VOL. 8, No. 2

JULY, 1962

ARCS and SPARKS

Magnificent Michigan Boulevard

Published by United Carbon Products Co. . . . for the advancement of Spectroscopy

THE PRESIDENT'S CORNER

I like to keep things simple. The simple word . . . the simple sentence . . . the simple theory, to me, have the clean-cut definition lacking in so many facets of our profession.

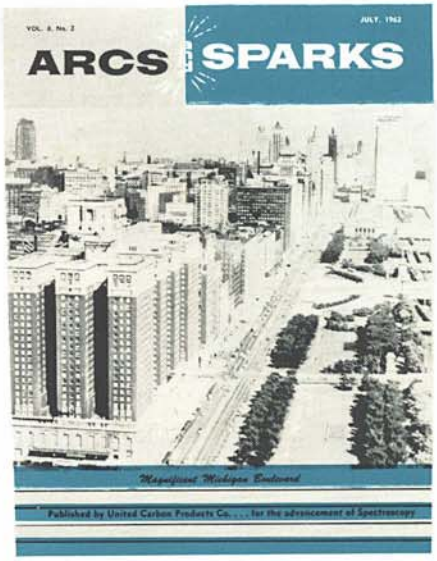
Not too many years ago, all of spectroscopy was relatively simple. The number of analytical jobs it was called upon to perform could be readily listed. The instrumentation was far from complex. And, from our company's standpoint, the number and variety of electrodes could be catalogued quickly. In one sense, this was efficient.

Today, you the spectroscopist are being challenged by the involving sophistication of the art to achieve brand new creative analytical techniques . . . almost daily. Your imagination — your abilities — your professional standards are undergoing constant and new testing. In fact, never in the history of our profession has there been a period so critical for the development of our future.

United's task is both simple and difficult. We must — and we will — provide you with the exact electrode — exactly machined — exactingly purified . . . to meet the challenges of present day analytical demands. Whatever your need . . . we're ready, willing, and able to deliver the finest type electrodes and rods available.

GEORGE T. SERMON, *President*
United Carbon Products Company

COVER STORY



Why is it that Chicago always seems new, fresh, alive. Perhaps it has something to do with the clear, clean Lake Michigan wind sweeping through the city. The cover photograph is a perfect perspective of famed Michigan Avenue . . . the "front yard" street of the windy metropolis. In the lower left hand corner of the photo stands the world's largest hotel, the Conrad Hilton, for several years the host to the Mid-America Spectroscopy Symposium. The spectroscopist can walk out of the Hilton, head North up magnificent Michigan Avenue and bask in a solid two miles of the finest shops found anywhere in the world. New buildings are popping up in Chicago like mushrooms in Spring . . . the city is wide-eyed, alert, prosperous . . . put it all together with the exploding growth of the 13th Mid-America Symposium and you have exhilerating excitement found nowhere else. Do we like Chicago — you bet we do!

SPECTROSCOPY'S MID-AMERICA HEADQUARTERS is the wonderful, wild, and winning city of Chicago. Above photo shows the "world's biggest and best-landscaped front yard" in America . . . another enjoyable civic feature that makes the Mid-America Symposium a "must" for many a spectroscopist.

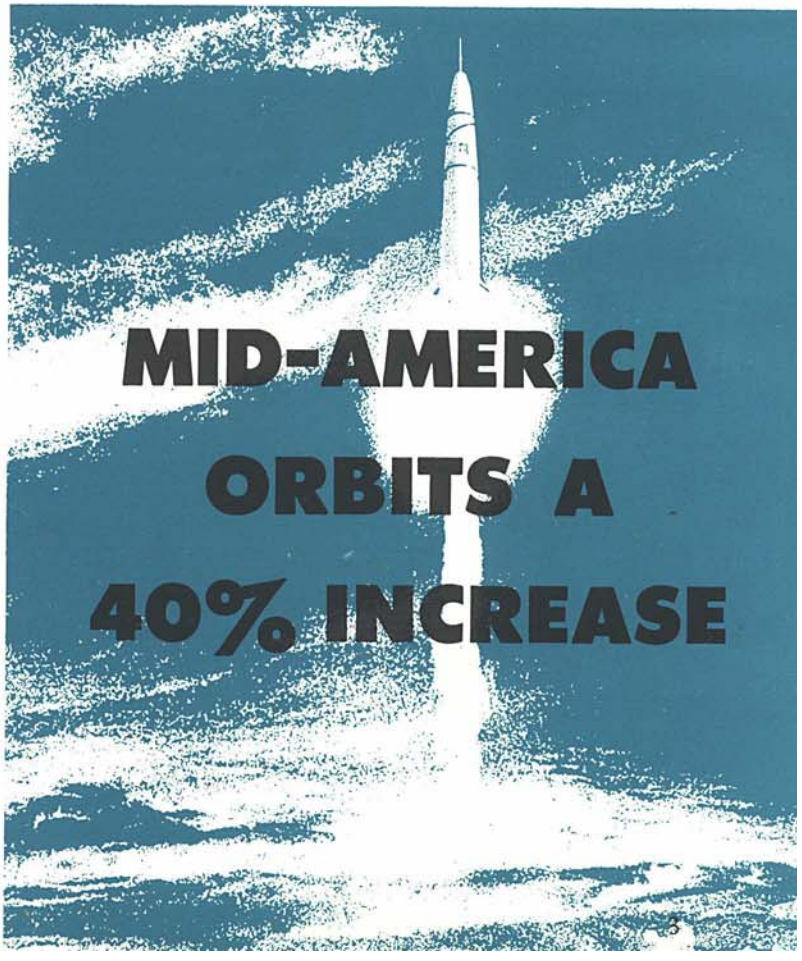
Chicago Symposium Racks Up Phenomenal Growth
Attendance, Exhibitions, Interest All At New Record Highs

To describe the 13th Mid-America Spectroscopy Symposium, held in Chicago, April 30-May 3, 1962 as a "tremendous success" is simply, and flatly, an understatement. It was only several years ago that the Chicago symposium was a fledgling missile with muscle . . . but in 1962, the Mid-America Symposium is a veritable "Titan" going into orbit with a 40% increase in registrants over 1961 and a corresponding improvement in the number of exhibitors!

Seldom, if ever, in the history of spectroscopy has a major symposium ever registered so spectacular a gain. Much credit must go to those with the vision to enlarge the old symposium of the Chicago SAS to the Mid-America Symposium embracing SAS sections in Buffalo, Chicago, Cleveland, Detroit, Indianapolis, Milwaukee, St. Louis, plus the Gas Chromatography discussion Group of Chicago. Broadening of the sponsorship has resulted in a strong upsurge of interest, a wider scope of participation, and a new sense of importance to all the profession located in the Mid-America area.

The statistics on the show are exciting not only historically, but more importantly, as an indication of a definite trend. Registered attendance was up from some 416 in 1961 to 586 this year . . . a fantastic gain of almost 41% . . . and the increase in visitors, while not checked, seemed to be in proportion. A total of twenty-two top quality exhibitors transformed the chandeliered opulence of the lush Normandy Lounge, in the Conrad Hilton Hotel, into a mecca for the newest in instrumentation, materials and specialized services. For the first time, the exhibit space on the east side of the Normandy Lounge mezzanine was too small and the registration desk, coffee bar, and several exhibitors spilled over into the west mezzanine of this luxurious setting. And, even among exhibitors, there was a new enthusiasm and satisfaction which might well forecast greater participation in 1963. As a matter of record, the United Carbon Products Company exhibit this year had more requests for data and samples than ever before.

While attendance and exhibitor statistics gave proof to the explosive growth of the 13th Mid-America Symposium, the number and selection of the papers presented attested to the enhanced depth of the technical character of the meeting. While the 41 papers presented in 1961 generated much discussion, some indication of the symposium's remarkable metamorphosis



ARE THEY LAUGHING AT US -- MEN? They'll never tell, even though we give them plenty of opportunity, but we love them just the same. Presenting (l. to r.) Vivian B. Biske, spectroscopist, American Can Co., Chicago; Elma Lanterman, x-ray spectroscopist, Borg-Warner, Chicago; and Rosemary Ferraro, advertising, Campbell Soup Co., Chicago.

ALL EYES SEEM TURNED in the direction of Mary Hansen, attractive wife of Russell J. Hansen, Continental Can Company, Chicago. That's (l. to r.) Mrs. Hansen; Allan M. Palmer, Continental Can Company; and Russell Hansen . . . everybody looking so serious -- but we know different!

can be surmised from the fact that this year's program presented 78 scientific papers . . . a 90% increase! The papers encompassed the fields of emission, infrared, raman, vacuum, ultraviolet, NMR, X-ray, and gas chromatography. Additionally, there was excellent participation in panels and workshops covering a wide area of contemporary subjects.

Hard-working as they were, the participants took Tuesday evening, May 1st from 6:00 P.M. -?, to let their hair down and really go "social". The Social Hour began at 6:00 P.M. and the delightfully different dinner meeting at 7:00 P.M. Ask any spectroscopist who participated and it's 100 to 1 the answer will be "The Mid-America Dinner Meeting is the greatest!" Of course, the reason is obvious: (1) As one of our clan put it, the meeting was "free" from banquet speeches, and (2) the dinner took place in the sumptuous Boulevard Room of the Hilton where an eye-filling Ice Show, billed as "Pink Tights", was presented during the meal. Enough said!

The effort put into this 13th Mid-America Spectroscopy Symposium was nothing short of back-breaking and Arcs & Sparks would like to salute each and every one who worked on it. On these pages, you will find listed the chairmen, officers, boards and committeemen responsible. Their efforts have been rewarded with a measure of success that will be hard to duplicate . . . and the eyes of our profession will look eagerly to more advances in the 14th Mid-America Symposium in 1963.

Chicago Confidential

SPECTROSCOPY HAS A NEW "TWIST" . . . although we're sworn to secrecy, we can write that one outstanding and young (?) spectroscopist and his pretty and young wife are veritable experts at the "twist" . . . watch out Peppermint Lounge here comes the SAS!

IMAGINE SWITCHING HOTELS . . . a group of our discriminating registrants affronted the entertainment manager of the Hilton, I'm sure, by travelling over to the Bonaparte Room of the Blackstone Hotel to catch the Denise Darcel show — wow! The French have a way about them!

ARE THEY GOING TO DISCONTINUE THE ICE SHOW? Soon after the annual dinner and Ice Show at the Boulevard Room of the Hilton, members of our austere group took to the dance floor. We just don't know what got into them but the management complained that they were more entertaining than the professionals!

ANNUAL MEETING OF THE "INTELLECTUALS" took place over the bridge table . . . these schemers included Al Ottolini, General Motors Corp., Graham Wright, Research & Control Instruments, T. P. Schrieber, General Motors Corp., and our own productive Nick Grondin . . . they're a "good group".

LOOKING LIKE A BOARD OF DIRECTORS are these four handsome gentlemen, caught not quite unawares, in our booth . . . (l. to r.) Sam Bass, spectroscopist, Michigan State University, East Lansing, Michigan; J. H. Lasell, spectroscopist, Cummins Engine Company, Columbus, Indiana; Roger Loofbourow, spectroscopist, F. L. Crobaugh Company, Cleveland, Ohio; and United's Carl Leistner.

ALL THE COMFORTS OF HOME are found in the United booth, and taking advantage of this is our own Nick Grondin and his most pleasant companion, Phoebe Mylott, spectroscopist, Fansteel Metallurgical Corporation of Chicago, Illinois . . . glad you could stop in to see us Phoebe!

HOW LUCKY CAN 3 FELLOWS BE . . . to have the company of pretty Mrs. Sheinkop. Handsome group includes (l. to r.) Jay A. Sheinkop, spectroscopist, Continental Can Co., Chicago; Mrs. Sheinkop; Robert Heath, advertising, Industrial Research Publication, Beverly Shores, Indiana; and Dr. John R. Ferraro, Senior Scientist, Argonne National Labs, Chicago.

WHY WAS IT that so many of the fellows who just left the symposium for a few minutes to "catch a breath of fresh air" wound up at William's Restaurant in back of the hotel? We did hear some unfounded rumors ? ? ?

THE NEW YORK YANKEES EXPLODED in the ninth to whip the Chicago White Sox just for the benefit of Sam Bass, Michigan State University, Chet Hastings, Bridgeport Brass, and Nick Grondin of United. It was the first major league game witnessed by Chet . . . nothing like seeing the best — first.

DAILY MEETINGS OF THE SAS "CELL" were held, quite informally, around the brass rail of the Ol' South Bar at the Conrad Hilton. By the end of the conference, the bartender was giving the boys a few hints on "techniques" . . . scientific, of course.

NEITHER TORNADIC WIND, NOR MONSOON RAIN experienced by Chicago during the conference could keep our devoted spectroscopists from their appointed rounds . . . it was one round after another at various "labs" all over the Chicago Loop . . . what a dedicated group!

REGISTRATION SEEMED TO TAKE LONGER this year . . . could be that the fellows found all sorts of things to talk about with the two charmers at the desk . . . Vivian Bisky, American Can Company, and Elma Lanterman, Borg-Warner Corporation . . . we just love the "feminine touch".

1962 Mid-America Spectroscopy Symposium Officials

SYMPOSIUM COMMITTEE CHAIRMEN

General Coordinator ..... JOHN R. FERRARO, Argonne National Lab.
Program Coordinator ..... JOSEPH S. ZIOMEK, De Paul University
Promotion Chairman ..... JAY A. SHEINKOP, Continental Can Company
Infrared-Raman Chairmen .. WILLIAM J. DRISCOLL, Baird-Atomic, Inc.
EDWARD A. PIOTROWSKI, Illinois Institute of Technology
JOHN DANACZKO, Western Electric Company
Emission Chairman ..... JOHN P. KAPETAN, Western Electric Company
X-Ray Chairman ..... ELMA LANTERMAN, Borg-Warner Corporation
Gas Chromatography Chairman ..... JOHN E. FORRETTE, Borg-Warner Corporation
GC Discussion Group of Chicago ..... SEATON PRESTON, Sunbeam Corporation
Vacuum Ultra-Violet Chairman ..... ROBERT J. MANNING, Beckman Instruments, Inc.
NMR Chairmen ..... STUART ARMSTRONG, Varian Associates
MILES SCHWARTZ, Varian Associates
Advisory Board ..... PROF. FORREST F. CLEVELAND, Illinois Institute of Technology
PROF. JOSEPH S. ZIOMEK, De Paul University
PROF. L. V. AZAROFF, Illinois Institute of Technology
PROF. CARL MOORE, Loyola University
PROF. HERMAN A. SZYMANSKI, Canisius College

SYMPOSIUM MINUTEMEN

VIVIAN B. BISKE ..... American Can Company
ROSEMARY FERRARO ..... Coulter Electronics, Inc.
RAYMOND F. GOULET ..... Jarrell-Ash Company
E. L. GROVE ..... Armour Research Foundation
RUPERT B. JONES ..... Witco Chemical Company
ROBERT KRUPP ..... Illinois Institute of Technology
FRANK LEAHY ..... Baird-Atomic, Inc.

REPRESENTATIVES OF PARTICIPATING SECTIONS

Cleveland ..... JEANNETTE G. GRASSELLI, Standard Oil Co.
Detroit ..... SAMUEL T. BASS, Michigan State University
Indianapolis ..... C. K. HASTINGS, Bridgeport Brass Company
Milwaukee ..... JOHN J. McDERMOTT, Ladish Company
Niagara Frontier ..... HERMAN A. SZYMANSKI, Canisius College
St. Louis ..... MARY LOUISE HOEVEL, The Reardon Company
Gas Chromatography Discussion Group of Chicago ..... SEATON PRESTON, Sunbeam Corporation

SELDOM -- IF EVER do we catch our own Joe Sermon, Assistant Sales Manager, not in the middle of a group. Concerning work, this pic should stop, forever, the question "Does he -- or doesn't he?"

CONGRATULATIONS ARE IN ORDER to these three men for their work in making the 13th Annual Mid-America Symposium such a record-breaker. They are, if you do not already recognize them, John R. Ferraro, Symposium General Coordinator, Argonne National Laboratories; Joseph S. Ziomek, Symposium Program Coordinator, De Paul University; and Jay A. Sheinkop, Symposium Promotion Chairman, Continental Can Company.

PRESENTING THE PANEL on "Emission and X-Ray", (l. to r.) John Waller, Chief Spectrographer, Union Carbide Metals Co.; Alvin Hurdle, Chief Chemist, United States Steel Corp.; Dr. Claude Hudgens, Supervisor, Instrument Section, Monsanto Research Corp.; Larry Zeeb, Assistant Technical Director, National Spectrographic Labs; Dr. Edwin Hodge, Supervisor, Spectrographic Lab, Mellon Institute; and John Boyd, Chief Chemist, John B. Clow and Sons Co.

CLEVELAND'S 7th

Annual Symposium Outstanding

The Cleveland Section of the SAS has much to be proud of in their Seventh Annual Conference held May 23, 1962 at the Western Reserve University, Cleveland, Ohio. Registered attendance held steady over last year while interest and enthusiasm showed marked gains . . . to make the 7th the best to date.

One of the most interesting messages we've heard in many years was the keynote address of Charles E. Pepper, National Lead Company of Ohio, "Selling Spectroscopy". A careful analysis of contemporary problems facing the profession, Mr. Pepper's thoughts gained wide comment. The remainder of the morning session was occupied by a lively Panel Workshop on "Emission and X-Ray". Another panel workshop was held during the afternoon on "Molecular Spectroscopy and Gas Chromatography" and proved to be most worthwhile.

Immediately following a scrumptious lunch, Mr. John Wyman, Permold Company, the symposium's Education Committee officer presented the Ernest B. Yeager Award. This award, consisting of a handsome certificate plus one hundred dollars, is given annually by the Cleveland SAS to an outstanding undergraduate student demonstrating an interest in some phase of spectroscopy. Dr. Yeager, in whose honor the award was named, is professor of chemistry at Western Reserve University and Technical Director of the Ultrasonics Research Laboratory. He is currently lecturing in Moscow at the invitation of the Soviet Academy of Science.

This year's recipient of the Yeager Award was Mr. Eric A. Entemann, a senior at Oberlin College, Oberlin, Ohio. Mr. Entemann is a member of Phi Beta Kappa and Sigma Xi, and is a winner of a National Science Foundation Fellowship to Harvard University where he will do graduate work in chemistry. His work in spectroscopy concerned the infrared spectra and vibrational assignments for cis and trans 1, 2 difluoro ethylenes and their deuterated derivatives, and was published in the J. Chem. Phys., Jan., 1962, co-authored by his professor, Dr. Norman C. Craig. This award is followed with intense interest by the membership of the entire Cleveland SAS and has won national recognition in our profession.

This year's successful symposium is a tribute to the vitality of the Cleveland Section, and certainly to all the following hard-working officers:

Conference Chairman ..... Don Lewis
Alloys & Chemicals Corp.

Emission & X-Ray ..... William Martin
Applied Research Labs

IR, Mass, NMR, GC ..... Robert Farrell
Sohio Development Labs

LET'S ALL GO -- SOHIO! . . . imagine one organization, Sohio Research, being lucky enough to be able to send all these beauties to the Cleveland Symposium: (l. to r.) standing; Mrs. Helga Fachler, Chemist -- Infrared Group; Miss Mary Ann Turner, Junior Chemist -- Analytical Development; Miss Ruth Zuback, Chemist -- Analytical Development; seated: Miss Bonnie Ross, Chemist -- Infrared Group; Miss Pat Neibecker, Junior Chemist -- Infrared Group; Miss Lynn Wolfram, Chemist -- Infrared Group; and Mrs. Jeannette Grasselli, Technical Specialist Project Leader -- Infrared Group.

ERNEST B. YEAGER AWARD is here being presented, by John Wyman, Permold Co., to the winner, Eric A. Entemann, Senior, Oberlin College, Oberlin, Ohio. The entire Cleveland SAS can be proud of this award and the outstanding scholarship and ambitions of the 1962 winner, Mr. Entemann, to whom we extend congratulations.

Publicity Chairman	Eleanor Campbell Republic Steel Corp.
Bulletin	Kenneth Hoffman National Spectrographic Labs
Banquet Chairman	Henry Dombrowski Cleveland Police Department
Finance Committee	Allan Gordon Lincoln Electric Co.
Hospitality Committee	Dr. Ernest Yeager Western Reserve University Dr. Eric A. Arnold Case Institute of Technology
SAS Representative	Sarah Degenkolb American Steel & Wire Company

. . . and, tribute most deserved should be made in the direction of all the 1961-1962 Officers of the Cleveland SAS. It was a fine symposium with plans for an even finer one in 1963.

DISTINGUISHED LUMINARIES include Cleveland SAS officers and keynoter; (l. to r.): Don Lewis, incoming President, Alloys and Chemical Corp.; Mrs. Jeannette Grasselli, President 1961-62, Sohio Research Labs; Charles Pepper, Keynote Speaker, National Lead Company of Ohio; Harry Pahl, Secretary 1961-62, General Electric Co.; and Alan Gordon, Treasurer, 1961-62, Lincoln Electric Co. Well done -- guys and gal!

CLEVELAND CLOSE-UPS

PLEASANT SURPRISE at the banquet was the attendance of Emil and Nancy Perout. Emil, now chairman of the Department of Metallurgy, Fenn College, Cleveland, formerly worked at National Spectrographic Labs as did his charming wife Nancy. They had a grand time, as did their many friends of many year's standing.

'TIS WITH A TOUCH OF SADNESS that the banquet marked the end of terms for the 1961-62 officers. We think Don Lewis, newly elected president is one of the grandest guys ever and will do a bang-up job, but he sure doesn't look like past-president Jeanette Grasselli . . . Ring-a-ding-ding!

DON LEWIS TELLS THIS one on himself: A few months back, Don had the task of introducing the speaker of the evening, Mr. Tom Schreiber of General Motors Research Laboratory. Being most conscientious and thorough, Don spent a great deal of time gathering facts about Tom's scholastic and working background — and memorized them all — perfectly. During this somewhat lengthy and fact-packed introduction, Don did a remarkable job, but alas, as he finished and turned to Tom he said, "It now gives me a great pleasure to present to you, our speaker, Mr.———??" You guessed it, Mr. Schreiber's name just was not to be remembered! It was one of those classic experiences and the crowd howled. Don soon remembered the name however, and the program continued. Don says he'll never forget this long as he lives . . . and will get many a laugh re-telling it.

SAGA OF THE SCREWDRIVER . . . leave it to a wonderful non-drinker associate of ours, the inimitable Nick Grondin, to pass on this neat bit of information: "I've known for a long time that a Screwdriver was a refreshing drink made with vodka and orange juice . . . but at Cleveland I discovered the ultimate in palatable potions was a mixture of vodka with milk of magnesia — and imaginatively labeled a Phillips Screwdriver!

JIGGERS — THE COPS . . . the symposium acted in wisdom, indeed, when it selected Henry Dombrowski as Chairman of Registration for the meeting. As chairman, Henry was in charge of all monies taken in. Perfect typecasting it was, for you see, Henry is a Sergeant in the Cleveland Police Department and a most important member of the Cleveland Police Scientific Investigation Unit.

LABORA-STORY OF THE MONTH

DR. JANET L. C. RAPP, Director of the Feed Service Corporation's Laboratory, is a bio-chemist with a tremendous spectrography talent.

FEED SERVICE CORPORATION

CRETE, NEBRASKA

One of the most remarkable testimonials to the benefits of the increasing sophistication of the art of spectroscopy comes directly from Philip Anderson, President, Feed Service Corporation, Crete, Nebraska:

> "Certainly, agriculture's knowledge of trace elements and their importance in the diet of ruminants would have been severely delayed were it not for recent developments in spectroscopy. It was directly due to the refinements of spectrographic accessories and carbon electrode materials that have made possible, and economically feasible, the analytical techniques on which we base our feed service program."

This statement is all the more remarkable when it is understood that the Feed Service Corporation of Crete, Nebraska has been responsible for developing a spectroscopic analytical method of ruminant feeds into a significant advance in the world's agricultural technology. Large private farming operations, leading agricultural colleges, and organizations in many parts of the globe involved in animal feeding problems have literally beaten a pathway to the door of Philip Anderson's spectroscopically created feed service. It becomes a privilege for Arcs and Sparks to feature the Feed Service Corporation, Crete, Nebraska not only as the Laborastory-of-the-Month, but a truly epochal example of a business being enlarged on the foundation of spectroscopy.

Physically, the laboratory is located in the small community of Crete, some 25-odd miles from Lincoln, Nebraska. While unassuming in outward size or appearance, the heart of the lab is a model of functionality. From all parts of the world, feed samples are sent in to the company in special bags provided by Feed Service. They have strong polyethylene inner-linings and an outer bag of heavy fabric. Immediately upon arrival, the animal feed sample is checked out, dried and ground. The chlorine content is first determined and then the sample goes to a Coleman Nitrogen Analyzer and a determination of the amount of protein present is accomplished at the remarkable rate of but eight minutes per sample. It is reported that this nitrogen determination is extremely accurate. Accuracy, combined with speed, is most essential in view of the character of the work and the fact that some 40 samples are handled in a working day.

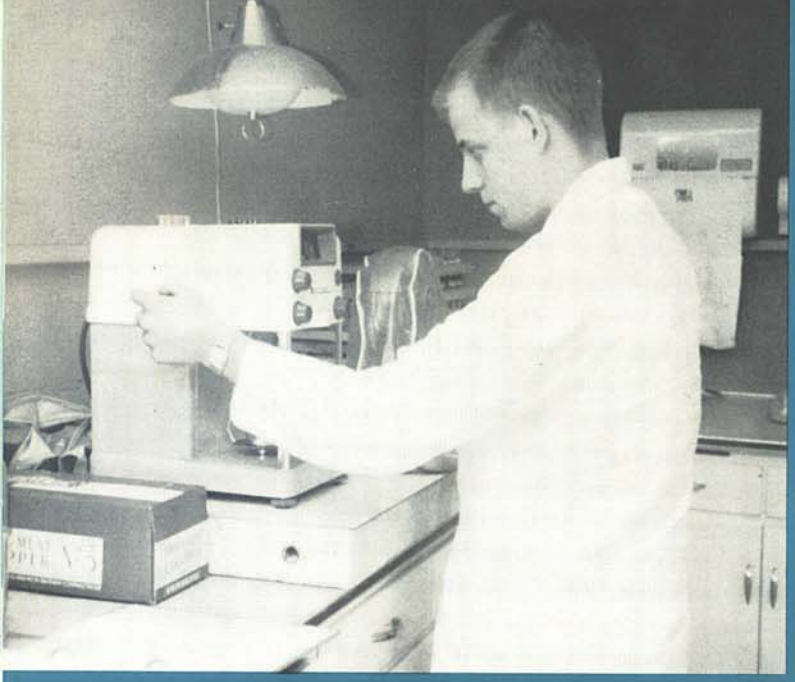
After this stage in the analysis, the samples are ashed preparatory to Spectrographic analysis. The entire analytical procedure is a credit to the most capable work of Dr. Janet L. C. Rapp, Laboratory Director. Dr. Rapp, a bio-chemist, with Mr. Anderson, president of the company, took special training in spectro-

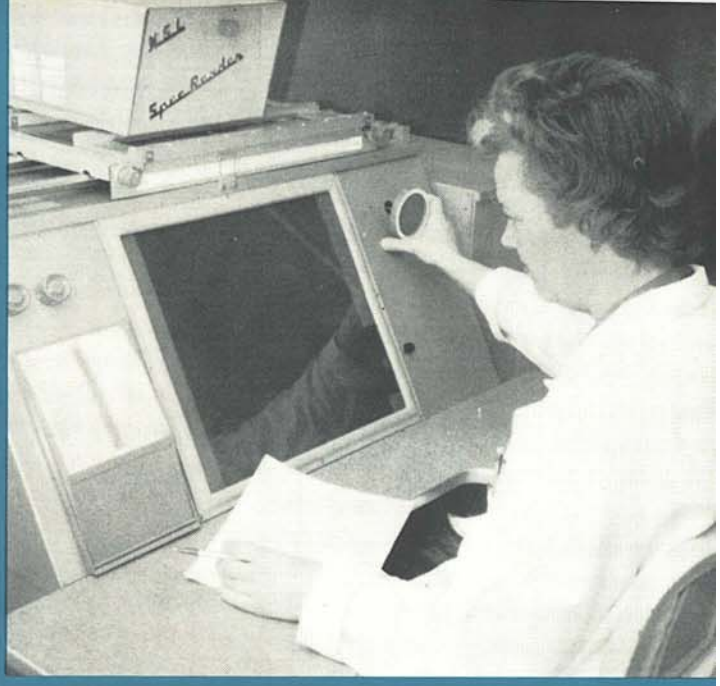
CREATIVITY REIGNS in the lab at Feed Service . . . shown above is Mr. Raymond Weilage operating a giant slide rule of his own design.

FAST AND ACCURATE is the operation of the Coleman Nitrogen Analyzer . . . Mr. Ronald Vlasin, right, can run off an analysis in 8 minutes.

scopic methodology prior to the installation of the equipment. They, in turn, have carefully trained other laboratory technicians in the operating of the equipment. Mr. Joseph Nosky, Vice President of Feed Service is proud of a hard-core technical staff . . . key people being Mr. Raymond Weilage, Chief Spectroscopist; Mr. Ronald Vlasin and Mr. Neil Mariska, Laboratory Technicians . . . giving credit for a tremendous amount of accurate analyses being completed daily.

Feed Service is proud of their new equipment, representing, as it does, the latest refinements in the industry. Basic to the preliminaries is the accurate and fast Coleman Nitrogen Analyzer. For sample preparation they use a new Spex Mill and also are highly satisfied with the controlled atmosphere work accomplished through use of a new Spex Stallwood Jet. Their preference for major equipment was a NSL coordinated group of instruments including a Dual Grating Spectrograph and Source Unit; a Densitometer and a Developer. Around this hard-working instrumentation and accessories grouping . . . with competent skilled personnel . . . Dr. Rapp and Mr. Anderson set up standards, trained personnel, and supervise an operation that monitors some 15 elements including Ti, V, Cr, Ni and other trace elements. In addition, Feed Service has also developed a device to accurately measure the tenderness of meat after slaughtering which is soon to be introduced to the meat industry.





(upper left)

ELECTRONIC BALANCE plays important role in maintaining accuracy in Feed Service Lab. Skilled technician is Mr. Neil Mariska.

(above)

TAKES A TRAINED EYE and a well developed skill to get the most out of the Reader as Shirley P. Rold is doing.

(left)

AT THE CONTROLS of the new NSL Spectrograph is highly skilled Laboratory Technician Mr. Raymond Weilage.

In this piece of equipment, the levels of K, Si, and Ni are significant.

This entire laboratory and resulting animal food analysis service was created to provide a scientific basis for the formulation and recommendations of their Morea brand of Liquid Feeds. Every customer receives a special report on the spectrographic laboratory's findings relative to the sample submitted. Animal feeding recommendations are made concerning feedstuffs and supplements to provide optimum growth and health in the animal. Beside the hundreds of U. S. customers, Feed Service Corporation collects animal feed samples from all over the world for testing purposes. The pin-pointing of deficiencies in ruminant diets can be of immeasurable value, particularly in under-developed countries.

Scores of interesting cases could be recited. Among the most interesting are the pathological samples submitted for analysis, which in two instances showed:

(a) Presence of a considerable amount of Mo in a series of cow fatalities. Corrective action here was highly profitable.

(b) Animal death due to excessive Bi which came from over-dosing herds with an anti-diarrheal remedy. Here's a case from England where the side-effects were much more devastating than the disease.

While these interesting pathological examples are arresting, in the words of president Anderson, "Use of this spectrographic analytical tool has been responsible for a better universal understanding of what the nutritive requirements of ruminants are. Among other important findings, for instance, we have underlined the importance of silicon in the rations of animals. This analytical method will undoubtedly be responsible for a widespread increase in the understanding and use of more scientific feeding systems for livestock the world over."

Arcs & Sparks is proud to salute the Feed Service Corporation, Crete, Nebraska for their outstanding utilization of the spectrographic analytical technique and, with the entire profession, wish for a spreading acceptance of this method of scientific animal food preparation and service.

Arcs & Sparks Exposes Utopian Life Of One of America's Best Liked Spectroscopists

At most every recent symposium the one topic guaranteed to stir up a flurry of speculation would be mention of Rockwell Kent III. Wild were the rumors about this grand guy . . . and it is with unrestrained gladness that we would like to pass on to all our readers the wonderful story of how one spectroscopist found his Utopia.

The fact that we had to dig deep to get the story is certainly nót surprising to all who know the quiet, strong character of "Rocky". It was only through Rockwell's gracious extension of an invitation to United's Carl Leistner that the story of this modern day Shangri La has come to light . . . and what a story it is!

Idyllically rooted on the top of one of Massachusetts' lovely rolling hills is Rockwell's "Wood Lea" . . . a picturesque New England farm home, large, roomy, and lovely. Protectively surrounded by shade trees, this lovely home looks out over sixty productive acres mainly devoted to fruit trees and pasture. Here in his "hide-away", Rockwell, his charming wife and five happy children contemplate — in Thoreauean frame — the foibles of the world . . . 1962.

We cannot but believe there was a measure of "science" in the selection of this stimulating site. "Wood Lea" is conveniently located just a few miles from picturesque Upton, Massachusetts . . . about 30 miles west of Boston right off the fast Massachusetts Turnpike. Commuting to the "Big Town" is a comparative snap. But, more to "Rocky's" liking is a study of the life of the 3,000 souls in Upton and the rich history reaching back to 1728 when the town was settled. He, we feel, finds particular pleasure in contemplating the "Devil's Footprints" . . . impressions in solid rock, over two miles apart, both five feet wide and two feet long, pointing Southward just outside Upton. Or perhaps taking the children to view the fine specimen of Glacial Boulder a mile from Upton. Dotted with smaller farms and rolling hills, the area abounds in points of rich and historical interest.

As many of us know, Rockwell has a solid and varied background in spectroscopy. He has published several papers and formerly was employed at Raytheon in Newton, Massachusetts. Presently, he has worked out a rather ideal solution by devoting two days a week to running the spectrographic laboratory at Electronic Metals and Alloys, Inc. at Watertown, Massachusetts . . . and devoting the remainder of his time to jobs agricultural at "Wood Lea". We cannot but feel this arrangement is most satisfactory to both EMA and Rockwell . . . and should prove mutually profitable.

One realizes and appreciates the value of the good earth when taking in "Wood Lea". The orchard, the pasture and the farm animals (a cow, colt, sheep, chickens, rabbits, pigeons, and three dogs) . . . all combine to give a feeling of security and continuity to life. We have nothing but admiration for "Squire" Kent, his lovely wife, and their family . . . and, it's the kind of admiration tinged with envy . . . here is a man with a dream — come true! So the "lost" is "found" — the "mystery" is "solved" — and, I have an idea that a steady stream of spectroscopic friends will find their way to Rockwell Kent's delightful "Wood Lea".

PRIZED LAMB is carefully checked over by "Rocky" as he starts in on his daily check of his barn.

SOLVED

THE MYSTERIOUS DISAPPEARANCE OF ROCKWELL KENT III

FINE COLT gets the nod of approval from "Rocky" as his visual check of the barn proceeds.

"BLUE RIBBON" CALF is being carefully groomed to win . . . and we have an idea that the ribbons will be flying at "Wood Lea".

SPECTROSCOPIST of-the-month

To the many spectroscopists around the world who have heard of George A. Nahstoll, the following biography should be particularly enlightening. Arcs & Sparks is happy, indeed, to select George as Spectroscopist-of-the-Month . . . and to be able to present the following fine biography of a man who has made major contributions to our profession.

George Nahstoll was born in Grand Junction, Colorado on October 19, 1913. He attended quite a number of elementary schools, located as far west as Seattle, Washington and as far east as Washington, D.C., because his father was with the Federal Department of Agriculture and moved with his assignments.

He graduated from high school in East Lansing, Michigan and attended Michigan State University, graduating from there in 1935, Magna Cum Laude, with a B.S. in Applied Science, having majors in Physics, Mathematics and Chemistry. At that time, he had his eye on the young field of spectroscopy and fulfilled this ambition by joining the Ford Motor Company. He started at the Ford Motor Company, Chemical Engineering Department, in November, 1935 as an X-ray technician and progressed with the company to its Central Staff Quality Control Office.

Mr. Nahstoll made a major contribution to the use of spectrographs as early as 1937 when he was assigned to the Industrial Research Department of the University of Michigan to build the first spectrographic equipment to be used by the Ford Motor Company. He also designed the first laboratory to use this equipment as well as several subsequent ones. Spectrophotometry was in its initial stages at this time as its laboratory had to be checked against a chemical analysis of given samples to prove its reliability. Further, this was the period when the use of spectroscopy for quantitative analysis in addition to qualitative analysis was regarded as a joke in many scientific circles.

By 1947, spectrographic methods and equipment had been developed to the point where it was possible for Mr. Nahstoll and his colleague, Mr. H. A. Tuttle, to design and build a mobile laboratory and prepare a detailed operating procedure entitled "The Control Of Materials by a Motorized Laboratory". This saved thousands of man-hours of work because the mobile laboratory could be driven directly to carloads of scrap or wherever else it might be desirable for an on-the-spot analysis. At times, thousands of forgings were separated rapidly when found to be of mixed chemical analysis.

During World War II, he and Mr. Ford R. Bryan developed a direct reading spectrometer for analyzing aluminum alloys. It was based on the principle of employing a photomultiplier tube on an aluminum internal standard line and moving one other tube to the various alloying element lines. By integrating the response from the two tubes, the percent of alloying element could be determined rapidly. This replaced the slower photographic procedure.

Mr. Nahstoll has contributed to numerous applications of spectrography as is indicated by the following papers:

"An Application of Multiplier Photo-Tubes to the Spectrochemical Analysis of Magnesium Alloy" — G. A. Nahstoll and Ford R. Bryan
Reprinted from Journal of the Optical Society of America, Vol. 35, No. 10, 646-650, October 1945

"Mobile Laboratory Speeds Steel Analysis" — H. A. Tuttle and G. A. Nahstoll
Iron Age, September 25, 1947

"A Method for Micro-Spectrography of Metals" — Ford R. Bryan and George A. Nahstoll
Journal of the Optical Society of America, Vol. 37, No. 5, 311-316, May, 1947

"Spectrographic Methods for Determining Magnesium in Nodular Iron" — Ford R. Bryan, G. A. Nahstoll and H. D. Veldhuis
Appeared in ASTM Bulletin No. 162, December, 1949. Also in the June, 1950 issue of The Foundry

"Suggested Practices for Installation and Safe Operation Of The Spectrochemical Laboratory" — George A. Nahstoll
Prepared under the sponsorship of Subcommittee I on Apparatus and Equipment of the ASTM Committee E-2 on Emission Spectroscopy — February, 1960.

Mr. Nahstoll is also active in numerous professional societies and is currently a member of the following:

American Electroplaters Society
Society of Automotive Engineers
Society for Nondestructive Testing
Optical Society of America
American Society for Metals
American Society for Quality Control

He has served as the second chairman of the local Optical Society and Spectrochemical Group, was active on ASTM Technical Committees, including two years as Chairman of Subcommittee IV of E-2 and ASTM Committees covering subjects such as rubber and sintered metals. More recently he addressed the American Electroplaters Society on the subject of "How Quality Control Applies to Electroplating".

Mr. Nahstoll likes to be considered as one of the "old timers" who attended the early M.I.T. Conferences on Spectrography as that was the time when the big argument was whether the arc or the spark excitation was the most valuable in quantitative spectrochemical analysis. He foresees further advances in spectrography, the ultimate being a unit which can be attached to a furnace to control the chemical analysis of its contents, similar to our present control of chemical processes.

GEORGE A. NAHSTOLL

Although he has strayed afield from spectrochemistry, he continues to keep his interest sharpened and is able to investigate the latest developments for possible application within the Ford Motor Company. His widened duties now include fields of textiles, corrosion, electroplating, metallurgy, rubber and other materials related to the automotive field.

Mr. Nahstoll married his college sweetheart in 1939 and has one daughter. Through the years he has been involved in scouting, Kiwanis and church responsibilities; he has served also as President of the local P.T.A., and treasurer and then President of the Farmington Players Group. Community theater has been his prevailing hobby activity for many years and golf runs a close second. He is also an avid follower of the M.S.U. football fortunes having the distinction of attending every M.S.U.-U. of M. game since he started ushering as a Boy Scout in 1925.

At present his community service responsibility is being discharged as a trustee on the Farmington Board of Education, in an area where the burgeoning suburban population makes keeping ahead on the building of schools, a constant challenge. Arcs & Sparks is happy to salute GEORGE A. NAHSTOLL — spectroscopist, active citizen, family man!

the grapevine

CONGRATULATIONS, DR. FRIEDMAN for winning one of the highest recognitions our country offers. Arcs & Sparks is happy to report Dr. Herbert M. Friedman, superintendent of the Atmosphere and Astrophysics Division of the Naval Research Laboratory, Washington, D.C., last week received the Navy Award for Distinguished Achievement in Science. It was reported that Dr. Friedman's many discoveries and progress in upper-air research including . . . measurements of lyman-alpha, scientific proof of the origin of X-rays in the sun . . . and studies in ultraviolet radiation won him this singular honor. He was presented with the Navy Award Medal and $5,000.00. It has been our pleasure to have reported on Dr. Friedman in the past and take this means to offer him the congratulations of the spectroscopy profession.

FIRST ANNUAL PACIFIC REGIONAL MEETING for Applied Spectroscopy and Analytical Chemistry will be held October 18-19, 1962 at the Huntington-Sheraton Hotel at Pasadena, California. Our hats are off to the sponsors of this regional meeting . . . the Los Angeles Chapter SAS in cooperation with the San Diego and San Francisco Chapters of SAS and the Southern California Section of the ACS . . . may this be the beginning of a strong western conference destined to enhance the profession of spectroscopy in the years ahead.

The two-day meeting program includes four technical sessions of one-half day each; a well-planned banquet; and an instrument exhibit where manufacturers will demonstrate the latest in scientific equipment. Each of the sessions will include one invited and six contributed papers. The subjects of the sessions and invited speakers are:

Absorption Spectroscopy . . . . . Dr. J. Decius

Electron Microprobe, X-Ray Emission and Diffraction Spectroscopy . . . . . Dr. David Wittry

Optical Emission Spectroscopy . . . . . Dr. Paul Schlichta

General Analytical Chemistry . . . . . Dr. J. E. Lovelock

Highlighting the dinner meeting, Thursday evening, October 18th, will be an address by the noted Dr. Harrison Brown. Dr. Brown, professor of Geochemistry at the California Institute of Technology and member of the Space Science Board of the National Academy of Sciences, will speak on his work concerning the origin of the solar system and its role in current space exploration studies. Another feature will be an instrument exhibit to be conducted on the same floor as the meeting rooms. Regarding exhibiting space and information, contact Mr. P. Evans at Braun Chemical Company, 1363 South Bonnie Beach Place, Los Angeles. Other information may be obtained from Dr. W. F. Urich, Scientific and Process Instruments Division, Beckman Instruments, Fullerton, California.

Those readers interested in submitting papers should forward abstracts of not less than 150 words to the program chairman: Arthur A. Chodas, Division of Geological Sciences, California Institute of Technology, Pasadena, California. Our good friend, Paul C. Ressler, Jr., Publicity Chairman, informs us that this first major SAS meeting on the West Coast holds promise of big things to come . . . and, let it be said, we're all for that — 100%.

IF YOUR SON DOESN'T LIKE SCHOOL — just tell him about Oscar Fritzsche. Mr. Fritzsche, like many of us, had the misfortune to graduate from high school in the middle of the most severe depression the United States ever endured, along in 1934. To help support himself, he felt he was the luckiest young fellow alive to get a job washing and cleaning up laboratory glassware in Armco's Research Lab under the supervision of chief chemist Arba Thomas. But, Oscar wanted — more than anything else — a degree in science from a recognized university. Never letting his goal slip out of view, he enrolled in evening classes at the University of Cincinnati, Cincinnati, Ohio. For fifteen years, after putting in eight to ten hours on the job, he attended night school two to three evenings a week. Think this is unusual . . . yes, it is, but . . . Oscar Fritzsche had to travel 72 miles round trip each evening he attended school! It is estimated he travelled 90,000 miles, using some 6,000 gallons of gasoline. Of course while he was getting his degree, he never missed a single day's work at Armco . . . he got married to a wonderful girl . . . he raised a family of three boys . . . he won promotion after promotion and today holds the position of Senior Spectrochemist. Please pardon us Oscar, but we'd like to call you FABULOUS FRITZSCHE!

SPECIFIC INFORMATION ON PART I, Tables of Spectral-line Intensities, Arranged by Elements, by William F. Meggers, Charles H. Corliss, and Bourdon F. Scribner is now available. This is a National Bureau of Standards Monograph 32—Part I, issued December 29, 1961. It is 473 pages and may be purchased for $4.00 from the U.S. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

This monograph, published in two parts, constitutes the most extensive set of tables of spectral-line intensities available in book form, and is the most complete work in its field.

Part I gives the intensity, character, wavelength, spectrum and energy levels of 39,000 lines between 2000 and 9000 Angstroms. The intensities were observed in a series of copper arcs, each containing 0.1 atomic percent of one of 70 elements. The data are presented in separate tables for each of the 70 elements. Part II, issued in October 1961, presented the 39,000 observed lines in the order of their wavelengths (NBS Monograph 32—Part II, $3.00).

Knowledge of true line intensities over long wavelength ranges of different spectra of many chemical elements has heretofore been very limited. In the preparation of this work, the relative intensities, or radiant powers, of 39,000 spectral lines with wavelengths between 2000 and 9000 Angstroms have been determined on a uniform energy scale for 70 chemical elements. Comparisons with other intensity measurements in individual spectra indicate that the National Bureau of Standards spectral-line intensities may have errors of 20 percent on the average. The intensities provide approximate quantitative values for the 70 chemical elements commonly determined by spectrochemists.

Heretofore the "MIT Wavelength Tables", published in 1939 by the Massachusetts Institute of Technology, have been the most widely distributed compilation of atomic spectra. Those Tables contain wavelengths with intensities in arc, spark or discharge tube of more than 100,000 spectrum lines most strongly emitted by 87 atomic elements between 10,000 and 2000 Angstroms, but none of the intensities were calibrated.

Although the NBS "Tables of Spectral-line Intensities" are limited to 39,000 lines of 70 chemical elements, all intensities are calibrated, many wave lengths are improved, more than 4500 lines not found in the MIT Tables are presented, and energy levels for about 25,000 lines are included.

NOTE: Foreign remittances must be in U.S. exchange and should include an additional one-fourth of the publication price to cover mailing costs.

ANACHEM INVITES DR. DIEHL . . . word has reached us, through P. N. Burkard, Wyandotte Chemicals Corporation, Wyandotte, Michigan, that Dr. Harvey G. Diehl, Professor of Analytical Chemistry, Iowa State University, Ames, Iowa, has been invited to give the Conference Address at the 10th Anachem Conference on Monday evening, October 22nd, at McGregor Memorial Conference Center, Wayne State University, Detroit. The title of his talk will be, "The Wet Oxidation of Organic Matter with Perchloric Acid". Dr. Paul K. Winter, recipient of the Anachem Award for 1962 will receive this honor on Tuesday, October 23rd. To honor Dr. Winter, who has worked at General Motors since 1937, a special symposium is planned, featuring leading analytical chemists from the major suppliers of basic raw materials to the automotive industry. Appearing on this program with Dr. Winter will be: Dr. Hugh F. Beeghly, Jones & Laughlin Steel Co.; Dr. S. S. Lord, E. I. du Pont de Nemours & Co.; Dr. Runyon G. Ernst, American Metal Climax Co.; Charles M. Gambrill, Ethyl Corporation; and Willard E. Houth, AC Spark Plug Division, General Motors Corporation. The preliminary program is now being mailed and if you are interested simply write P. N. Burkard, Publicity Chairman, 10th Detroit Anachem Conference, Wyandotte Chemicals Corporation, Wyandotte, Michigan.

LET'S GO SOUTHEASTERN . . . the annual Fall meeting of the Southeastern Section, SAS, is tentatively scheduled for the week-end of September 14-15. The meeting will be held at the new Chemstrand Research Center, Durham, North Carolina. The Chemstrand company has graciously expressed the desire to be host to the organization at lunch on Friday, September 14th followed by a tour of their new research facilities. Always an interesting meeting, this year's symposium promises to be finer than ever.

THE LATEST FROM OTTAWA, where preparations for the Ninth Annual Ottawa Symposium are going full tilt, is that the symposium will be bigger and better than ever. The date is the 17th-19th of September . . . the place, Ottawa, and arrangements have been made to hold the meeting jointly with the Analytical Section of the C.I C. The latter group will promote their symposium and solicit papers independently but there will be one program, one registration fee, and one banquet. Other good news is that we can look forward to the usual most enjoyable and friendly Social Hour, sponsored as in previous years. The program is being arranged so that there will be two concurrent sessions. However, papers on allied subjects will not be held at the same time. In order to smoothly coordinate the joint symposia, Dr. Page has appointed Dr. R. Barefoot to work with the Montreal group and two other coordinators will be named to work with the Ottawa group.

It will bring a vote of appreciation from symposium registrants to be informed that the IX Symposia will be held at the N.R.C. Building on Montreal Road where one large auditorium, two smaller auditoriums, and excellent cafeteria facilities are available. Also to be looked forward to with great anticipation will be the elegant banquet which will probably be held in the wonderful Totem Pole Restaurant. It is the fervent hope of the United technical team that they will meet all their many fine Canadian friends at the IX Ottawa Symposium, during the breathtaking month of September when Canada glows in its autumnal splendor.

TRANSACTIONS OF THE IX INTERNATIONALE Colloquium Spectroscopicum is now available at a subscription price of 130 New Francs. The transactions of this IX International Colloquium will appear in the next few months in the form of three bound volumes 24 cm x 16 cm, and approximately 600 pages each. They will include the text of 97 lectures and discussions, communications of the colloquium, preceded by trilingual summaries (French, English, German) and accompanied by diagrams, plans and photographs. If you are interested, it is suggested you write immediately to: Secretariat of the G.A.M.S., 1, rue Gaston-Boissier, Paris 15, France and enclose a money order, banker's check or postal money order for these valuable transactions.

THE 1960 PUBLICATION AWARD, given by the Detroit Section of the Optical Society of America, was won by Richard F. Majkowski and T. P. Schreiber, Research Laboratories, General Motors Corporation, Warren, Michigan. The award was given for the best paper written by a member of the Detroit Section during the calendar year 1960. The winning paper's title was "Use of Controlled Atmospheres to Minimize Matrix Effects in the Spectrographic Analysis of Tool Steels" . . . and was published in Spectrochimica Acta, Vol. 16, No. 10, 1960.
The award of a fifty-dollar U.S. Government Bond was shared by the co-authors and was presented at a dinner held before the May meeting of the Detroit Section. Our warmest congratulations, gentlemen.

MEANWHILE...back at the office

Two days in June, 1962, shall be long remembered at the United office. It was on June 14th and 15th that we played proud host to Dr. Ayme Cornu, Ingenieur au Centre d'Etudes Nucleaires de Grenoble, just prior to the big Tenth International Conference on Spectroscopy held in Maryland.

Arrangements for the visit had been made months in advance. In fact, it was during the IX Symposium in Lyon, France that the idea was suggested. Dr. Cornu, well acquainted and universally liked by scores of United States spectroscopists, was anxious to tour the plant which made many types of electrodes being used in his laboratories at Grenoble. And, certainly, the United team was happy to show off its producing operation.

In addition to a thorough tour of the United plant, Mr. George Sermon, President and Mr. Carl Leistner, Technical Assistant to the President, made arrangements for Dr. Cornu to tour several interesting laboratories of the Dow Chemical Company in adjacent Midland, Michigan. The gracious Dow hosts were Dr. J. D. Hanawalt and Dr. Norman Wright, both well known in scientific fields. It was felt that Dr. Cornu left with a most favorable impression of the quality and quantity of work being accomplished in leading United States laboratories.

Before accompanying the United team to Maryland for the Xth International Conference, Dr. Cornu was guest of honor at a reception held in the George T. Sermon home and grounds, the evening of June 15th. Arcs & Sparks sincerely hopes Dr. Cornu had a pleasant visit at United and wishes him to be assured his visit will be pleasantly remembered "back at the office."

The surgeon uses many instruments

Each of these instruments is a precise extension of the creative surgeon's hands . . . all are essential to his proficiency.

Today, the spectroscopist is challenged by the sophistication of the art to achieve new creative analytical techniques. That's why *United* offers you a graduated range of physical grades . . . from low to high densities. There is no need to compromise imaginative ability nor professional standards by limiting your choice of electrode grades.

As many new instruments are being developed for surgeons, so *United* is continually striving to provide you with the exact electrode to meet each different need.

Why not write today for full details and samples from our wide selection of custom and stock electrodes?

UNITED carbon products co.

P. O. BOX 747-B
BAY CITY, MICHIGAN

Litho in U.S.A.