ARCS & SPARKS

Published by the
Ultra Carbon Corporation
for the advancement of Spectroscopy

FALL-WINTER 1972 VOLUME 17 No. 2

ARCS & SPARKS
Fall - Winter 1972 Issue

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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.

DR. ALAN WALSH
Recipient of Maurice F. Hasler Award

Dr. Alan Walsh, Assistant Chief of the Division of Chemical Physics, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, was presented with the Maurice F. Hasler Award in Spectroscopy, Wednesday, September 13, 1972, at the Eleventh National Meeting of the Society of Applied Spectroscopy held in Dallas, Texas.

Dr. Alan Walsh is *considered the "father" of atomic absorption spectroscopy*. He first exhibited a complete apparatus for carrying out a technique of atomic absorption in November 1953 and his now classic paper appeared in Spectrochimica Acta in 1955. Nearly all work in atomic absorption stems from the publication of that paper. *Dr. Walsh's contributions have been recognized all over the world*. One of his major contributions to the technique was in the development of intense, stable, and inexpensive hollow cathode discharge lamps.

Dr. Walsh has been more recently interested in the ultimate goal of analysts, i.e., to determine many metals at one time. This interest has resulted in the development of resonance monochromators and of selective modulation techniques and in the use of atomic fluorescence spectrometry.

He has published more than 40 papers on atomic emission spectroscopy, atomic absorption spectroscopy, atomic fluorescence spectroscopy, infrared and Raman spectroscopy.

Dr. Walsh holds patents in Australia, U.S., Japan, and other countries on atomic absorption spectroscopy, multiple monochromator, and improvements in grating monochromators.

He has been the recipient of many awards and honors among them the Britannica Australia Science Award 1966; President, Australian Institute of Physics 1967-68; Fellow of the Royal Society, London 1969; Royal Society of Victoria Research Medal 1969.

This spectroscopy award was established to honor the memory of the late Dr. Maurice F. Hasler, co-founder of Applied Research Laboratories. The award is sponsored by Bausch and Lomb, Inc. and provides an honorarium of $1,000 to the recipient. The purpose is to recognize and encourage achievement in the origination, improvement or application of spectroscopy in chemistry and physics.

(See additional photos of 11th National Meeting this issue.)

ULTRA CARBON CORPORATION PURCHASES PYROBOND PRODUCTION PROCESS AND EQUIPMENT FROM DOW CORNING CORPORATION

BAY CITY, MICH. – Ultra Carbon Corporation has announced the purchase from Dow Corning Corporation, Midland, Michigan of the Pyrobond® 1300 and 1300F product lines and processes for producing silcon carbide converted casings on graphite-fabricated components. Ultra Carbon Corporation is a leading producer of precision-machined graphite parts for science and industry.

Commenting on the Pyrobond purchase, Del Hughes, Ultra Carbon's president, said, "Pyrobond 1300 Series products complement our existing series of Pyro-Tech PT 101, PT 333 and PT 444 component surfaces and should substantially broaden our market position in this area of advanced technology."

The purchase includes all domestic and foreign patents, Pyrobond trade name, manufacturing equipment and application technology. Ultra Carbon will manufacture these products at their Bay City plant and will market them world wide through existing representatives to current and future users of this unusual high-performance material.

Pyrobond is the registered tradename given by Dow Corning to graphite components which have their outer surface converted to silicon carbide providing an extremely hard and wear-resistant case around the graphite substrate. This material was developed for design engineers requiring more sophisticated materials to gain longer life and improved performance where existing materials such as ceramics, titanium carbide and plain graphite do not meet chemical, physical and thermal requirements.

In discussing the effects of the purchase on the local community, Mr. Hughes said, "We are pleased that Ultra Carbon can bring the manufacture of these products to the Tri-City area. In addition to providing employment for high level technicians and professional personnel, international sales of these new products should provide important economic growth from outside sources to the Bay area over the coming years"

Crobaugh Laboratories Cleveland, Ohio

From pesticide residue to a scrap of burned out aircraft the lab "Detectives" find the answers.

The work of such a laboratory can never really be considered routine. Each day brings something new and often challenging. For more than 78 years Crobaugh Laboratories have been providing industry, government and individuals with answers to questions which range from quality control to forensic analyses.

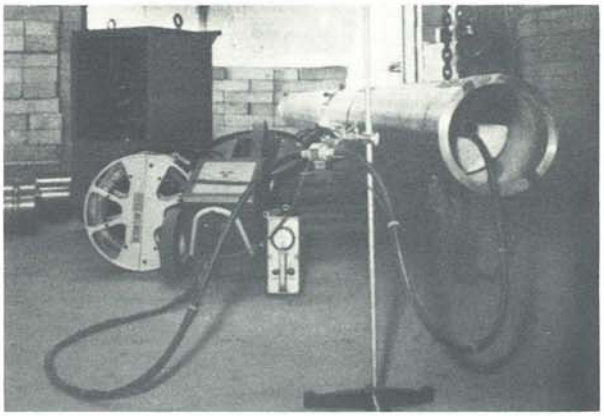
Crobaugh Laboratories, headed by President Morton L. Levy, were founded in 1894 by the late Frank L. Crobaugh. Mr. Levy is a native of Cleveland and a graduate of Case Western Reserve University. He served with the U.S. Air Force during World War II and still flies for both business and pleasure.

Prior to joining Crobaugh, Mr. Levy worked with Harshaw Chemical Company, Celanese Corporation and Jones & Laughlin Steel Corporation. In 1948 he formed his own company, the Cleveland Chemical and Engineering Service, which specialized in organic analyses. In 1950 Levy's company joined Crobaugh Laboratories which at that time specialized in inorganic analyses, especially of metals. Mr. Levy became president of the firm in 1963.

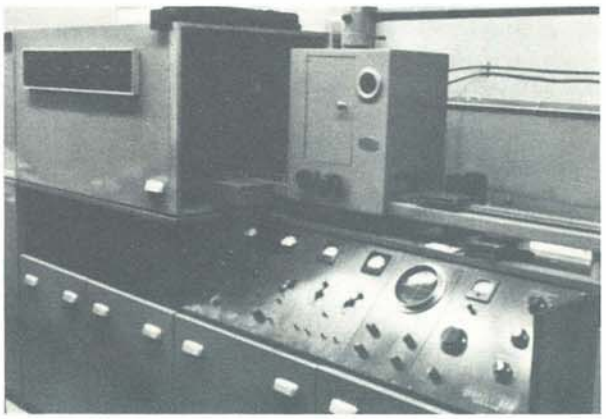
The company has been a pioneer in adapting spectroscopy to a wide variety of problems. Crobaugh was one of the first commercial laboratories to combine infrared spectrography, emission spectrography, gas chromatography, X-ray diffraction and X-ray spectroscopy all under one roof and to use them in the analyses of unknown materials.

Crobaugh was also one of the first commercial laboratories to make pesticide residue analyses a "routine" operation. They routinized the pesticide residue analytical determinations in the early 60's when the FDA and Department of Agriculture released official methods for specific pesticides.

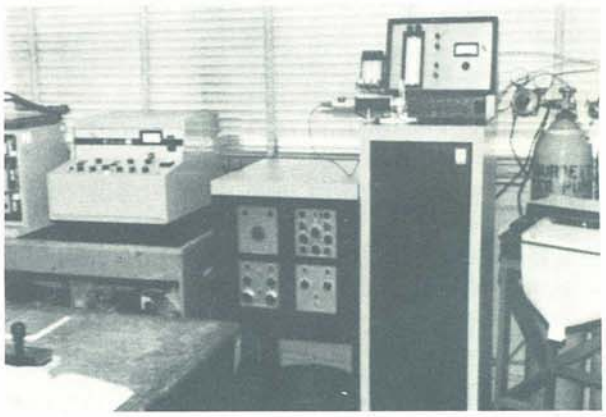
Their work is so varied that they must be considered generalists and not really specialists. They work with gases, liquids, solids, petroleum, water, metals, organic solids, detergents and fertilizers. They get into such diverse processes as packing, food handling, smelting and all kinds of manufacturing. Crobaugh people have ridden locomotives and witnessed traction tests in order to certify such equipment for export from the U.S. to foreign countries. They take to the air too. The company-owned aircraft is frequently utilized in their research and testing when an aerial view and photos will aid in a faster and more accurate solution to a problem. A



RADIOGRAPHY X-Ray and Gamma



EMISSION SPECTROSCOPY



CHROMATOGRAPHY – Thermal Conductivity, Flame Ionization, Electron Capture, Flame Photometric.

recent example was the measuring from the air, huge piles of bulk storage.

In Cleveland, several years ago, a scandal of sorts developed over the use of soybean additives in hamburger. It was against both federal and local laws and was unfair competition to meat dealers who were abiding by the law. A wholesaler could take 100 pounds of hamburger meat, add 3½ pounds of soy additive, pump 10 pounds of water into it and end up with 113½ pounds of meat. The soybean derivatives were not harmful, as a matter of fact they improved the hamburger nutritionally, enhanced both appearance and flavor and kept it from shrinking during cooking.

The local newspaper retained the services of Crobaugh to analyze hamburger purchased from various sources. At that time tests to establish the presence of soy in hamburger were in the embryonic stage. Microscopic techniques were of little value because the manufacturing process subjected the soy to many environmental factors which changed the shape of the individual particles. It was a time-consuming and lengthy research problem but Crobaugh met the challenge and came up with a method of determining soy flour in ground meats.

One of the most interesting aspects of their work is legal testing. Crobaugh personnel have appeared as expert witnesses before courts in all parts of the United States. Their testimony has included reasons for material failure, methods of analysis, safety hazards, patent disputes, product liability, industrial accidents and aircraft crashes.

Crobaugh is active in quality control. They supply certified analyses of materials for sale and shipment. This is important in setting the prices of the commodity. For example, the value of an ore will depend on how much of the metal it contains. The price of fertilizer will be related to its chemical analysis.

Too, the firm often carries out technical surveys for individuals and companies considering investments. Their investigations often determine whether a particular industry or development is worth the asking price.

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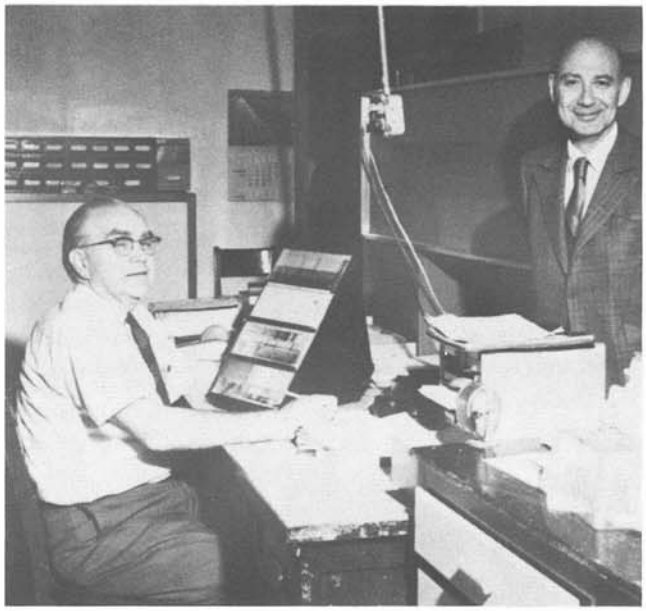


President Morton L. Levy (right) with Roger W. Loofbourow at the Emission Spectrograph.

Henry R. Friedberg, Vice President, recording data during sampling for airborne particles as part of an Environmental Study.

In 1968 the news media headlined the possible solution to the disappearance in 1937 of Amelia Earhart and her navigator, Fred Noonan. Chunks of torn metal believed to be from the Lockheed Electra Miss Earhart had been flying were found on the island of Saipan. This along with stories told by the natives started the investigation.

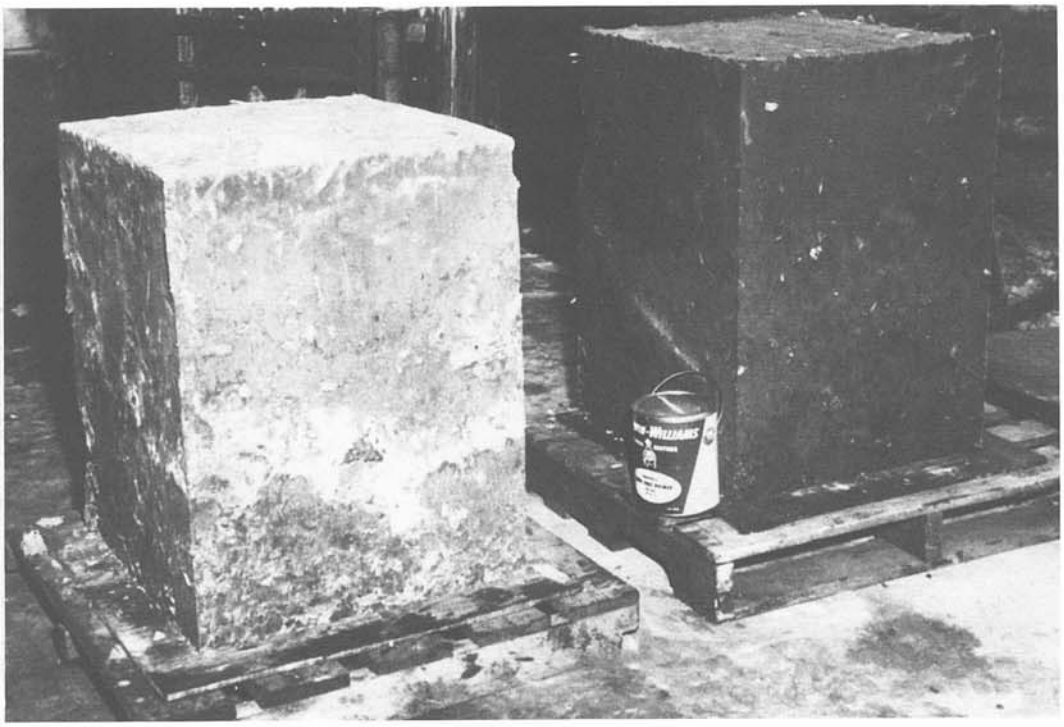
Crobaugh "detectives" were called in to analyze these 30-year-old pieces of metal. Results of their research and tests showed that such metal was made by Alcoa from 1934 to 1936, and not made after that date. Similar metal was sold to Lockheed during those years. Amelia Earhart's disappearance still remains a mystery. Crobaugh people believe from the facts at hand that she was lost at sea.

From 1966 through 1969, Crobaugh Laboratories were retained by the National Aeronautics and Space Administration, the Airline Pilots Association and United Air Lines. Their assignment – determine what gases were in the atmosphere of airplane passenger cabins after landing accidents that were not completely catastrophic but resulted in fire starting outside of the fuselage from ruptured fuel tanks. In air crashes of this nature, accident investigators had noted that not all deaths were caused by the usual offenders – impact, burns, asphyxiation and fire.

Actual aircraft were used by Crobaugh Laboratories in making the tests. The charred cabins can still be seen at the right of the northeast landing approach at Cleveland Hopkins International Airport.

Crobaugh tests indicated that the synthetic resins used in the manufacturing of the furnishings of the passenger cabin pyrolyzed and gave off gases in varying amounts from minor to toxic proportions. These results were confirmed in 1970 in a series of similar tests made by the United States Bureau of Standards.

With the growing concern over ecology more and more of their work is related to air and water polution. Crobaugh Laboratories, going back many years, has had a very active part in studying phases of waste problems. A demonstration grant, under the auspices of the City of Cleveland, was completed by Crobaugh. The purpose was to show the feasibility of grinding and shredding solid municipal wastes, mixing with other available waste products and compacting the results to form "concrete" blocks which would have enough density and integrity to be used as marine fill for Cleveland's contemplated Jet Port in Lake Erie. These concrete blocks may also be used to combat soil erosion along the south shore of Lake Erie. The compacts as developed, are free from odor and vermin. No one at Crobaugh suggests using these as prime construction materials. They are useable for filling in foundations and do serve as a means of concentrating waste for transportation to fill old strip



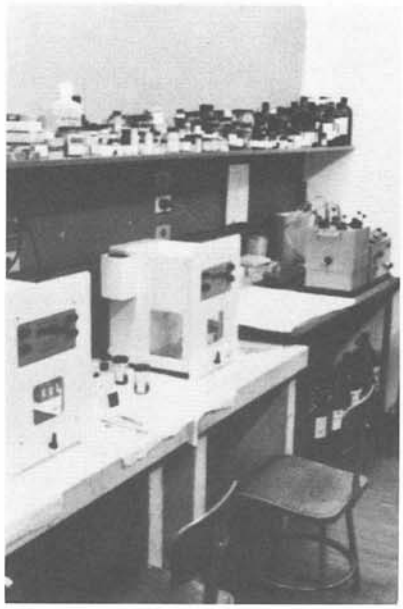
Two of the "concrete" blocks, weighing approximately 1100 pounds each, made to demonstrate the feasibility of compacting waste materials.

ORGANIC MICROANALYSIS Elemental Analysis, Functional Groups.

mines and can replenish the soil after a period of years. Crobaugh has made blocks weighing over 1,000 pounds to demonstrate the possibilities involved for using solid waste, together with other waste products, in forming useable material.

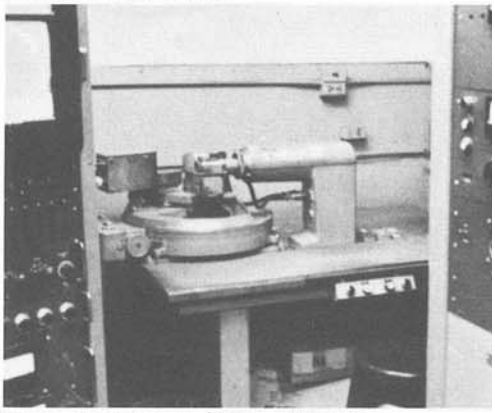
The words ecology, environment, recycle, waste management, etc., are all "old hat" to Crobaugh Laboratories. The officers of the company, as individuals, strongly believe in a systems approach to the entire problem of waste treatment. This includes the entire body of knowledge concerning water and air pollution together with the treatment of solid waste. The recycling of many solid and liquid wastes is already economically practical, i.e., the present scrap metal industry and ion exchange of liquid wastes to recover precious metals are two extreme examples. However, there are many pilot plants being built today which take municipal solid wastes as a whole and convert them to useable energy as well as recoverable items which include metals and compost. Of course, the activity in these areas has accelerated in the last five years.

Their constant research in a broad range of pollution has given Crobaugh people an insight and possible solution to many of our problems. They are firmly convinced that the technology for cleaning up the environment has already been developed. The knowledge is there. It is just a question of motivation and engineering. All that is needed is a decision to put the program together and get on with saving our ecology!

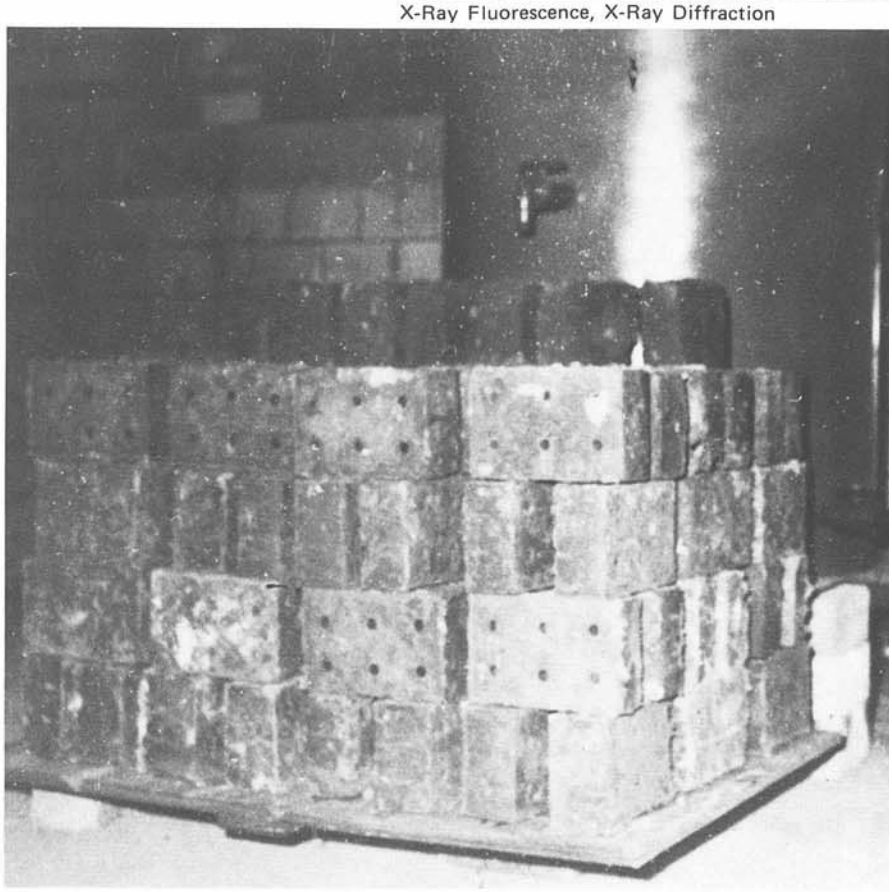


MOLECULAR WEIGHTS
V.P. Osmometer

ATOMIC ABSORPTION



X-Ray Fluorescence, X-Ray Diffraction



Pilot-size compacts which were immersed in Lake Erie Water in the tank shown behind th compacts. Water samples were then tested for pollution.

14th Annual Rocky Mountain Spectroscopy Conference

DENVER, COLORADO
JULY 31 – AUGUST 1, 1972

Bob Brown, LeRoy Jacobs, Howard Taylor, all of Accu-Labs Research and Jim Weber of U.S. Bureau of Mines.

Jerry Tabor, Molybdenum Corp., Art Hubert, Elwin Mosier, and J. Turner, all of U.S. Geological Survey.

H. L. Dequasie, Delaware Valley Development & Service Corp. with Harlan Barton, Dow Chemical Company.

20th Annual Anachem Conference

DEARBORN, MICHIGAN
OCTOBER 9-11, 1972

Mrs. Jean Chimera, Convention Bureau, Dennis Oberding, Registration Chairman, Ethyl Corp., Dr. Ed. Havelena, Detroit Edison.

Dr. Charles N. Reilley (right) Anachem Award recipient. Making the presentation is Mitch Kapron, Anachem Award Chairman. Dr. Reilley's current research is in Nuclear Magnetic Resonance, Electro-Chemistry and computer applications.

Dr. Ira J. Holcomb, Conference Chairman, Park-Davis & Co., Dr. Sid Siggia, U. of Massachusetts, Dr. Charles N. Reilley, U. of North Carolina, Dr. Vernon Stenger, Dow Chemical Co., Mitch Kapron, Anachem Award Chairman, Ethyl Corp.

Spectroscopy Society of Canada

19th Spectroscopy Symposium

Brendan St. George, President of the Spectroscopy Society of Canada, presenting the award plaque to Dr. Hurwitz.

Brendan St. George, Dr. and Mrs. Hurwitz, and Professor J. D. Dick, Chairman of the Conference.

Mr. and Mrs. A. W. Pross, Mr. and Mrs. R. A. Burley and Mr. and Mrs. G. R. Woolerton.

Mrs. Dick, Professor Dick, Mrs. Dunn, R. Dunn, Miss D. Deaken and R. Rowan.

Dr. Jan K. Hurwitz

The Spectroscopy Society of Canada, admitted to Honorary Membership, Dr. Jan K. Hurwitz, in recognition of his activities in establishing this society and serving as its first president during the years 1955-57.

His work in behalf of both the Canadian and U.S. Spectroscopy Societies goes back many years. While serving as President of the Canadian Society, he aided in establishing the Society's Copper Standards Committee and in formulating the Society's first Constitution and By-Laws. Dr. Hurwitz was also Chairman of the first Ottawa Symposium on Applied Spectroscopy in 1955 and served on the committee for the second and third symposia in 1956 and 1957.

A native of Toronto, Ontario, Dr. Hurwitz attended the University of Toronto and graduated with a B.A.Sc. in Engineering Physics. He completed his graduate work in physics at the same University receiving M.A. and Ph.D. degrees in 1947 and 1950 respectively.

In 1948 he joined the staff of the Mines Branch, Government of Canada, in Ottawa where he performed research and development work in emission spectrochemistry. In 1957, he left the Mines Branch and joined the Research Laboratory of United States Steel Corporation, Monroeville, Pennsylvania, where he is responsible for activities in the emission spectroscopy laboratory.

Dr. Hurwitz has authored and published some 22 technical papers. He has served as a lecturer at the University of Ottawa during 1956-57 and the University of Pittsburgh in 1963-70.

For eight years he served on various committees of the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy and held the office of Treasurer of this organization for a two year term. Dr. Hurwitz has served as both Secretary and Treasurer of the Spectroscopy Society of Pittsburgh. He was Secretary of the Society for Applied Spectroscopy 1965-67 and is an active member of the Publicity Committee of this society, having served as chairman in 1971.

11th National Meeting - Society for Applied

DR. C. R. BUNDLE, Bradford University, Bradford, England, was the recipient of the William F. Meggers Award. The Meggers Award recognizes the most outstanding paper published in Applied Spectroscopy in the past year. Dr. Bundle's paper was "Some Recent Advances in Photoelectron Spectroscopy."

Atomic Absorption School – Claude Veillon, University of Houston, at the Rostrum

Dr. George H. Morrison, Cornell University, Dr. Alan Walsh, Hasler Award recipient, and Max Amos, Varian LTD., Australia.

Anna Yoakum, Stewart Laboratories, presiding at the session in X-ray spectroscopy

Award Luncheon

A. F. Rekus, Baltimore Gas & Electric Co., Mr. and Mrs. I. Glaze, American Cast Iron Co., John Marling, Baird Atomic, Inc. Richard Knisley, Iowa State U., and Joe Hwang, Instrumentation Laboratory

C. Pepper, National Lead Co. of Ohio, A. Rekus, Baltimore Gas & Electric Co., A. T. Myers, U.S. Geological Survey, V. G. Wheeler, Allied Chemical Corp.

Spectroscopy

Dallas, Texas
September 10-15, 1972

Fred Lichte, Colorado State U., Ed Peck, Lawrence Livermore Laboratory, Jim Seeley, CSU., Howard Taylor, Accu-Labs Research.

General Chairman, Phil Kane, Texas Instruments Inc., speaking at the awards luncheon.

Conducting the session on 'Infrared Spectroscopy at Sub-Ambient Temperatures', J. E. Katon, Miami University, Oxford, Ohio.

A Texas "20 Gallon" hat is presented to Rod Skogerboe by Robert Crawford, FDA and Asst.-Chief Analyst of Dallas Society of Analytical Chemists

Cyrus Feldman, spectrochemist, Analytical Chemistry Division, Oak Ridge National Laboratory, was granted the ASTM Award of Merit and named a Fellow of the American Society for Testing and Materials. The presentation was made by Arnold J. Lincoln, Vice Chairman of ASTM Committee E-2.

The Award of Merit is granted to individuals for distinguished service to the cause of voluntary standardization. Feldman received the award "for his vast knowledge in the area of fundamentals of spectroscopy, his inate ability with the pen which has produced ASTM Standard E 116 on Photographic Photometry that is invaluable to all spectroscopists the world over since 1956."

Feldman's major professional activity concerns research and development in the spectrochemical analysis of ores, solutions and radioactive materials, and in photographic photometry. He originated porous cup electrode and sifter electrode; and studied the mechanism of liquid spark discharge. He developed fusion and chemical separation procedures to increase the sensitivity and specificity of arc, spark and flame analysis.

Feldman participated in the Oak Ridge National Laboratory Traveling Lecture Program, 1954-1960. He served on the Editorial Advisory Board of Spectrochimica Acta, 1957-1965; and has been scientific editor of Optics and Spectroscopy (English translation of the Russian Journal Optika i Spektroskopiya) from 1960 to the present.

Feldman has authored many papers and articles in his areas of professional interest. Other writings include ASTM Standard E 116 on Photographic Photometry; encyclopedia articles on flame photometry, microphotometer, rare earth microanalysis, and spark spectrochemical methods for solution analysis.

Racing Sailing Yachts

With George Alexander

Since going to press "RAGTIME" with George in the crew has won the 1972 race to Mazatlan, Mexico. With forty-six boats competing "RAGTIME" was first to finish breaking the previous record by 13½ hours. They handicapped out to third place in Class A. It looks as though the crew will have "RAGTIME" right up front in that 1973 race to Honolulu.

George Alexander aboard 'Defiant' enjoying his favorite sport.

For this one, George is navigator. He, and the other crew members have been in this race several times before; they are aboard the yacht "Sundancer," owned and skippered by Ed Sundberg, a very accomplished ocean racer. It's the first weekend in November, 1970, at the starting line of the annual yachting race from Los Angeles to Mazatlan, Mexico.

The race course is around the tip (Cabo San Lucas) of Baja, California and then across the Gulf of California to the city of Mazatlan, a total distance of about one-thousand miles. For those who like to sail under spinnaker – and who doesn't, this is a great race. Sometime within the first 24 hours the spinnaker will go up and with luck will not need to come down until you work through the lee under Cabo San Lucas. After that it's a spinnaker reach all the way across the Gulf.

For the story of this particular race we will let George tell it just the way he told it to us. "The boat, 'Sundancer' was a new, somewhat modified CAL 43. As we approached the starting line on November 7, we knew that we had a good chance to win. We had a terrific downwind boat, great sails and an excellent crew. It was a very windy day so the start was quite exhilarating.

"The whole fleet moved very rapidly down the coast. After an hour or so it became very apparent to us that the rest of the fleet was going on a much different course than we. After a bit of frantic worrying – for our two compasses were differing by 20°, we found the source of our problem. The Mickey Mouse compass swinging company, had placed compensating magnets around our compasses with no regard to the fact that sailboats tilt a bit. The harder it blew, the more we heeled and the further apart our compasses would go. Well, over the side went the compensating magnets. We then continued without knowing whether or not our compass was correct. This was going to plague me all of the way down Baja since I was the navigator. I spent most of my star time taking fixes that would tell me how far off shore I was, rather than how far down the course. This led to some rather strange morning positions for the yacht Sundancer. I certainly developed a deep sympathy for navigators on this trip.

"As we neared Cabo San Lucas the winds were quite light even to the point where we could go swimming – the water and air are just the right temperature at this time of year. The light air continued until we were well on our way across the gulf at which time the breeze filled in and we were spinnaker reaching on our way to Mazatlan. About midnight we got an idea of how well we were doing when we found ourselves running neck and neck with a very good 57 footer. The next noon we crossed the finish line at Mazatlan. We were eighth to finish, beating several of the Class A boats on a boat-to-boat basis. A storm front brought the Class D boats in for the overall handicap win. We were first in Class B, so we had reason to be happy."

Since 1949 George V. Alexander has been associated with the Laboratory of Nuclear Medicine and Radiation Biology, University of California, Los Angeles. As a Spectroscopist, he is very much involved in biological tissue analysis.

"It's really a great sport – you can leave the dock and within ten minutes your mind is off all those perplexing problems. When you return you are refreshed enough to really charge ahead to solve any problem. It sounds a bit like medicine and maybe it is – but it sure comes with a great candy coating." This is how George describes his favorite leisure time activity, crewing on ocean sailing yachts.

George was introduced to sailing as a child on Lake Santa Fe near his home in

Wichita, Kansas. After a stint in the Navy during WW II, he returned to Wichita and did a great deal of racing and pleasure sailing on the lake.

He, his wife, and teenage children, a boy and three girls, have participated in many regattas with their own 18-foot Mercury class sloop, "Grinch," in honor of "Grinch Who Stole Christmas." This name is most fitting, as a newcomer to Mercury racing, they won the Christmas Regatta, when they first purchased the boat back in the early 60's.

George had crewed in a number of races aboard 24 and 28 foot boats but it was while they were preparing "Grinch" for a regatta that his crewing on larger racing yachts took a turn toward greater frequency. Friends literally picked them up bodily and insisted that they crew for them that day. It was all in fun, but it was the beginning of the end as far as any serious racing of "Grinch" was concerned.

That was some ten years ago and since then George has crewed, at some time or other, in all of the major races that are held in that area. Countless times he has had the thrill that comes with being aboard the winner as it crosses the finish line.

Briefly, for the uninitiated, the boats are divided into different classes, A, B, C, and so on, determined by size and type. A race in which all classes participate will have a number of winners, by class, handicap, first to finish, etc. Naturally, there are many races where boats of a single class compete to determine the winner of that class. In the Los Angeles area, every weekend sees a number of very good races and many are National Championship races. It is not possible to compete in every race so a boat owner will compete in one series one year and another series the next.

For long distance ocean racing, a 30-foot boat is normally considered the minimum length for safety; they range in length up to 70 feet or more. For example, a 50-foot sailing yacht will have a 55-foot mast, an 18-foot boom and carry 1325 square feet of sail. The cost of these boats ranges from $30,000 for the small ones and in excess of $300,000 for a 70 footer. The kind and quantity of equipment a boat carries is a big factor in the price differential. The average will range around 110,000 dollars.

"Ya Turko," the 50 foot yawl in which George raced to Honolulu. The events of this race are covered in our story.

Ocean racing is a highly competitive sport. Crew selection is not a decision lightly made by the boat owner. Winning the race and the safety of his boat are in the hands of the crew. One must be knowledgeable in every area of sailing. In one race a man may be sailing master, in another, the navigator. He must be congenial, this is as important as his sailing ability. The crew is confined for 9 to 14 days in the Honolulu race, and 18 to 28 days in the Tahiti race. Anything can happen, malfunctioning equipment, a calm which leaves you going nowhere, to a storm, which requires all hands just to keep afloat. Months of shake-down races and cruises go into preparation of both boat and crew for races such as these.

At this writing George is among a crew of eight competing in a number of "shake-down" races, including the race to Mazatlan, Mexico, in preparation for the 1973 race to Honolulu. The boat will be the "Ragtime." She is a marvelous light-weight racing machine, a single-hulled 62' sloop steered with a tiller. She was designed and built in New Zealand and brought to this country two years ago.

This will be the second Transpac Yacht Race to Honolulu for George. The first was in 1969 on the yacht, "Ya Turko," a 50-foot yawl.

The race takes place in July, but preparations for the 1969 race began in April for George, with the launching of

Continued

"Ya Turko," owned by an often-smiling, but occasionally snarling, George Antarr. During the next three months they were to install radios, refrigeration, complete the rigging, set up an alternating current generator and select a crew totaling nine, who were capable sailors and who could get along together for the eleven days of the race.

Of the twelve weekends prior to the July 4th start of the big race, they raced or tested gear and a crew on at least eight. Their racing success was quite good considering their lack of experience with Ya Turko. Their big win during that time was the 220-mile Pacific Mariners Yacht Club-Channel Islands Race. They were first to finish, first overall on corrected time and, of course, first in class. They took home quite a few trophies on that one.

The starting line for the big race is San Pedro, and again we will let George describe that first long ocean race with "Ya Turko" and crew.

"The start was to be some fiasco. With the wind more southerly than usual the starting committee had shifted the line so that it aimed almost at the west end of Catalina Island, the first mark of the race. This caused some confusion as to which way to approach the line, and also made the end nearest Catalina very highly favored. We were rather chicken and stayed out of the high traffic area and got a so, so start.

"It took us until about 5 P.M. to round Catalina and start toward Honolulu. We were about in the middle of the fleet as we rounded the West End. It was a beautiful afternoon and our cook was preparing steaks. The skipper decided our cocktail hour should be extended to "one more." Well, after this extended happy hour and tremendous dinner put on by our cook, we were all convinced as we watched the sun dissolve cleanly into the horizon that there is nothing like ocean racing.

"Our watches began at 8 P.M. with three four-hour watches and two six-hour watches. As the evening set in the wind began to build, we were moving quite well. Before the night was out we had made three or four sail changes, the winds were blowing a steady 35 to 40 knots and the seas were very choppy. We had chosen to hold high on the course in contrast to quite a few of our class competitors. I believe this turned out to be a blessing, since I later figured out that boats that dropped toward the Trade Winds quite abruptly may have run into winds as high as 60 knots. Six yachts lost masts or abandoned the race for some other reason during the first 48 hours.

"A great shocker hit us at noon on the second day as the engine was started to charge the batteries and cool the refrigerator, a swishing sound had me out of my bunk going for the engine compartment. There I found we were 'up to the floor boards' in water. Our automatic bilge pump had burned out and we had accumulated a tremendous amount of water. I went to our emergency hand pump which was a very high volume pump installed in the cockpit and got to work, but nothing happened, so I then got our second pump from up forward. After installing the necessary hoses to get the water to the outside and applying the required amount of muscle, we began to make some headway. After more than an hour of pumping it, the bilge was clear but we still had two problems, one – where did this water come from, two – why didn't our emergency bilge pump work?

"The water had come in through our Dorades which are the baffled ventilators used on yachts. The yacht manufacturer had neglected to install baffles in our Dorades, so whatever water hit the vents came right into the bilge after passing over much of our bread supply. The mystery of the inoperable emergency bilge pump turned out to be something of a blessing. The bilge pump had been installed backwards, but fortunately the 'exhaust' was on the high side of the boat and out of the water, otherwise I would have been pumping water into the boat. I guess you can't expect much for $100,000!"

Things went along fairly well after this for Ya Turko and crew. The winds shifted more astern after about the fourth day and they were able to use some of their large reaching sails and take on the appearance of a beautiful racing yawl. Soon they were able to move toward the south and into the trade winds. The winds were still quite strong with long sessions of 30-35 knots velocities.

Ya Turko was not the easiest yacht to steer in heavy winds and big seas and so under full sail it was not uncommon to round up, that is, to swing more broad side to the wind and lay rather flat in the water. This can be avoided with attentive helmsmanship and good team effort by the crew. As you can imagine there is more of a tendency to "round up" in the wee hours of the morning than at other times. It was this tendency which led to the next saga, as George puts it, "of what is surely beginning to sound like an episode from the Perils of Pauline." So we will go on with George describing the next adventure of Ya Turko and crew on their first race to Honolulu.

"My watch was roused from sleep by the call of 'all hands' about midnight. It had been blowing about 35 knots, the seas were quite big and we had rounded up many times during our off watch. Finally the pressure had torn the spinnaker halyard block from the top of the mast and the big spinnaker went sailing out in front of the boat held only by the sheet and guy. Someone mistakenly asked for one of these to be released and the chute dropped to the water and under the boat. The tremendous pressure which developed, sheared the spinnaker pole very cleanly at the mast and sent it back to hit the upper shrouds with enough force to break off the starboard spreader. Since Ya Turko only has one pair of spreaders this was quite serious.

"Well, this is where we started. The mainsail was being lowered to take pressure off the mast. We fished a rather shredded spinnaker out from under the boat and untangled many lines. One crew member was on his stomach sliding from side to side as Ya Turko rolled in the big seas. We got him below and into a life harness which is considered routine gear for above deck work. We put one of our more agile crew members into several pairs of pants and a couple of sweatshirts to serve as padding as we hauled him up the mast of the rolling yacht to remove the broken spreader. With two downhauls it was still difficult to keep him in place. As we were removing the spreader, 'Amorita,' a yacht that we had been racing within sight of for two days went screaming past. She put a light on us and we did

"Grinch," the Alexander's racing sloop which started George on large long distance yacht racing.

"Ragtime," the 62 foot sloop in which George will race to Honolulu in 1973. That's George on the foredeck ready to take down the jib.

our best to let her know that we were o.k., but vocal communication was not good with the noise of the high winds and seas. Fortunately we had a replacement spreader and it was only necessary to drill holes in the pattern of the old spreader and reinstall it. At 3:30 A.M. we were finally ready to race again. It always seemed incredible that it took that long to do the job but under the conditions I suppose we did quite well.

"The remainder of the trip was really great. The weather eased off a bit and it was quite pleasant to sail day or night. An experience that you just can't get anywhere along our Pacific shore is steering a yacht of this size down the huge rollers found in the Trade Wind part of the Pacific. Everyone began to relax and truly enjoy ocean racing. Our three months of preparation were unquestionably worthwhile."

Prior to crossing the finish line near Diamond Head, they switched to a spinnaker saved for this occasion. It was a beautiful white chute with the Turkish crescent and star in the center. Needless to say, they were quite distinctive as they moved through the finish line at hull speed and flying everything they could handle. Ya Turko finished about the center of the 70 boat fleet, not bad when you take all the problems into consideration. But most important, this first long-distance race for boat and crew, tried them, and proved them capable.

The last race to Honolulu found George rebuilding the optical emission spectrometer. He was unable to participate but he had already developed a way to enjoy the race from his lab.

In 1970 George purchased a new Hewlett Packard 9100 Calculator to aid in the many calculations necessary to control their optical emission system. To check out the trigonometric part of this calculator he developed a program for calculating the day-to-day positions of the boats in the Tahiti Race. It was a fun way to follow the race and good experience in programming the new calculator. From about two days out they were able to estimate the finish time of the first yachts to within five minutes of the true time. Being this successful the first time, they decided to try it again for the 1971 Honolulu Race.

The real key to the success of the daily calculations of handicap and overall position was the ham communication network set up to relay the information to George in his office. A ham radio operator, Bill Thompson, was aboard the escort vessel and when Bill was ready with the daily latitude and longitudes he would contact another ham operator, Carrol Hudson in Newport Beach, who in turn would call and patch George into the network. George would enter the data in the computer and calculate for each yacht its distance to Honolulu, its class position and its fleet position. They were able to take care of the press and all other parties concerned within about an hour from the time of the transmission.

Altmar, Protege, Puff, Sundancer, Sundowner, Ya Turko and Ragtime, names that will always awaken fond memories for George, of great boats and even greater friends with whom he shared the thrill of a win and the disappointment of a loss.

Oak Ridge National Laboratory

16th Conference on Analytical Chemistry in Nuclear Technology

George Alkire, Wetinghouse Hanford Co., M. H. Campbell, Atlantic Richfield Hanford Co., James W. Robinson, National Lead Co.

Gatlinburg, Tennessee

October 24 - 26, 1972

Herbert Frittum, IAEA Safeguards, Vienna, Austria, J. C. White, Director of Analytical Chemistry Division, Oak Ridge National Laboratory

Glenn R. Waterbury, Los Alamos Scientific Laboratory, Glen J. Behling, General Electric Co., L. J. Brady, Chairman, Oak Ridge National Laboratory, Milton J. Rasmussen, USAEC – RL

Dinner Speaker, Charles F. Metz, Los Alamos, and W. D. Shults, Assistant Director, Analytical Chemistry Division, Oak Ridge National Laboratory

L. A. Stephens, Y-12 Plant, Union Carbide Nuclear Division, Roy W. Morrow, Y-12 Plant, and J. W. Charles, Y-12 Plant

LOOKING AHEAD

Jan. 14-17 — 8th Middle Atlantic Regional Meeting Washington, D. C. Contact: R. F. Brady, Jr., 706 Hope Lane, Gaithersburg, Md. 20760

March 5-9 — 24th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy. Cleveland, Ohio. Contact: H. L. Retcofsky, U.S. Bureau of Mines, 4800 Forbes Ave., Pittsburgh, Pa. 15211.

March 21-24 — 8th Annual Meeting, Association for the Advancement of Medical Instrumentation. Washington, D.C. Contact: AAMI, 1500 Wilson Blvd., Suite 417, Arlington, Va. 22209. 703-525-4890.

April 8-13 — 165th National American Chemical Society Meeting. Dallas Convention Center, Dallas, Tex. Contact: W. Wayne Meinke, National Bureau of Standards, Washington, D.C. 20034

April 9-12 — International Symposium on Ion-Selective Electrodes. University of Wales. Contact: D. R. Hub, UWIST, King Edward VII Ave., Cardiff, Wales, U.K.

April 9-13 — LABEX International and the Physics Exhibition. Earl's Court, London. Contact: LABEX International 1973, U.T.P. Exhibitions Ltd., 36-37 Furnival St., London EC4A1JH, England

April 11-18 — MESUCORA 73 and Physics Exhibition. Paris France. Includes measuring, analyzing and testing equipment, data processing of measuring, regulating, and automation. Contact: MESUCORA/ PHYSIQUE, 23, rue de Lubeck, 75-Paris 16eme, France

April 15-19 — Industrial Aspects of Biochemistry. University College, Dublin. Contact: The Secretariat, FEBS Special Meeting, IMA Conference Centre, 10, Fitzwilliam Place, Dublin 2, Ireland. Tel: 62087/62550.

April 15-20 — Federation of American Societies for Experimental Biology Annual Meeting. Atlantic City N.J. Contact: FASEB, 9650 Rockville Pike, Bethesda, Md.

April 16-19 — 8th International Symposium on Advances in Chromatography. Toronto, Canada. Contact: Albert Zlatkis, Chemistry Dept., University of Houston, Houston, Tex. 77004.

April 23-25 — 19th ISA Analysis Instrumentation Symposium. Stouffer's Riverfront Inn, St. Louis, Mo. Contact: J. L. Kern, Monsanto Co., 800 N. Lindbergh, St. Louis, Mo. 63166

April 24-27 — Sixth Annual Scanning Electron Microscope Symposium and Workshop. Chicago, Ill. Contact: Milton E. Nelson, IIT Research Institute, 10 W. 35 St., Chicago, Ill. 60616. 312-225-9630

May 13-15 — Central Regional ACS Meeting. Cleveland, Ohio. Contact: Gilbert K. Meloy, Sohio Research Center, 4440 Warrensville Center Road, Cleveland, Ohio 44128

September 3-6 — Second International Symposium on Liquid Scintillation Counting. Hotel Metropole, Brighton, England.

Includes exhibition. Those wishing to present a contribution or take part in the exhibition should write to M. A. Crook, Society for Analytical Chemistry, 9/10 Savile Row, London WIX 1AF, England.

September 24-28 — Symposium on Noble Gases Sponsors: EPA, University of Nevada Flamingo Hotel, Las Vegas, Nev.

Includes techniques for detection and measurement. Abstracts before April 1, 1973. Manuscripts by August 15, 1973. 100–200–word abstracts to A. Alan Moghissi, U.S. Environmental Protection Agency, P. O. Box 15027, Las Vegas, Nev. 89114.

LABORATORY CALIBRATION STANDARDS USING NATURAL GRAPHITE NOW UNDER DEVELOPMENT

A program to develop and produce laboratory trace analysis calibration standards based on natural graphite for use in such areas as spark source mass spectroscopy, neutron activation, optical emission spectroscopy and others has been announced by Ultra Carbon Corporation, Bay City, Michigan, and Accu-Labs Research Incorporated, Wheat Ridge, Colorado.

The new calibration standards based on natural graphite will add a new dimension to laboratory analyses at the low-ppm and sub-ppm trace level. Instead of using purified graphite with controlled impurity additives for comparative investigations, natural graphite with calibrated existing impurities can be used. These natural impurities should more closely resemble impurities found in many types of test samples for more accurate quantitative determinations of unknowns.

The standards will be prepared to meet customer quantitative analysis requirements for trace analyses in bio-medical, geochemical, environmental and high purity solid-state materials.

Preliminary semi-quantitative spark source mass spectrographic analyses in ppmw have been prepared for a basic mixture of bulk natural graphite materials. When certified, these materials can be diluted back into Ultra Carbon's Ultra Superior Purity (USP) briquetting type graphite powder to meet individual laboratory substrate needs.

The natural graphite standards will be supplied with maximum particle sizes of 20 microns in high purity, impervious, dust free, screw cap pyrolytic graphite coated graphite vials. Kits containing vials of the calibrated graphite in sizes of one and two grams each will be available in sets to dilute with high purity graphite or already in diluted form to cover a given concentration range of elements.

Initially it is planned to certify only ten of the more requested and important elements for general laboratory reference. Additional elements will be certified and made available as indicated by demand.

Development of the new standards is a joint venture between Ultra Carbon Corporation and Accu-Labs Research Incorporated. Accu-Labs Research will carry the analytical responsibility, while Ultra Carbon will supply basic graphite mixtures for the standards, packaging and marketing. Analysis for certification will be carried out by several methods including spark source mass spectrometry, isotopic dilution, neutron activation and other applicable chemical techniques.

Technical presentations will be made at major scientific meetings to announce the progress and status of the certification of these standards. Statistical data and analytical applicability studies will be provided as they become available.

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Spectroscopy Society of Pittsburgh

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U.S. Bureau of Mines
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ULTRA PEOPLE

Ultra reserves this space to introduce the men and women that our customers and friends seldom have an opportunity to meet or see. For more than 26 years Ultra Carbon has been the leader in producing the ultimate in high purity, precision machined carbon/graphite parts for science, industry and government. It is the combined efforts of the individuals you will meet in this, and future issues of Arcs & Sparks, that have contributed to our continuing growth and expansion.

Each is eminently qualified for the function he or she performs. It is their enthusiasm and concern for the quality of the products and services that has enabled Ultra to maintain its leadership role for over a quarter of a century. Obviously, all are highly regarded "Ultra People."

PEGGY BECKROW

"Good morning, Ultra Carbon," the voice you hear most every time you call is that of Peggy Beckrow. Keeping up with the incoming and outgoing calls is not an easy task but Peg has been doing just that, at the Ultra switchboard for seven years.

Taking the position of switchboard operator was a new experience for Peg. Her previous positions included four years as secretary to the sales manager of a local pipe and supply company. When the company went out of business, she took a job with Yellow Pages, Bell Telephone Company, as a project clerk. In this position she was responsible for the final processing of advertising sales contracts.

Peg is a collector – candle holders from all over the U.S. and match books (matches intact, please) from all over the world. Her lovely home is a hobby and she is most happy when entertaining guests there. In summer you will most often find Peg and her husband, Bob, he is a senior lab technician at Dow Chemical, in their yard. They both enjoy gardening and the results show it.

Free time activities include tennis, golf, bicycling and for the more quiet moments, reading, especially poetry. Here too, we must include Blu, Peg's tiny toy poodle.

Peg and Bob enjoy searching out unique shops and browsing, through the rare and unusual merchandise. These trips give them an opportunity to pursue another pastime, locating good eating places and trying out the house specialty.

SUSAN WEITZEL

A "scintillating personality" best describes the head of Ultra's accounting department, Susan Weitzel. Now in her fourth year with Ultra, Sue started in the accounts receivable department and was promoted to her present position two years ago.

Working in the high school office for three years prior to her graduation in 1963, was the beginning of Sue's career in bookkeeping. Before joining Ultra she held positions in a department store and with an automobile dealer. In both of these jobs her major function was accounting.

Doing a first-rate job is a habit with Sue and she is to be commended for her many accomplishments. She studied piano for many years and is a fine musician. She plays the bagpipes and for several years was a piper with a local all girl piper marching band. She sews and makes many of her own clothes.

Enthusiastic about sports, she actively participates in bowling, water and snow skiing. Sue and her husband Gary, are avid followers of both football and auto racing and take every opportunity offered to take in a game or race. Summer finds them spending much of their free time on their 18' boat, "Den-Dee."

Sue has one hobby which surprised us, because it has nothing to do with active sports. She collects "Hummel" figurines. They are very, very expensive and to date there are eight in her collection.

Along with taking care of her home, a schnauzer named "Mister," Sue also keeps books for Gary, who owns his own auto repair and service business.

LEIGH HAGA

With a number of years of new product development experience to his credit, Leigh Haga, joined Ultra in September, 1971, as Manager of the Research and Development Division.

Leigh was born, reared and graduated from high school in Bay City. He attended Michigan State University and received his BS degree in chemistry in 1954. He joined the U.S. Air Force in 1955 and served until 1958.

After being discharged from the service, Leigh took a position in the laboratory of General Motors, Bay City Division. During this time he attended Saginaw Valley College at night and graduated with a degree in mathematics.

Leigh was employed by Dow Corning for eleven years. Starting as a technician in their R&D labs he soon moved up to Project Leader. Prior to joining Ultra he was employed by High Performance Technology, Midland, Michigan, as Supervisor of Special Finishing.

His previous functions have included working on Czochralski crystal growth, float zoning of silicon and germanium and high temperature vapor deposition of silicon. His responsibilities have involved supervision of silicon wafer slicing, lapping and the cleaning and packaging of the wafers prior to shipment. Leigh was also responsible for taking out of development and putting into production, the vapor deposition of silicon carbide on various substrate materials.

Flying, is his favorite hobby. Leigh served five years in the Air Force Reserve as an instructor pilot in C-119's, where he accumulated some 2,000 hours flying time. He was discharged with the rank of Captain. Leigh has a commercial pilots license and is contemplating getting his instructors certificate so that he can teach.

He and his wife Betty, have seven children ranging from 7 to 16 years in age. They enjoy fishing and bowling together and as members of the Knights of Columbus and Elks Club, they enjoy the social activities offered by these organizations.

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