MELPAR-A-GRAPH

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Bright Light Shines in Optoelectronics Laboratory

Cross a blowtorch flame with a microwave field, sprinkle generously with salt, and what do you get? Light too bright for the eyes to bear—light more than 100 times as intense as that of the flame when the field is absent.

This phenomenon, called "microwave enhancement of light," is the basis of a light source conceived and fabricated by the Optoelectronics Section of Melpar's Research Division under the direction of Dr. Jenny Bramley. Although it is still in the experimental stage, the device promises to be a practical new source of intense illumination.

In one experimental apparatus, the flame was supplied by an oxyhydrogen torch, and the microwave field by a magnetron. The flame, located in a waveguide receiving the magnetron output, was "seeded" with sodium, so that it burned yellow. (It was seeded by adding to it sodium salt—plain table salt in some instances.) When power was applied to the magnetron, the yellow flame suddenly increased more than a hundredfold in intensity and remained at the high brightness level as long as power was applied. Similar experimental setups, with different seedings, yielded intense red, blue, and green lights.

In brightness and efficiency, the new light source surpasses xenon arc lamps,

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Charles F. Eyer, senior electrical engineer of the Optoelectronics Laboratory, adjusts the position of an oxyhydrogen torch as he prepares for a demonstration of the microwave enhancement of light. Mr. Eyer and Stanley M. Bryla, senior physicist, were associated with Dr. Bramley in the bright-light-source project. *Photo by Sakamoto*

Blanchard, Blei Attend Conferences in Europe

Dr. Gordon C. Blanchard participated in the International Congress on Fouling and Marine Corrosion at Cannes, France, June 8-13. Dr. Blanchard, Supervisor of the Microbiology Branch of the Research Division, attended the conference under Air Force sponsorship.

Dr. Ira Blei, Head of the Biodetection Section, Research Division, presented a paper at the Committee on Space Research Symposium in Florence, Italy, in May. The title of his paper was "Review of Concepts and Investigations for Use of Optical Rotation as a Means of Detecting Extraterrestrial Life." The symposium was sponsored by the International Union of Sciences.

MELPAR SUBSIDIARY DEVELOPS AMPLIFIER FOR RADIO TELESCOPE

Microwave Physics Corporation, a Melpar subsidiary in Garland, Texas, recently developed an advanced parametric receiving amplifier for the world's largest steerable radio telescope. The telescope is at the National Radio Astronomy Observatory near Green Bank, W. Va.

The new amplifier is capable of increasing the detection range of the telescope threefold over the range obtainable with conventional receiving methods. Using the Microwave Physics device, NRAO has detected galaxies as far away as 50 million light years. Fifty million light years is the distance over which light, moving at approximately 186,000 miles per second, travels in 50 million years.

Microwave Physics also produces low-noise parametric amplifiers for operation at room, liquid-nitrogen, and liquid-hydrogen temperatures and at all microwave frequencies through K-band. Other areas in which this Melpar subsidiary is active are solid-state harmonic generators, microwave transistor oscillators, special ferrite components, solid-state lasers, microwave modulation and demodulation of light beams, and infrared and optical communications systems.

President Reports New Orders Up, Sales Off

According to President Edward M. Bostick, new orders so far this year have amounted to $31 million, compared with $17 million at this time last year. Sales for the first half were $22,991,020, compared with $35,080,021 for the same period of 1963.

Although orders almost doubled those for the first six months of last year, Mr. Bostick stated that sales for the full year 1964 would be below the record sales of 1963.

Mr. Bostick also said that Melpar has several programs now in development which could substantially change the picture for the future.

Four million dollars of the new orders were recently announced as an award to Melpar West Virginia Corp., a wholly owned subsidiary located in Beckley and Fairmont, West Virginia.

Net income of Melpar for the first six months amounted to $777,758 or 31¢ per share, against $732,047 or 29¢ per share for the first half of 1963.

Employees, Families Enjoy Melpar Night

Melpar employees and their families numbered about a thousand in the crowd of 25,000 at the Senators-Yankees game in D.C. Stadium on Melpar Night, July 10. Seated together in reserved grandstand sections right behind home plate, the Melpar fans had a closeup view of the action. It was a lot of fun, even though the Senators lost 4-1.

Note to World's Fair Trippers

The Melpar speech synthesizer EVA is being exhibited in the Federal Pavilion at the New York World's Fair. The synthesizer is part of the National Science Foundation exhibit called "Waves of the Future."

WABCO Rapid Transit Proposal Accepted by San Francisco

ONE-MAN OPERATION. This a a model of the operations room of the WABCO automatic train control system. From this room all trains on the 75-mile San Francisco rail rapid transit network could be controlled by a single person using the ultramodern computer represented at rear left.

To the right of the computer are models of three magnetic tape storage units, a system status display map, and voice and digital data communications equipment. Other equipment shown includes the computer control console, a printer (left), and an automatic typewriter feeding into the computer.

The San Francisco Bay Area Rapid Transit District recently awarded a $654,480 contract to Westinghouse Air Brake Company for manufacture and demonstration of a computerized automatic train control system. The system will be tested in the spring of 1965 for application on the 75-mile rail rapid transit network being built to serve San Francisco Bay Area commuters.

Engineering and manufacturing of the system will be assigned to the Union Switch & Signal and Westinghouse Air Brake divisions of WABCO and to Melpar. The work of these organizations will be coordinated by the WABCO Mass Transit Center, an agency created in 1963 for the specific purpose of making all WABCO resources available to planners of rapid transit systems.

The fail-safe control system is designed to run commuter trains at speeds up to 80 mph with only 90-second intervals between trains on the same track. Heart of the system is a solid-state digital computer which, with peripheral equipment, will be located in an operations room like that shown above. From this room all operations of the system would be controlled, including scheduling, dispatching, routing, speed control, running time, and removal from service of all trains.

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Bright Light Source

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which are among the very brightest sources of artificial illumination availab Other points of interest are that the microwave-enhanced light is susceptible to modulation of as much as 99% at frequencies up to the megacycle range, and that the source can be designed to emit light in a single color, that is, light concentrated in a very narrow band of the visible spectrum.

Work on the new light source continues, with a view to developing a completely self-contained, flameless unit of extremely high efficiency. Such units would find many applications. A brilliant green light might be used by submarines to illuminate the ocean floor (sea water absorbs green light less than light of other colors). Intense blue light would be useful in photography. Airports might use yellow light for illumination and lights of several colors for air-traffic control systems. And on the highway, traffic signals with red, amber, and green "microwave enhanced" lights would be hard indeed for motorists to miss.

Herrington Gets Ph.D.

Lee P. Herrington, Research Divisi scientist, received a Ph.D. from Yale University on June 15. Dr. Herrington's field is meteorology, and his specialty the meteorology of forests. He is now working on the field trials of the "jungle canopy" meteorological study in which Melpar is engaged.

MILESTONE. Four civilian employees of the Melpar Plant Office, Defense Contract Administration Services Region, recently received Air Force certificates and pins in recognition of length of service. William J. Lochridge, Emmor Hoover, and Edgar C. Goodhart have completed 20 years of Federal service and Gerald J. Long has completed 10 years. Maj. Raymond P. Barnes, Officer in Charge, Melpar Plant Office, made the presentations. Shown above, in the usual order, are Maj. Barnes, Mr. Lochridge, Mr. Long, Mr. Hoover, and Mr. Goodhart.

SUPERVISORS' FORUM

This month Larry Shaw answers random questions that frequently arise in the weekly supervisors' panel discussions conducted by the Personnel Department.

Q: A non-exempt employee's pay is not affected if he arrives for work within six minutes after the start of his work shift. Does this policy mean that employees have a grace period of six minutes without being considered late?

A: From the standpoint of his attendance record, an employee, exempt or non-exempt, is late if he is not present at the start of his work shift.

Q: An employee with military reserve status receives orders to active duty for a short period, say two weeks. Must he use any accumulated vacation to cover all or part of his absence?

A: Not unless he wants it that way. Otherwise his supervisor should initiate a memo to the Personnel Manager requesting military leave of absence. Incidentally, a copy of his orders should be furnished Personnel Records for file.

Q: Of what importance is the Termination Check List, form PER-168?

A: It is an extremely important record, as it shows the status of company property which may have been issued to a terminating employee. No final paycheck is delivered until Personnel has received a completely executed check list from the immediate supervisor.

Q: May a non-exempt employee be permitted to work uncompensated overtime at his own volition?

A: Never. To permit uncompensated overtime is in direct violation of strict Federal and/or State labor laws. In permitting a non-exempt employee to work uncompensated overtime—no matter how willing the employee may be—a supervisor places the company in a possible serious position with the law.

OC PLANT NAMES IPEP, GPEP WINNERS

April winners of the Individual and Group Performance Evaluation Program awards at the Oklahoma City plant were announced June 12 by Joseph W. Hall, plant manager.

James D. Bridges was selected for the IPEP award in recognition of his excellent performance as a task leader in the Assembly Group and in particular for suggestions that led to significant improvements in the polyurethane coating operation.

Rx for a Staggering Phone Bill: Judicious Use of WATS

How would you like to get the phone bill for JE 4-6000 some month? Over $20,000 for long distance calls alone, to say nothing of local service and other charges.

The number of long distance calls from Melpar's Northern Virginia plants is around 450 a working day, and the tab for them is a staggering $1,000 and more—in real money, friends.

There is an easy way to cut this down to a merely stupefying $500 a day: *judicious use of the WATS lines.*

The WATS (Wide Area Telephone Service) lines are long distance lines leased by Melpar. They can be used to reach practically any telephone exchange in the country, outside Virginia. The Company pays for these lines whether they are used two hours a day or 24. It follows that the more of Melpar's long distance traffic that is handled by its WATS lines, the lower the bill.

Here are some tips on how to cut costs by getting the most out of WATS:

—Keep your calls brief. Although Melpar pays a flat rate for WATS, 15-minute calls cost a great deal more than 5-minute calls because they force traffic off WATS and onto regular long distance lines.

—Plan to call when traffic is lightest. Relatively slack periods are 8:00-9:00 and 11:00-12:00 in the morning and after 4:00 in the afternoon. (The switchboard is attended until 8:00 p.m.)

—If the person you are calling is not in, leave word that you will call back at a certain hour; don't ask him to return your call collect.

—Supervisors of field personnel, arrange a time when *you* can call *them.* If that's not practical, accept collect calls from them, hang up, and call them back on a WATS line.

—Be patient. Waiting time for a WATS line is seldom more than a few minutes.

The WATS lines carry a lot of traffic—we wouldn't have them if they didn't. But the number of lines is more than adequate. A ninth line was added only this month. With a little forethought and patience on the part of users, many more calls can be accommodated than at present.

WATS service is good now, and with cooperation all around, it will be even better. We hope this encourages you to use WATS, *judiciously,* for as many of your long distance calls as possible.

GOING UP!

These are the employees who moved onward and upward in June. Congratulations, all!

Deane K. Allen, Process Engineer; Anthony Barretta, Programmer; and Ray R. Burch, Senior Electrical Engineer.

Merlin P. Coffee, Senior Mathematician; Paul F. Combs, Planning Coordinator; Ralph J. Emerson, Junior Industrial Engineer.

Jerry W. Evans, Senior Mathematician; Charles F. Eyer, Senior Electrical Engineer; and Ruth L. Faith, Principal Engineer.

William L. Gordon, Senior Electrical Engineer; William B. Lyttle, Senior Physicist; and Robert C. McIlhenny, Branch Supervisor.

R. Wendell Presgrave Junior Engineering Assistant, and Marlin L. Pugh, Maintenance Foreman.

Donald L. Rush, Principal Engineer; Clarence I. Sterling, Principal Engineer; and John W. Truslow, Senior Administrative Assistant.

The GEP award was shared by three sections of the Engineering Support Group, which reports to Bruce L. Manilla. These are the Production, Methods, and Reliability Engineering sections.

PATENT AWARDED FIVEL, BAUM

The U. S. Patent Office in May issued a patent for a blood pressure measurement system invented by Milton J. Fivel, Head of the Technical Staff, Engineering Division, and the late Dr. Jerome N. Baum, Company physician from 1957 until his death in March 1962.

The invention relates to a system for measuring blood pressure in terms of time elapsed between an electrocardiac signal and a pressure signal in a blood vessel, taken at a pressure point.

The patent was assigned to Melpar.

Congressman Praises Melpar Ad of July 4

The full-page advertisement that Melpar ran in Washington newspapers on July 4 drew praise from Rep. Joel T. Broyhill, 10th District, Va.

Featured in the ad, against a blue background, was a representation of the Declaration of Independence with the words "Not worth the paper it's written on—unless we live by it." The remainder of the ad carried the famous sentence from the Declaration beginning "We hold these truths to be self-evident. . . ," Melpar's address and logotype, and the message "For independence, yours and your country's—United States Savings Bonds." Congressman Broyhill's words of commendation were expressed in the following letter to Executive Vice President Arthur C. Weid:

DEAR ART:

Again I am most pleased to extend my personal congratulations for the outstanding advertisement "Declaration of Independence" that you ran in the Washington newspapers over the July 4th weekend.

As is often the case with endeavors of this sort, very few people take the time to write and acknowledge the wonderful work you are doing, but please rest assured based on personal comments and conversations that I have overheard, this ad was certainly exceptional and you and your firm are to be commended for running it.

With kindest personal regards, I am

Sincerely,

Joel

JOEL T. BROYHILL, M.C.

Scenes from Many Countries Captured in Mundt's Paintings

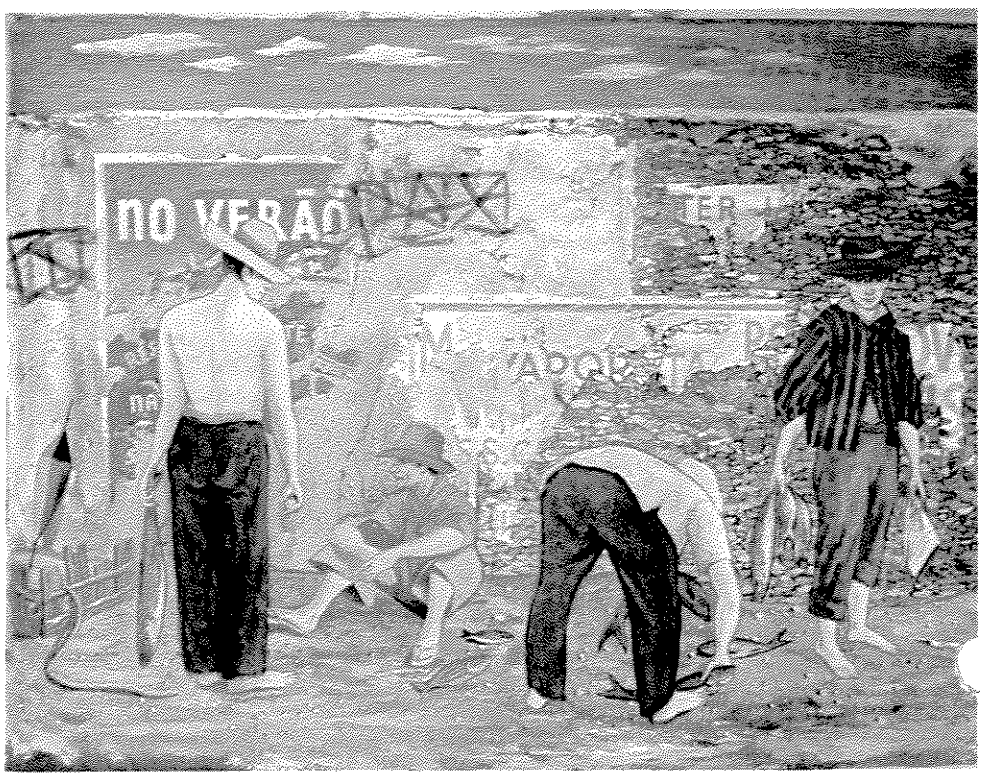
Maj. Don Mundt retired from the Army last December, with 20 years' service and a rich store of memories of the lands in which he had traveled and lived: Japan, Korea, the Philippines, Hawaii, the South Pacific, Panama, and nearly every country of South America.

Now a senior illustrator in Publications, he is absorbed in building a civilian career. But the memories—of a peaceful Japanese fishing village, a livid Peruvian beggar against a poster-plastered wall, the war-ravaged airport at Seoul—are fresh and clear. Neither time nor the inrush of new impressions will dim them, for Mr. Mundt has captured the images of the past 20 years in hundreds of oils, watercolors, and pen and pencil drawings.

Don Mundt at his drawing board in Publications.

His paintings may evoke only memories from Mr. Mundt, but they draw admiration from gallery directors and art-show juries. Museums on three continents have exhibited his work, among them the Metropolitan Museum of Art in New York, the Corcoran Gallery in Washington, the Denver Museum, the Ueno Memorial Gallery in Tokyo, and the Belas Artes in Rio de Janeiro. He has had two one-man shows—the first at the Art Institute of Chicago and the second at the Asahi-Kaikan Gallery in Osaka, Japan. Mr. Mundt's prizes include awards won in the 1954 and 1955 annual Washington, D.C., area shows at the Corcoran Gallery. Both award-winning works were done in *gouache*, or opaque watercolor. One of them, *Four Fishermen*, is reproduced here.

A native of Milwaukee, Mr. Mundt lived in Chicago before joining the Army and served a term as president of the Chicago Society of Artists. He and Mrs. Mundt and their six year-old daughter Jane now live in Vienna, Va.



Prize-winning *Four Fishermen* was painted at Fortaleza, Brazil.