausch & Lomb Company.

Following the award luncheon, Dr. Lester W. Strock will chair the 1971 Hasler Award Symposium. Papers will be related to flame spectroscopy, one of Professor Fassel's current areas of research.

Mr. Maurice E. Salmon of the Smithsonian Institute has arranged an interesting symposium on the use of spectroscopy in museum examinations. This will provide meeting attendees with an opportunity to learn about several fascinating approaches to blending the ancient arts and modern spectroscopic technology. Speakers will include:

1. Dr. Thomas Cairns, Conservator-Chemist, Los Angeles County Museum of Art.
   Subject: Applications of Mass Spectrometry in the study of metallic objects and the study of painting media and pigments of Indian minature paintings.
2. Mr. William J. Young, Museum of Fine Arts, Boston, Massachusetts.
   Subject: Applications of the Laser Microprobe and Optical Emission Spectrography in the analysis of museum artifacts.

3. Mr. J. F. Hanlan, National Conservation Research Laboratory, National Gallery of Canada, Ottawa, Canada.
   Subject: Water color pigment analysis by means of non-dispersive X-ray Fluorescence Spectrography.

4. Mr. Bernard Leech, Conservation Department, Royal Ontario Museum, Toronto, Canada.
   Subject: Application of Optical Emission and X-ray Fluorescence Spectrography in the analysis of Chinese bronzes.

5. Mrs. Jacqueline S. Olin, Conservation-Analytical Laboratory, Smithsonian Institution, Washington, D.C.
   Subject: The Application of Neutron Activation Analysis of Medieval Stained Glass.

Program development is also proceeding for symposia on Spectroscopy in Environmental Control, Spectroscopy in Bio-medicine, New Frontiers in Spectroscopy, Use of Computers in Spectroscopy, and Literature and Data Retrieval. Details on these symposia as well as the variety of papers that will be presented at the general session will be available later on in the summer. The program will be published in Applied Spectroscopy and the program will also be the subject of direct mailing to all members of the Society for Applied Spectroscopy and other persons who have expressed an interest in details of the 10th National Meeting.
For information write:

Dr. E.F. Kaeble
Monsanto Company
Inorganic Research Dept.
800 N. Lindbergh Blvd.
St. Louis, Mo. 63166

Ultra Carbon Corporation Elects Sheldon To Board Chairman And Hughes To President

Seated (l. to r.), Del Hughes, Wes Sheldon. Standing (l. to r.), Ned Arbury, Ray Baney, Gene Musinski and Dave Sheldon.

Ultra Carbon Corporation's Board of Directors has elected Weston L. Sheldon as Chairman of the Board and Del Hughes as President and General Manager. In addition, Ultra Carbon shareholders have voted to increase the size of the Board of Directors from three to five members and have elected Raymond J. Baney and David M. Sheldon as new Directors.

Gene Musinski, Treasurer, and Ned Arbury, Director and Secretary shall continue in their present positions.

Weston Sheldon, prior to his election as Board Chairman, was President of Ultra Carbon. He has held that position since 1965, when the firm was reorganized under his direction.

Del Hughes was Executive Vice President and General Manager before his current election as President. He has been with Ultra Carbon Corporation for 25 years and has held several management positions including Secretary, Treasurer and Director of Administration.

Raymond Baney joined Ultra Carbon in 1958 and has held various manufacturing and marketing positions since that time. He will continue as Sales Manager of the firm, a position he has held since 1967.

David Sheldon is Manager of Michigan Retail Services, Inc. of Lansing, Michigan. He will continue to work and reside in Lansing.

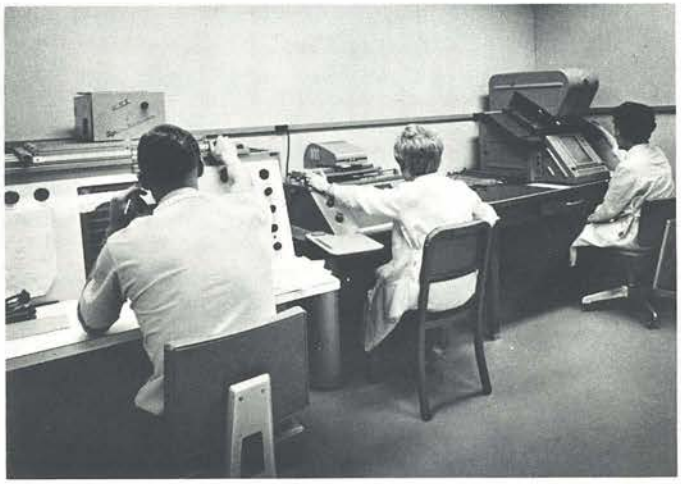
Gene Musinski joined the firm in 1947. He will continue as Director of Administration, the position he has held since 1967.

Ned Arbury, President of A. S. Arbury & Sons, Inc., Midland, Michigan, has been active as a director since the inception of the company in 1945.

Ultra Carbon was founded in Bay City, Michigan, in 1945 with the special capability of producing graphite and graphite products with purity levels until then unheard of. The original techniques used to purify graphite are today known as the "Ultra F Process". This process, on which basic patents were granted in 1956, is very well known to all users and manufacturers of high purity graphite materials and components. Since its formation, Ultra Carbon has been a research and development oriented company aimed at expanding the potential of its highly specialized products and technology in a wide range of industries.

Coors/SPECTRO-CHEMICAL LABORATORY

The laboratory is managed by Dr. Glenn H. McIntyre. He has directed corporate research and commercial spectro-chemical laboratories for over 40 years and is a recognized authority in the fields of ceramics and chemistry.

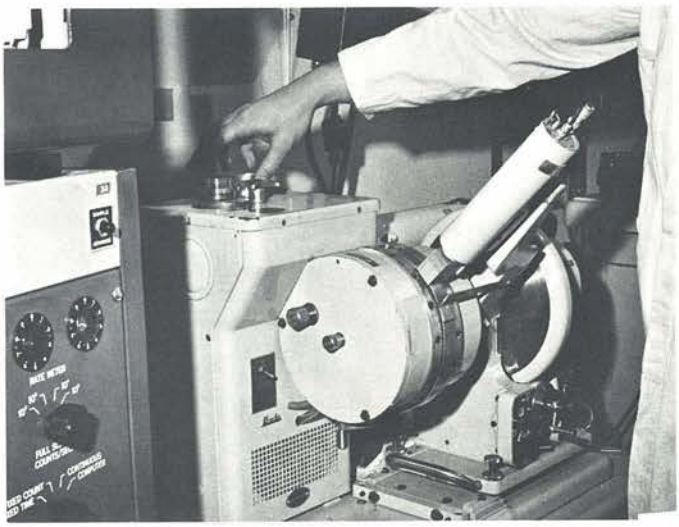


Densitometry
Seated from left to right: Mr. James Fox, Mrs. Barbara Wheeler, and Mrs. Rosemary Mapps.

Golden, Colorado, a community nestled in the foothills of the Rockies west of Denver, is the home of the Adolph Coors Company (4th largest producers of beer in the nation) and Coors Porcelain Company. The combined employment of these two companies is approximately 4500 people. Housed within one of the complex of buildings is Coors Spectro-Chemical Laboratory. This division of Coors Porcelain Company has operated as a commercial testing laboratory for the past six years.

At present, a staff of 20 chemists, scientists, and technicians are required to handle the work load. This, however, has not always been the case. Established in early 1956, the laboratory had one person and a 1.5 meter photographic emission spectrograph with appropriate support equipment. The primary objective at this time was to analyze the aluminum used in the manufacturing of aluminum beer containers. Between 1956 and 1961, the need for a quality control program within the porcelain plant became apparent and the laboratory's growth began with the addition of two technicians.

During 1960, the company further realized the significance of analytical data, and due to an Atomic Energy Commission (AEC) contract requiring close quality control data, further expanded the laboratory facility by adding a 3 meter photographic emission spectrograph, a vacuum fluorescent x-ray, and a complete inorganic wet chemistry

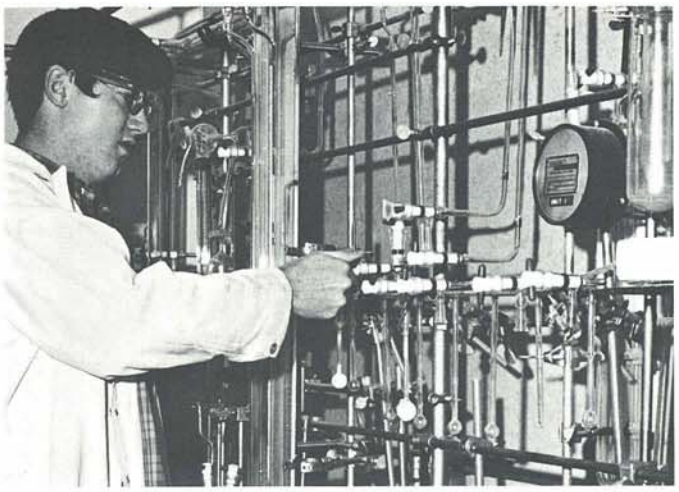


Vacuum Fluorescent X-ray

Mr. David Wherry making use of the gas chromatograph.

GOLDEN, COLORADO

Mrs. Barbara Wheeler working at the console of the dual-grating Emission Spectrograph.



Surface area of powders using the classical Brunauer, Emmet, and Teller (BET) gas adsorption technique being operated by Mr. Robert Robins.

laboratory. By the end of 1962, a staff of 14 people was required to keep up with the production schedule. The years of 1963 and 1964 were not as active as the previous two years. The AEC contract had been completed; consequently, the laboratory's staff was reduced to nine. On January 1, 1965, Coors Spectro-Chemical Laboratory was born.

Dr. Glenn H. McIntyre came to Golden from Cleveland, Ohio by way of Florida in the summer of 1964. He had been active in commercial laboratory administration both in Cleveland and Hialeah, Florida. In meetings with Mr. Joseph Coors, president of Coors Porcelain Co. and Mr. Laurence E. Ferreira, director of research, it was decided that the Rocky Mountain area needed a first class commercial laboratory to serve not only industries locally but nationally. Dr. McIntyre was offered and he accepted the position of manager of the laboratory, named Coors Spectro-Chemical Laboratory, with the charge that the laboratory was to provide accurate analyses of materials at reasonable speed and at competitive costs to its customers. A rather unusual philosophy for a captive laboratory was adopted in that customers were to be treated alike with no preference shown to Coors Porcelain Company's divisions as to services and prices over other customers of the laboratory. This meant that all work coming into the laboratory, regardless of

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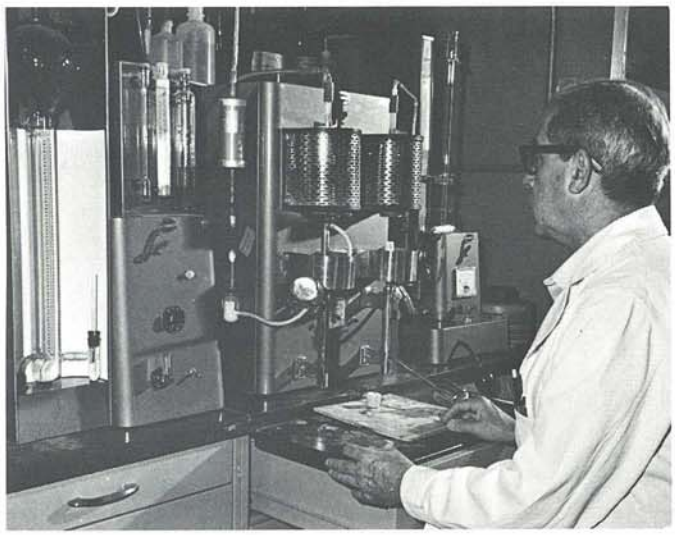
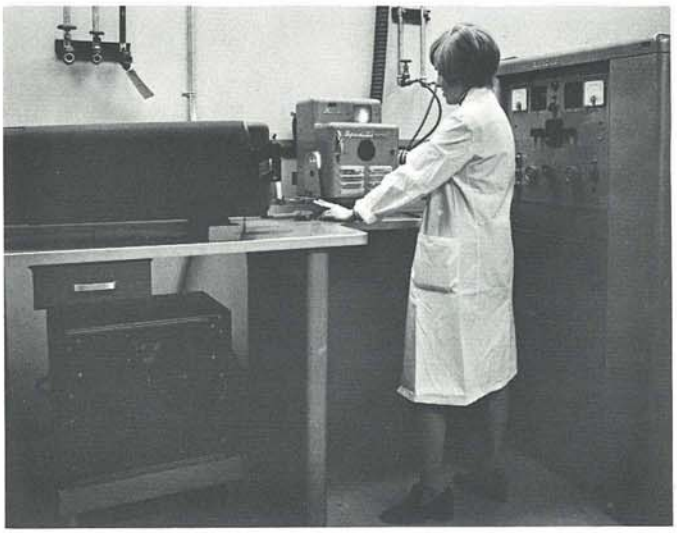


Mr. Almiro Lopez using the Leco Carbon Analyzer.



Mrs. Barbara Wheeler using the 1.5 meter Emission Spectrograph.

Coors/SPECTRO-CHEMICAL LABORATORY

Mr. Robert Chapin using the Atomic Absorption Spectrophotometer.

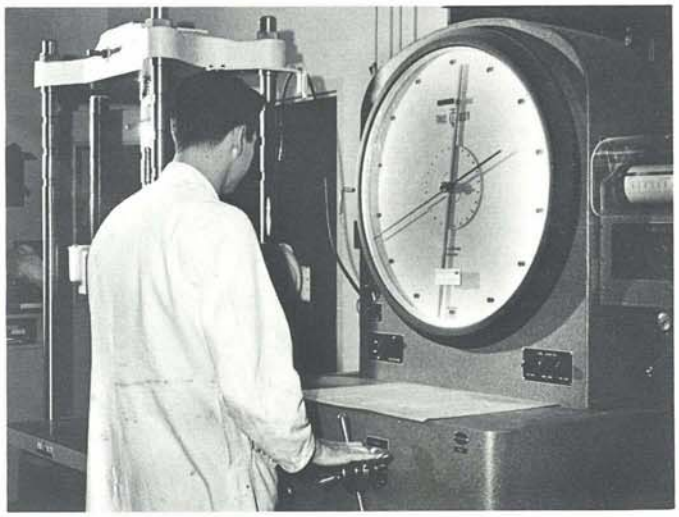
Mr. Glyndon Mondy is checking the Dielectric strength of a ceramic insulator for qualification under MIL-I-10B.

source, was to be treated with equal effort, scheduling, and high quality of performance.

Instruments and personnel were provided to keep the laboratory completely modern and efficient.

Being closely associated with the research and production facilities and personnel of the Coors Porcelain Company, it was natural that the laboratory early became highly specialized in the analysis of ceramic raw materials and finished products. Also, being closely allied with some of the requirements for the manufacture of aluminum containers for the Adolph Coors Company (producers of the famous "America's Fine Light Beer - Made from Rocky Mountain Spring Water" - sold in eleven western states) the laboratory was already expert in analysis of aluminum alloys.

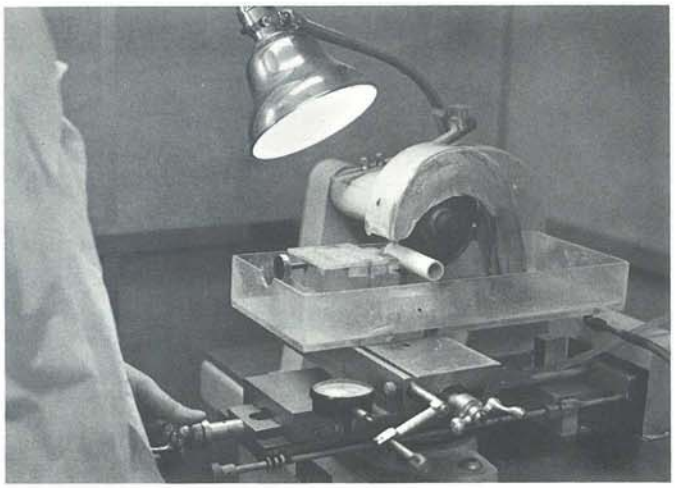
From this beginning the laboratory has grown steadily. It has expanded into all phases of inorganic and some organic materials testing and chemical analysis. Physical testing includes the all important subject of micromeritics properties of finely divided materials-surface area and particle size distribution. Surface area is determined by the classical gas adsorption method of Brunauer, Emmet and Teller. What basically is a classical research system has been adapted to a production process by carefully designing the adsorption equipment to include multiple stations with a minimum of volume, special greaseless



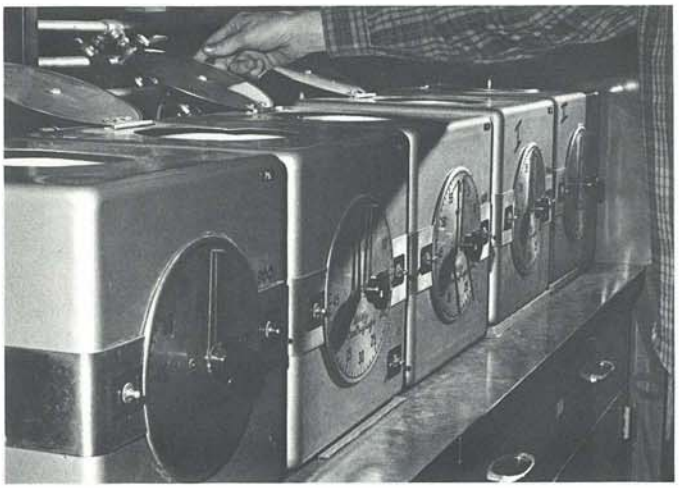
Compressive and tensile properties of metals and ceramics.

Mrs. Doris Cheever examining a ceramic polished section at the Zeiss Ultraphot II Metallograph.

GOLDEN, COLORADO



Cutting specimens for preparation of thin and polished sections prior to photomicrographic examination.



Particle Size Distribution of powders by the Whitby Centrifuge accelerated gravity technique.

stopcocks to avoid grease problems in a high vacuum system, transducers and recorders to register rapid pressure change in the system, and computerized calculations of data. The surface area of as many as thirteen powder samples daily can be determined with a surface area range of as little as one square meter or less than one square meter per gram to over 1000 square meters per gram with excellent duplication of data.

The apparatus used mostly for determining average particle size distribution is the accelerated gravity system known as the MSA Whitby Centrifuge. Other means are available if the customer desires, but this ASTMC-21 method has been found to yield reproducible data of value.

The testing and certification of alumina ceramic bodies for U.S. Military electrical insulator application must be performed under MIL—I—10B specifications. Coors Spectro-Chemical Laboratory is one of only a very few in the United States qualified by the government to perform these tests.

Recognizing the need for air and water pollution services to industry, the laboratory is equipped and experienced in the sampling of stacks for gaseous and particulate effluents. A wide variety of stacks have been studied and

(Continued on next page)

Mrs. Rosemary Mapps at the 3 meter Emission Spectrograph.

Coors/SPECTRO-CHEMICAL LABORATORY
GOLDEN, COLORADO

The Classical Wet Chemistry Laboratory is essential for referee analyses. Seated at the balance is Mr. Almiro Lopez. Standing at the bench is Miss Carolyn Utley. Beyond Carolyn is Mr. Bruce Brunstad, and Mr. Gary Henry is determining the sulfur content of a steel.

data reported. These include sewage incinerators, rubber products factory stacks, power, and ceramic plants.

Water samples from streams, storm and sanitary sewers, and factory outlets have been examined for many different species of contaminants - including mercury in extremely trace amounts.

Distilled water samples from one government facility is routinely analyzed for some twenty-eight elements in the few parts (1-10) per billion range to assure the facility no contamination has entered the distilled water system. Many of the elements, if present, are below the one part per billion level.

The laboratory also specializes in thin and polished sections of ceramic materials with corresponding photomicrographic examination for crystal size and related properties. Microprobe examination of materials of various kinds, including surface impurities, is also done routinely.

Metallographic specimens are examined for physical and chemical properties by instrumental and classical chemical means.

Radiography of ceramics, light metal alloys, plastics, and mineral specimens is also done on a routine basis. The laboratory is not equipped with the massive radiographic equipment that is required for the service of heavy metal sections. The type of specialized radiography done by this laboratory relates to imperfections and systems of minute dimensions in materials not highly opaque to x-rays. Resolving power is excellent.

An important service is provided to all industries with lubrication problems. These include the determination of wear metals in lubricating oils as well as all standard ASTM tests for oils and greases. Industries using diesel engines, aircraft engines and the like, find these data to be extremely valuable for preventative maintenance.

It may seem strange, particularly to easterners, that a laboratory located at the edge of the Rocky Mountains could provide efficient services across the width and length of the United States or compete with big city laboratories. By using air mail and messenger service directly from the receiving post office in Denver, Colorado, samples are received from most any location in the United States within twenty-four hours or less and more often, overnight.

Samples mailed any time during the week are usually in the laboratory the next morning. The delivery of samples and reports poses no delay problem. Hence, location on the eastern slopes of the Rockies near Denver has all the advantages of delightful climate and scenery with efficient delivery service of samples and reports.

This area is uniquely convenient for the mining industries. Exploration is still being pursued vigorously by many mineral exploration interests. Naturally, Coors Spectro-Chemical Laboratory is actively engaged in Geochemical and Assay analytical work.

Coors Spectro-Chemical Laboratory is a commercial testing laboratory which offers a wide range of analytical and testing capabilities to the metal, mining, ceramics, oil, and glass industries. Services offered include: emission spectroscopy, atomic absorption, gas chromatography, fluorescent x-ray, optical microscopy, particle size distribution and surface area of powders, complete ASTM lubricating oil testing, electron microprobe, and air pollution surveys.

22ND ANNUAL PITTSBURGH CONFERENCE

Cleveland Convention Center, Cleveland, Ohio — February 28—March 5, 1971

K. E. Curtis

A. J. Ahearn

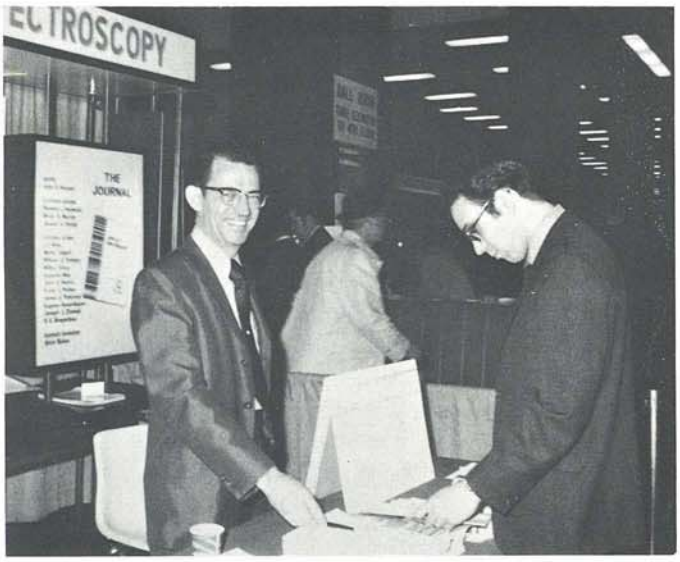
C. H. Perry

AWARD WINNERS AT PITTSBURGH CONFERENCE

The Society for Analytical Chemists of Pittsburgh awarded their 1971 SACP Fellowship Award to, K. E. Curtis of the University of Waterloo, Waterloo, Ontario, Canada. The presentation was made by G. L. Vassilaros, Chairman of the Society for Analytical Chemists. Mr. Curtis spoke to the session on, "Studies of the Analytical Reagent 2, 3—Dihydroxypyridine".

The Spectroscopy Society of Pittsburgh 1971 Award was presented to Dr. Arthur J. Ahearn of NBS, by C. J. McCafferty, Jr., Chairman of SSP. Dr. Ahearn's address to the special symposium was titled, "Trace Analysis by Spark Source Mass Spectrometry".

The Coblentz Society Award recipient was Professor Clive H. Perry of Northeastern University, Boston, Mass. The presentation was made by Dr. Charles Angell, President of the Coblentz Society. Professor Perry addressed the symposium on, "Infrared and Raman Spectra of Solids".



(l. to r.) Larry Grieshammer, The Lubrizol Corp., Cleveland, Ohio, Richard Fiedel, Pfizer Inc., Easton, Pa.

(l. to r.) G. W. Ryder, Delco Moraine Div. GMC, Dayton, Ohio, J. W. Ryan and D. E. Witenhafer both of B. F. Goodrich, Avon Lake, Ohio.

(l. to r.) Emmanuel Hernandez, University Nacional, Bogota, Columbia and Roy Cellich, Ultra Carbon representative.

(l. to r.) H. G. Zelinske, Amsted Research Labs., J. D. Nohe, Western Electric.

(l. to r.) C. L. Grant, Paul A. Pelton both of University of New Hampshire Exp. Station, Durham, N. H., Dick Murie, General Motors Research Lab., Warren, Michigan.

22ND ANNUAL PITTSBURGH

Wes Sheldon, Chairman of the Board and Del Hughes, President Ultra Carbon Corporation.

(l. to r.) Alvin Herdle, U. S. Steel Corp., Youngstown, Ohio, Earl Hill, Gulf Research, Pittsburgh, Pa., Hans Wiesendanger and Bruce Raby both of UTI, Sunnyvale, Cal.

PITTSBURGH CONFERENCE GENERAL CHAIRMEN

Year	Conference Year	Chairmen
1950	1st	C. Manning Davis, Robert A. Friedel
1951	2nd	John J. McGovern, Henry Freiser
1952	3rd	Hugh F. Beeghly
1953	4th	C. Burton Clark
1954	5th	Melvin L. Moss
1955	6th	Robert K. Scott
1956	7th	Raymond G. Russell
1957	8th	Neil E. Gordon, Jr.
1958	9th	James F. Miller
1959	10th	Edwin S. Hodge
1960	11th	Laben M. Melnick
1961	12th	Andrew G. Sharkey, Jr.
1962	13th	Fritz Will, III
1963	14th	James E. Paterson
1964	15th	Francis P. Byrne
1965	16th	Bruce M. LaRue
1966	17th	James P. McKaveney
1967	18th	Frank E. Dickson
1968	19th	Richard T. Oliver
1969	20th	Gerald L. Carlson
1970	21st	Robert Mainier
1971	22nd	William G. Fateley
1972	23rd	Harry Fracek

The current officers of the two sponsoring societies are:

	SOCIETY FOR ANALYTICAL CHEMISTS OF PITTSBURGH	SPECTROSCOPY SOCIETY OF PITTSBURGH
Chairman	George L. Vassilaros	Charles J. McCafferty, Jr.
Chairman-Elect	Robert L. Nadalin	Robert Mainier
Secretary	C. Ellen Gonter	A. J. Kavoulakis
Treasurer	Robert J. Limpert	Herbert Retcofsky

HISTORICAL NOTES

The annual Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy is an outgrowth of separate conferences held prior to 1950 by the two sponsoring organizations—the Society for Analytical Chemists of Pittsburgh (the Analytical Chemistry Group of the Pittsburgh Section, American Chemical Society) and the Spectroscopy Society of Pittsburgh (the Pittsburgh Section of the Society for Applied Spectroscopy). The 1971 Conference and Exposition is the twenty-second, in which these two groups have cooperated in planning an extensive technical program, seminars, awards, and an outstanding display of the latest in laboratory instruments and equipment. Members of each organization have shared the responsibility for carrying out the many details to properly accommodate the visiting scientists, exhibitors and other interested persons who attend the Conference and Exposition each year.

The Society for Analytical Chemists was organized in 1942 by a group of chief chemists and research analysts to provide for an interchange of ideas, develop solutions to problems in analytical chemistry, and to encourage sociability among practitioners of the same profession. In 1945, this Society became affiliated with the Pittsburgh Section of the American Chemical Society as its Analytical Group. The Society held its first symposium in 1946 attracting about one hundred chemists to hear ten papers of current interest. By 1949, the Analytical Symposium had grown to a two-day gathering attracting

four hundred attendees, eighteen papers and eleven exhibitors.

As early as 1940, the Cooperative Spectroscopy Laboratory of the University of Pittsburgh under the direction of Dr. Mary E. Warga was sponsoring annual meetings on spectroscopy. The local interest generated by these meetings led to the formation of the Spectroscopy Society of Pittsburgh, and the Spectroscopy conferences continued through 1949 under the joint sponsorship of the University of Pittsburgh and the local spectroscopy society.

In 1950, the current style "Pittsburgh Conference" had its inception when the Society for Analytical Chemists of Pittsburgh and the Spectroscopy Society of Pittsburgh united their efforts to organize a joint conference. At that time, fifty-six papers and fourteen exhibitions were presented in a three-day conference.

Attendance of conferees, and participation by exhibitors, has increased every year so that now the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy is international in scope and importance.

In addition to a broad technical program, and an extensive exhibit of laboratory equipment, there are several awards made during the Conference week which have gained national recognition. Yearly, the Spectroscopy Society of Pittsburgh gives an annual award to a prominent spectroscopist. The Coblentz Society, composed of absorption spectroscopists, presents an award during the Conference week in recognition of an outstanding spectroscopist under thirty-five years of age.

Both sponsoring societies support other programs during the year. The Society for Analytical Chemists sponsors a college scholarship program in chemistry or chemical engineering, college senior chemistry awards, and summer graduate fellowships under the auspices of the Analytical Division of the American Chemical Society. Since 1957, the Spectroscopy Society of Pittsburgh has made annual grants to several district colleges for needed scientific equipment and library materials. Both sponsoring societies support the book fund of the Carnegie Library Technology Section, the annual Buhl Planetarium High School Science Fair, and the Pennsylvania Junior Academy of Science.

Since 1964, the Conference has been incorporated under the laws of the Commonwealth of Pennsylvania, with the two sponsoring societies as the principal stockholders. Thus, operating as a business corporation, the Conference Corporation is better able to meet the needs and requirements of the conferees and the scientific community.

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Modern Industrial Spectroscopy
Dept. of Chemistry
Arizona State University
Tempe, Arizona 85281

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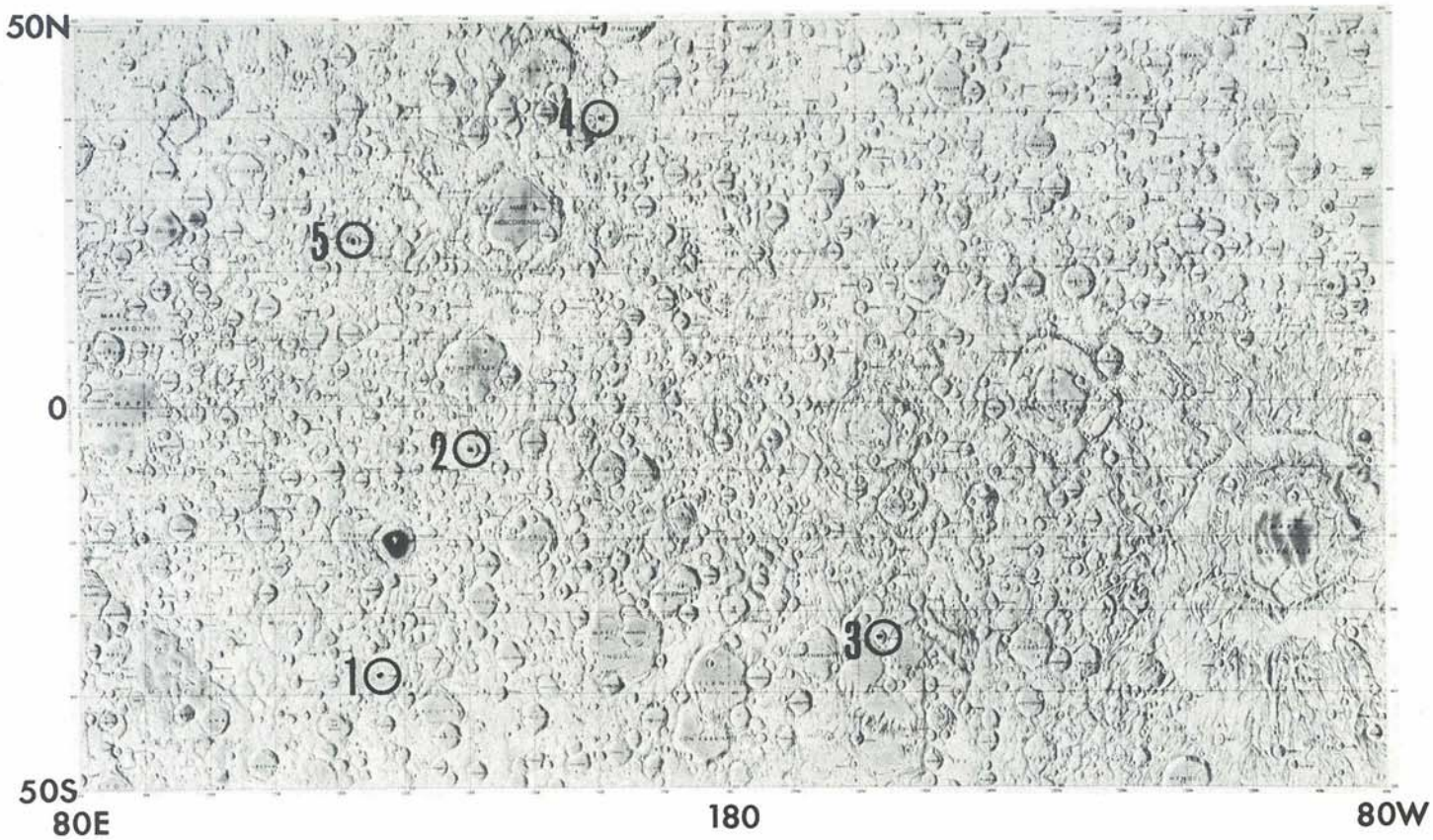
SIX FORMER NBS STAFF MEMBERS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LUNAR FARSIDE CHART



Above is a chart of the moon's far side. The numbers show the locations of craters named after former NBS staff members, as follows: 1. William W. Coblentz; 2. John H Dellinger; 3. Hugh L. Dryden; 4. Nicholas E. Golovin; 5. William F. Meggers. The crater named after Paul W. Merrill is not visible on this chart, as the crater is located 75N and 116W.

We are indebted to Mrs. Susan Ellis, Editor of The NBS Standard for the following article.

In 1932 when the International Astronomical Union adopted a system of naming craters on the near side of the moon after famous scientists, the idea that by 1970 craters on the far side of the moon would also have been mapped and named, would have been dismissed as sheer fantasy.

What would have seemed fantasy is now fact. In August of 1970, the IAU gave official names to more than 500 craters on the moon's far side. The list of names as currently published includes mythological figures such as Daedalus and Icarus, and honors humans over a time span from the Fourth Century B.C. (the Babylonian astronomer Kidinnu) through 1970. All persons so recognized are deceased. Among the illustrious names now on the far side of the moon are the following six: **Dr. William Weber Coblentz (1873-1962; NBS physicist, 1905-45); Dr. John Howard Dellinger (1886-1962; NBS physicist, 1907-48); Dr. Hugh Latimer Dryden (1898-1965; NBS physicist, 1918-47); Dr. Nicholas E. Golovin (1912-1969; NBS administrator, 1949-58); Dr. William Frederick Meggers (1888-1966; NBS physicist, 1914-58); Dr. Paul Willard Merrill (1887-1961; NBS physicist, 1916-18).**

All six men were internationally known in their fields. **Dr. Coblentz**, a pioneer in the field of radiometry, established standards of thermal radiation whose values remain unchallenged to the present day. Dr. Coblentz joined the Bureau in 1905 as a laboratory assistant to Director Samuel W. Stratton. That same year he founded a radiometry laboratory at NBS, and became Chief of the Radiometry Section, a position he held until his retirement in 1945. Instruments he designed extended the fields of spectroscopy and colorimetry, and found application in the areas of astronomy, biology, botany, chemistry, meteorology, photochemistry, physiology, and psychology. His researches also included such varied fields as the physical study of the firefly; ice formation on plants; radiation constants and visibility of radiation; photoelectric properties of materials; stellar radiometry; planetary temperatures; phototherapy; and ultraviolet bioclimatology.

PERPETUATED ON MOON'S FAR SIDE

Dr. Dellinger, an innovative authority in the field of radio communications, was Chief of the NBS Radio Section from 1918-46, and Chief of the Central Radio Propagation Laboratory from 1946-48. His fields of research covered mathematics; the electrical properties of copper; electric units; the science, development and application of radio; and the measurement of properties of electrical insulating materials. His discovery of the simultaneous occurrence of visible solar eruptions and semi-worldwide sudden radio fadeouts resulted in the phenomenon being named "the Dellinger effect".

Dr. Dryden was a specialist in aerodynamics, especially boundary layer flow, wind tunnel turbulence, and wind pressure on structures. Chief of the NBS Aerodynamics Section from 1920-34, Chief of the Mechanics and Sound Division from 1934-46, and NBS Associate Director from 1946-47, he left the Bureau in 1949 to become Director of Research for the National Advisory Committee for Aeronautics, becoming Director of NACA in 1949. Under his leadership NACA produced a vast body of new knowledge that made possible routine supersonic flight and laid much of the groundwork for space flight that was to come. He directed research culminating in the hypersonic research airplane, the X-15. It was Dryden who pressed for a solution to the critical re-entry problem, a solution which made it possible for the United States to proceed with the development of manned satellites. In 1958 he was appointed Deputy Administrator of the newly-created National Aeronautics and Space Administration and participated in the planning for the Gemini and Apollo projects. He remained Deputy Administrator of NASA until his death in 1965.

Dr. Golovin was the only one of the six who did not join the Bureau in the capacity of a working physicist. As a statistician and operations research analyst already successful in the business world, he became intensely interested in physics and at that stage in his life completed a Ph.D in that field, specializing in theoretical solid state physics and nuclear technology. He came to NBS in 1949 as Executive Assistant to the Director. From 1952-53 he served as Assistant Director, and as Associate Director for Administration; from 1954-58 he was Associate Director for Planning. He left the Bureau early in 1958 to become Chief Scientist at White Sands Proving Grounds in New Mexico.

Dr. Meggers, dean of American spectroscopists, was Chief of the NBS Spectroscopy Section from 1920-58. His life work can be summarized under four general headings: (1) precision measurement of standard wavelengths; (2) detailed descriptions of photographed spectra; (3) quantum interpretation of these spectra; and (4) practical applications of spectroscopy. In 1925 he initiated a program of interferometric measurement of absorption lines in the solar spectrum, the first modern spectroscopic standards in astrophysics. He was the first to utilize a single artificial isotope of mercury, Hg 198, as a light source in spectroscopy. This mercury lamp has served as a working standard of measurement throughout the world. Spectra are usually measured at atmospheric pressure, but must be corrected for the refractive index of air if employed for atomic interpretation. In 1960 Meggers provided a two-volume *Table of Wavenumbers* for converting wavelengths from 2,000 to 10,000,000 angstroms to wave numbers per centimeter in *vacuo* with an accuracy of one part per 100,000,000. Another contribution to spectroscopy was his exploitation of photosensitizing dyes to record spectra in the long wave visible and near infrared. His measurements of the spectra of rare gases in the infrared region formed one of the foundations for the development of modern lasers. He undertook the improvement of special descriptions throughout the entire photographic range, and made significant contributions to the analyses of more than 80 atomic spectra during his lifetime. His spectroscopic work provided a significant contribution to the field of spectrochemical analysis—a subject in which he was deeply interested.

Dr. Merrill served the Bureau the most briefly of the six. He was a physicist with NBS from 1916-18, working on problems related to infrared photography and camera design, and pioneering experiments in aerial photography. An outstanding astronomer, he spent most of his distinguished career (1919-1952) at the Mt. Wilson and Mt. Palomar Observatories (California Institute of Technology) in Pasadena, California. He did extensive work on wavelengths of spectrum lines, and red and infrared photography, but his main interest was stellar spectroscopy and interstellar matter, particularly stars whose spectra showed deviation from the normal. He became an authority on red stars especially those known as long period variables. He discovered the presence of technetium in stars of spectral type S, and also carried out an extensive survey to discover early-type stars with bright hydrogen lines. During his career he retained his interest in the work of the National Bureau of Standards, and in 1958 published a book, LINES OF THE CHEMICAL ELEMENTS IN ASTRONOMICAL SPECTRA, which had a 65-page appendix including *Partial Grotrian Diagrams of Astrophysical Interest*, prepared by the Bureau's Dr. Charlotte Moore Sitterly (since reprinted as NSRDS-NBS 23).

A seventh individual should be mentioned, because of his many sojourns at the Bureau as a research associate working with Dr. Charlotte Moore Sitterly. A crater also has been named for **Dr. Miguel A. Catalan**, a professor at the University of Madrid and during his working career the outstanding spectroscopist in Spain. Dr. Catalan discovered multiplets in arc spectrum of manganese, beginning a new approach to analysis of complex spectra, and also did research on other complex spectra.

1970 EASTERN ANALYTICAL SYMPOSIUM

AWARDS

SAS New York Section Medal
presented to
Dr. John R. Ferraro
Argonne National Laboratory
Argonne, Illinois

Benedetti-Pichler Memorial Award
presented to
Dr. Walter C. McCrone
McCrone Associates
Chicago, Illinois

"THE SCIENTIFIC CALAMITY IN THE USA"

JOHN R. FERRARO
Argonne National Laboratory, Argonne, Ill.

EDITORS NOTE: Dr. John R. Ferraro at the 1970 Eastern Analytical Symposium was presented with the SAS, New York Section Medal. In accepting the medal he departed from his prepared text and, instead spoke on the plight of the scientific community in America as a result of the economic slowdown. Below are Dr. Ferraro's remarks:

That an economic calamity exists in the USA among the scientific and engineering community is undeniable. Engineers, physicists and chemists in government and industrial laboratories are becoming unemployed in ever increasing numbers. Many scientists are being forced into early retirements. New PhD's cannot obtain employment. The job market is saturated and there are at least 50 applicants per vacancy. Many of the newly unemployed are in their 40's and 50's and some employers consider these individuals as unemployable. Judging from what I've heard discussing the problem with fellow colleagues here at the Eastern Analytical Symposium the end is not in sight. I believe that the situation may worsen and for some may never improve.

The time has come for action. Can anyone imagine the AMA not acting in time of a medical calamity? Yet, as nearly as I can tell none of the engineering or technical societies have voiced any serious and vociferous complaints to Washington. Furthermore, none of these societies is large enough or powerful enough to make much impression. However, collectively the voice of all societies acting in consort, may make the powers-that-be standup and take notice. I, therefore, propose that all societies (engineering and scientific) join together along with all their local sections and flood the Presidential Science advisor with telegrams and letters expressing concern for the present situation. To allow the situation to worsen would be to perhaps permanently injure the country immeasurably. A brain-drain in reverse may be in the making with diminuation of our National Scientific Manpower. If any society member feels that this is beyond the scope of the society activities, then I would suggest that they read their constitutions anew. Is it any wonder that many members complain about how little our societies do for the member? The lack of a concentrated effort on the part of any society during this crisis has left me disappointed and shocked. The opportunity is now here to help our membership. Are we to fail them again?

I would also propose that a committee be formed representing all engineering and scientific societies to study the concrete steps that should be taken and recommended to Washington to prevent any further down-trend of scientific employment. Personally, I think it has gone far enough. If allowed to continue, our scientific stature in the world will deteriorate and then only a major effort (ala Sputnik) at a tremendous cost will partially reverse the situation. It is obvious to me that not all of the present crisis is reversible unless we go back to full employment. Will the 40 or 50 year old unemployed scientist or engineer be able to return to work, or must he seek other employment. If so, what a waste of manpower. Is this the best security we can offer to scientists and engineers? If it is, then we have failed our membership miserably.

Now none of my proposals or others that this or other groups may suggest may come to fruition. However, we owe this both to our unemployed and to our employed members. We must act now and I would hope that all of you are in agreement.

Statler-Hilton Hotel, New York City — November 18-20, 1970

EASTERN ANALYTICAL SYMPOSIUM

FUTURE MEETINGS

1971 November 10, 11, 12
Statler-Hilton
New York, N.Y.

1972 November 15, 16, 17
Traymore Hotel
Atlantic City, N.J.

1973 November 14, 15, 16
Statler-Hilton
New York, N.Y.

(l. to r.) Ivor L. Simmons, Chairman-elect, George E. Heinze, 1969 Gen. Chairman, Melvin H. Goodman, Publicity Chairman, David A. Green, 1970 General Chairman.

(l. to r.) Seated—George Heinze, Mel Goodman, Charles Jedlicka, Standing—Charles North, Dick Knauer, Roland Hirsch, Norm Gardner.

(l. to r.) John D. Johnson, Herbert R. Gram both of Spectrogram Corp., Floyd M. Hansaker, Arc Carbon Div., Union Carbide.

(l. to r.) Ron Elchesen, Spectra Physics, John R. Ferraro, Argonne Nat'l Labs., E. D. Todd, Spectra Physics.

(l. to r.) Dr. P. W. J. M. Boumans, Phillips Research Laboratory, Eindhoven, Netherlands, L. E. Owen, Tomorrow Enterprises, Dr. Marvin Margoshes.

"INDUSTRY'S RESPONSE TO ITS SOCIAL RESPONSIBILITIES"

Excerpts from a talk by
Jerry McAfee, President, Gulf Oil Canada

Editors Note: The following remarks by Mr. McAfee were contained in a speech given to the Annual Meeting of the Edmonton Chamber of Commerce. Edmonton, Alberta, Canada. Copies of the complete text may be obtained from the Public Relations Dept., Gulf Oil Canada, 800 Bay St. Toronto 5, Ont. Can.

"People promoting conservation must be as responsible and constructive as they expect industry to be," Gulf Oil Canada president Jerry McAfee told the annual meeting of the Edmonton Chamber of Commerce.

"They should concentrate on real problems based on evidence rather than hearsay or hysteria and use intelligent perspective in establishing priorities."

At the same time Mr. McAfee recognized that honest criticism had done much good, as reflected in industry's response. "We are sensitive to these expressions of public concern. The challenge is good for us . . . and in general I believe that industry is responding well . . . to valid expressions of concern."

In exploring "Industry's Response to its Social Responsibilities," Mr. McAfee proposed that some division of the Chamber of Commerce could consider establishing a national study center devoted to the practical extension of social science research to current problems.

"Such a center . . . could provide a structured and effective approach by business towards analyzing and helping solve those baffling problems associated with life in a scientific, technological and industrialized society. Industry committed to social responsibility would have a source of counsel, information and possible programs," he said.

"Perhaps we need on this continent at this time a new profession — 'social engineering' to bridge in a practical way the gap between social science on the one hand and public need on the other."

Mr. McAfee suggested that the social engineer could render invaluable service in translating what the social scientists now know and learn in the future into positive and effective action, just as conventional engineers have converted new knowledge in the physical sciences to practical public progress.

"The business community is in a unique position to provide the experience, the know-how and the muscle needed to establish 'social engineering' as a recognized and needed new area of human endeavor," he said.

Mr. McAfee suggested that business institutions are still too often perceived as being willing to react but not to lead — perhaps from a failure to communicate and perhaps from earlier failures to listen and to take appropriate action.

"The new dimension in business is that making a profit can have no lasting meaning as a measure of success unless management takes into realistic account what is happening to the society of which the business is a part," he said.

"Business or industry does not exist just to make a profit but also to serve society. Management must accept the concept of a total-business orientation, not a production-oriented administration nor even a market-oriented administration."

He said he would not be surprised if managers in the 1970's find that social considerations outweigh technical concerns.

"Management decisions are never easy and decisions in areas involving social responsibility are tougher than most. The real problems are often not the technical changes themselves but the human changes that accompany technical innovations."

If private institutions are unresponsive to the environmental aspirations of the people they serve, hostility towards our free enterprise system will mount as a seriously disruptive phenomenon, Mr. McAfee said. On the other hand, if our industries realistically identify themselves with human concerns, they can heighten the nation's response to social needs and to the individual initiatives of concerned people.

However, he said, "As much as we might wish to be able to solve all the world's problems — pollution, poverty, pestilence — it is unrealistic to ask industry to do more than its own share of the job."

He reminded the audience that environmental protection and pollution control measures do carry a price tag. "To pay for them the consumer must pay either higher taxes or higher prices. In our standard of living we may have to substitute better environment for some of the things we demand. Let us hope that industry can improve its productivity so that the reduction in our output of goods and services will be minimized."

Those truly concerned about the environment might well devote more of their efforts towards overcoming public apathy in the support of worthwhile causes, and encourage the public, in their actions as individuals, to do everything positive and constructive that they can to preserve the environment, he said.

SAS MEMBERS EMPLOYMENT SERVICE

All future issues of APPLIED SPECTROSCOPY will carry an "Employment Section". Dr. John R. Ferraro, Editor and Dr. Leopold May, SAS President, urge both the unemployed and employers to take advantage of this service.

A confidential file of curricula vitae of unemployed members of SAS will be maintained. You may write or call:

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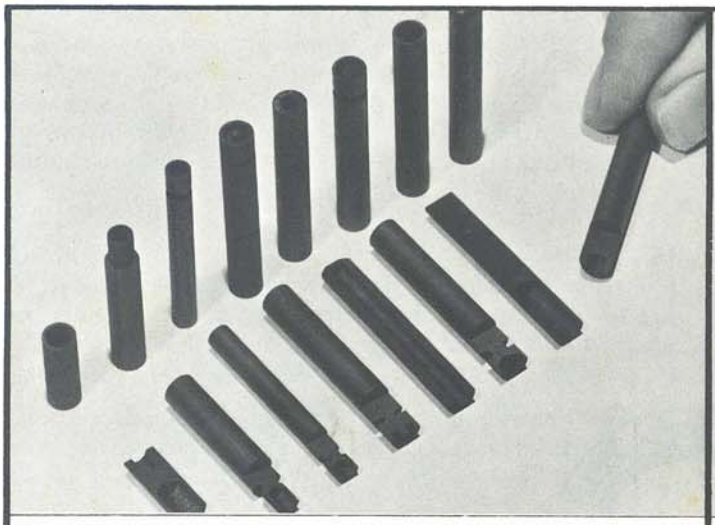

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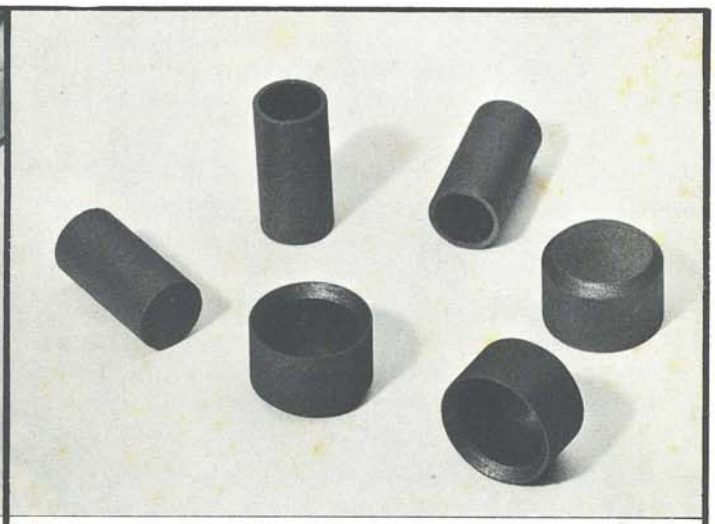

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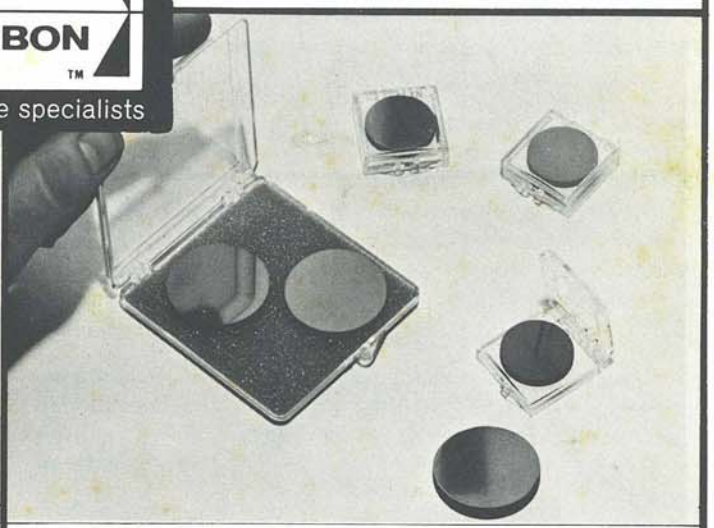

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