MELPAR-A-GRAPH

MELPAR, INC. • A SUBSIDIARY OF WESTINGHOUSE AIR BRAKE CO.

Volume 8, Number 3 MELPAR, INC. • A SUBSIDIARY OF WESTINGHOUSE AIR BRAKE CO. April, 1963

MELPAR GETS $55 MILLION MM ORDER

Modern Control for A Modern Operation

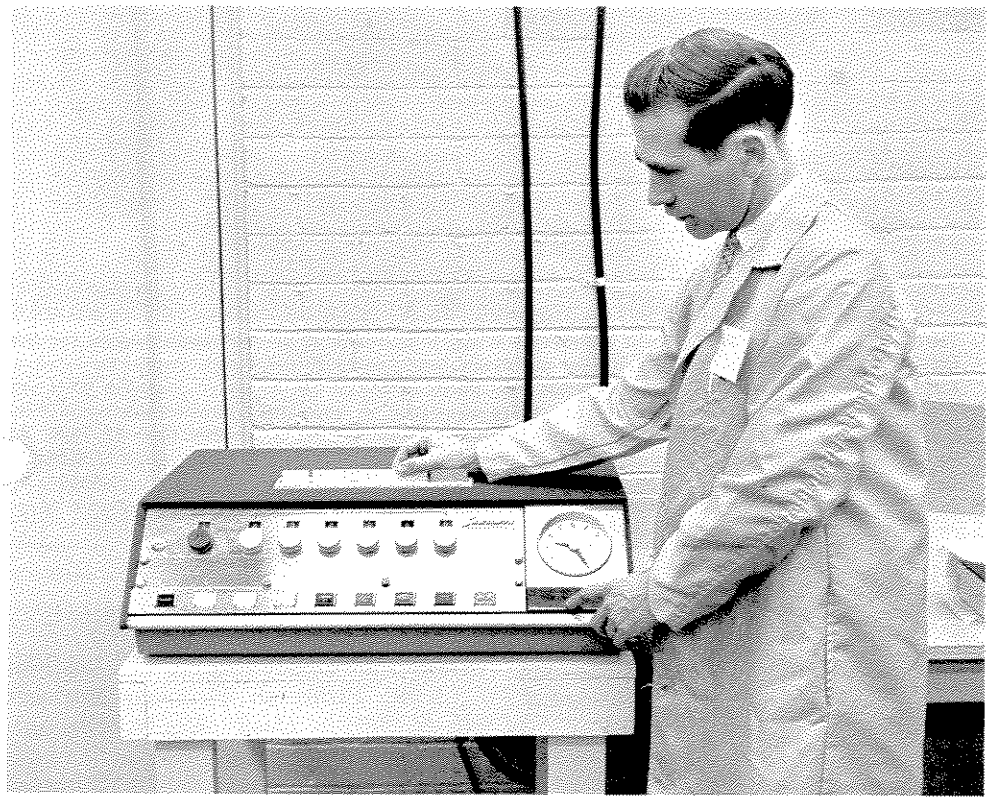

Photo by Sakamoto.

"Senior Planner Frank Swick reporting from station 30 at 9:25 A.M. on April 10. Inspection has just been completed on printed circuit board Serial No. BBB-0991, Part No. 65725-502, Release No. 1113, Job No. C7004, and Type No. N10Q." A few dials set, three cards slipped into slots, a flick of the finger at the Transmit switch — and the message goes speeding over a cable from this Transacter to the data-processing storage center in Melpar's Minuteman facility.

The Transacter is one of 11 in the Transacter Data Collection System that goes into operation this month. The system tracks the movement of printed circuit boards through 11 assembly stages. Besides the Transacters, it includes two compilers, located in the data-processing storage center, and a printer, installed in the chart room where progress of boards is monitored. The compilers receive and check messages from the Transacters and record them on paper tape. As tape moves toward the take-up reel of a compiler it is read for items of information that may require immediate action. Such items are quickly transmitted to the printer, which prepares page printouts of the crucial data. Information taped by the compilers is later transferred to business machine cards for processing.

Getting the facts fast, so that little problems can be solved before they become big ones, is often a knotty problem in industrial activities. The new system has created a great deal of interest because it helps solve this problem and also because it cuts paperwork to a fraction of what it would otherwise be.

A follow-on order of more than $55 million for Minuteman high-reliability circuit boards was awarded to Melpar in March. The award was made by Autonetics Division of North American Aviation. According to John R. Moore, president of Autonetics, it is believed to be one of the largest orders to a single contractor ever awarded by his company.

The circuit boards will be used in the Minuteman inertial guidance, flight control, and aerospace ground equipment being produced by Autonetics as an Air Force prime contractor. Melpar has been a source of such boards for the Minuteman program for two years.

The solid-fueled Minuteman ICBM was declared operationally ready last December, when the first two flights of 10 missiles each were turned over to the Strategic Air Command at Malstrom Air Force Base, Montana.

Melpar Subsidiary Signs Communications Contract With United Arab Republic

Television Associates of Indiana, Inc., a Melpar subsidiary located at Michigan City, Indiana, has signed a contract to assist the United Arab Republic in a communications project that eventually will permit Western Europe to be linked by microwave with Khartoum, in the Sudan. The Indiana company will serve as engineering consultant, according to TAI President W. C. Eddy.

The project will include rehabilitation of present communications facilities between Alexandria and Aswan, via Cairo, and some new construction. It will also require relocation of facilities between Aswan and Abu Hamed, in the Sudan. Currently, communications lines between these two points run through an area that will be under water when the Aswan high dam is completed.

The UAR contract is the second major Middle East communications project for Television Associates of Indiana. The Indiana company two years ago

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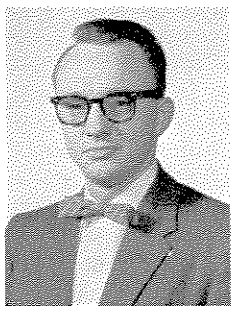
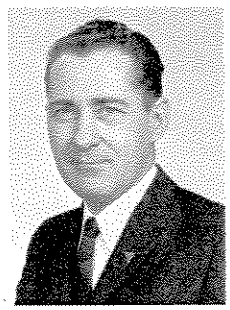
FEILD, GOESER LOOK BACK ON 15 YEARS

One of the happy things about Melpar (or disconcerting things, depending on your point of view) is that you can become a respected "old-timer" when there's hardly a glint of silver in your hair. Cases in point are Sam Feild and Joseph Goeser, who in March joined the select company of 15 other employees entitled to wear Fifteen Year Service Pins.



Sam C. Feild



Joseph N. Goeser

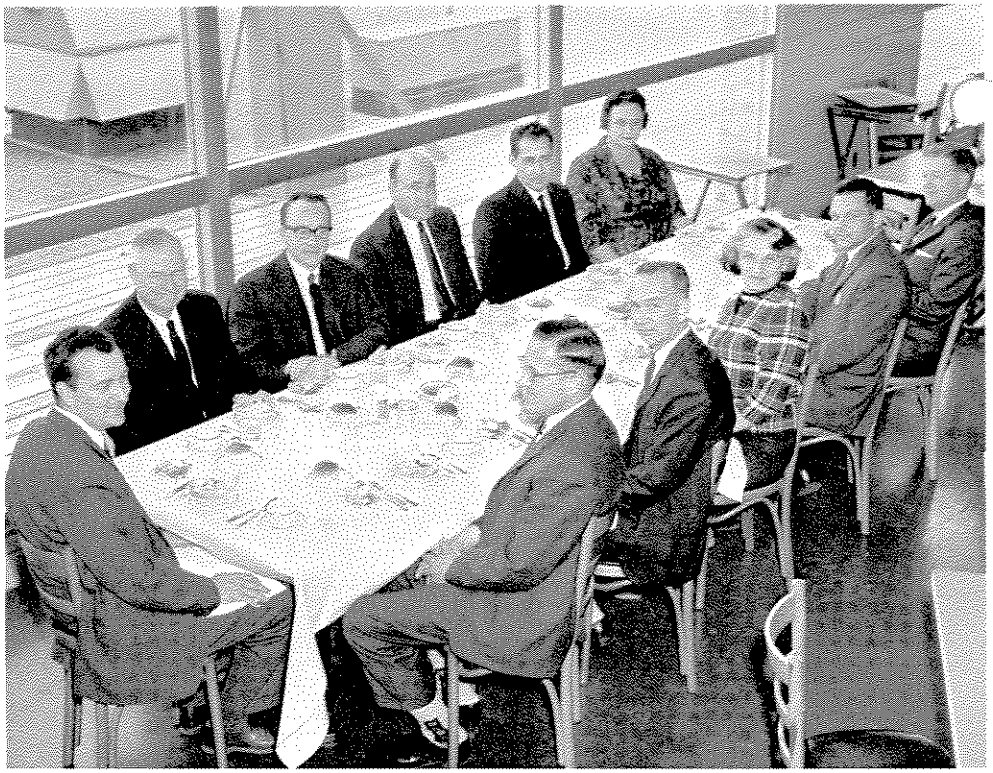
In 1948, when Mr. Feild came to Melpar as a technician and Mr. Goeser as a junior engineer, the Company was just emerging from its infancy and showing signs of the phenomenal growth to come. It occupied about 25,000 square feet on Swann Avenue in Alexandria and employed 125 people, give or take a few.

Promotional literature was pointing with pride to about $2.5 million in prime contracts, completed or in progress, with a respectably long list of military agencies. Already a policy of diversification was in evidence: gunnery trainers, simulators, recorders, scanners, antennas, tuners, high-frequency communications systems, telemetering equipment, transmitting and recording devices, and underwater sound equipment appeared in the list of Company developments. Melpar was also pioneering in miniaturization of electronic components and in printed circuitry.

The operation may seem like small potatoes in the light of today's volume of business, diversity of research, development, and manufacturing activities, and level of employment. "But," says Sam Feild,"it was a stimulating, a challenging time. As in most small organizations, people had to be versatile, taking on jobs that would now call for the talents of several specialists."

Today both Joseph Goeser and Sam Feild are Principal Engineers, Mr. Goeser in Aerospace Division and Mr. Feild in the Radar Department. The Goesers live near Mount Vernon with their children Kathy Jo, Nicky, John, and Stephen.

A native of Iowa, Mr. Goeser spends much of his spare time in gardening and home improvements. Mr. and Mrs. Feild and daughters Jackie and Sharon live in Annandale. Astronomy is Mr. Feild's most absorbing hobby; he's a member and trustee of the National Capital Astronomers.



THREE SCORE FOR FIVE. Three score years is the total length of service chalked up by the five Melpar employees who earned a Ten Year or Fifteen Year Service Pin in March. Again the cafeteria was the scene of the awards luncheon, which took place on March 20. Heads of operating units and Company officers attended to congratulate those observing an anniversary. Seated clockwise from the left around the table are L. C. Wright; William P. Bird, 10 years' service; Sam C. Feild, 15 years' service; Executive Vice President A. C. Weid; Joseph N. Goeser, 15 years' service; Maria Brieling, 10 years' service; Joseph W. Hall; Leonard Kings; Joan T. Lafrank; John E. Johnson, 10 years' service; and James T. Hilfiker. Photo by Salmon

GOING UP!

Congratulations to the Melpar employees who received promotions in February and March. Here are their names and the moves they have made:

G. B. Aldrich to Field Service Engineer A, D. K. Allen to Junior Chemical Engineer, and M. F. Allen to Assistant to Director of Management Controls.

J. R. Baldwin to Test Supervisor, R. H. Belair to Accounting Supervisor, and H. N. Broeder to Senior Programmer.

W. J. Brown to Assistant Supervisor, Quality Control; W. O. Brown to Senior Planner; and T. T. Cilley to Buyer.

A. C. Coe to Statistician, R.A. Compher to Senior Planner, and R. B. Daves to Junior Methods Engineer.

R. V. Dipboye to Senior Planner, K. B. Drinkard to Shop Foreman, and A. J. Dunivan to Junior Engineering Assistant.

J. R. Fisher to Electrical Engineer, H. L. Fleck to Quality Control Engineer, R. W. Freeman to Senior Systems Engineer, and F. A. Haag to Senior Planner.

A. D. Hale to Planning Supervisor, A. E. Hilker to Supervisor, Purchase Material Quality Control, and R. L. Howard to Planning Coordinator.

H. L. Hyatt to Test Engineer, D. L. Jarrett to Technical Editor, and R. E. Kellogg to Head, Administrative Staff, Research Division.

J. B. Kerr to Shop Foreman, J. I. Mitchell to Shop Supervisor, and D. R. Morrisette to Methods Engineer.

D. J. Nocera to Field Service Engineer A, J. P. Powell to Staff Secretary A, and I. C. Rhea to Senior Planner.

E. M. Skinnider to Staff Secretary A, J. E. Smith to Staff Secretary A, and W. H. Smith to Senior Electric[illegible] Engineer.

W. R. Tyree to Junior Quality Control Engineer, J. D. Wilson to Accountant, L. D. Worthy to Senior Electrical Engineer, and C. Zimmerman to Inspection Foreman.

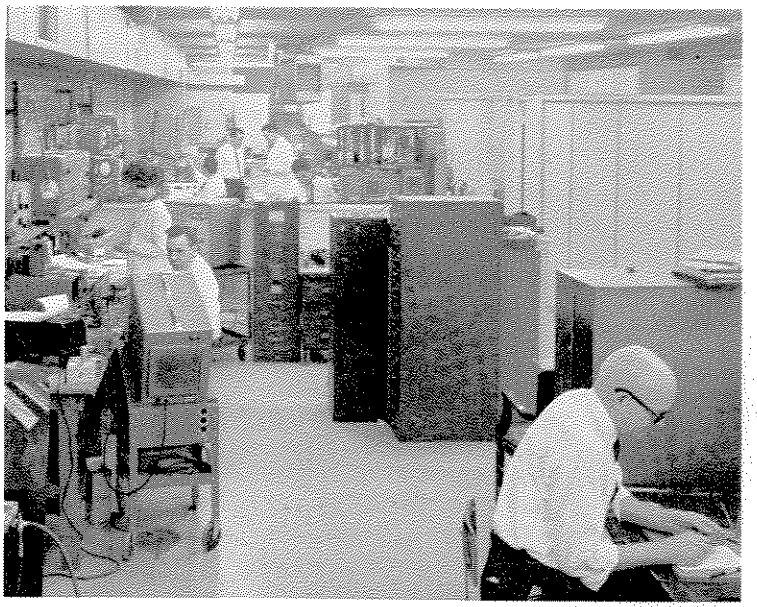
SPD SHIPS 1000th UNIT

The Ides of March was an auspicious day for the Special Products Division. On March 15 the division, which develops, manufactures, and markets tuning-fork frequency standards and frequency dividers, shipped the 1000th unit from its Bailey's Crossroads facility.

The devices made by SPD are used as time and frequency references in space, ground, airborne, and shipboard equipment. Their most dramatic success was as gating circuits and frequency references in Mariner II. On the 180 million mile flight to Venus, two Melpar tuning-fork frequency standards operated perfectly for over 2600 hours.

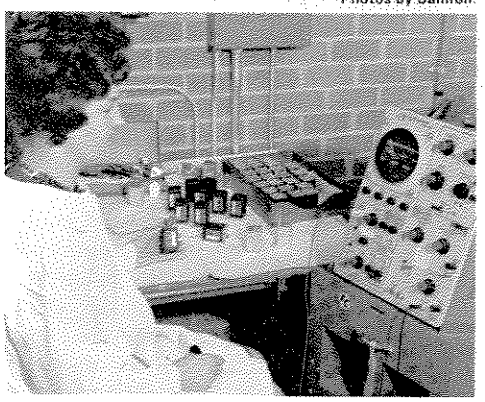
Melpar, through its Special Products Division, has been selling the miniature frequency devices for only 18 months. In this short span, the Company has pulled itself up to a high ranking nationally in sales of these items. Manufacturing capability has jumped in the last nine months from 20 units a week to 100 a week, and the frequency devices are now marketed in most areas of the United States.

The key factor in these developments, according to Armand Klein, Manager of SPD, is excellence of design. Melpar frequency devices are small, simple in construction, accurate over a wide temperature range (some stock items are accurate to 0.005 per cent from −55° C to +85° C), and exceptionally resistant to shock and vibration. Also cited was the first-rate service the customer gets, both from engineering sales representatives and from the customer-oriented team at BXR.



Photos by Salmon.

LONG SHOT. View down the length of one section of the SPD facility shows Senior Electrical Engineer William Asten, chief developer of Melpar tuning-fork devices, in right foreground. Close by are John Bashista and Gloria Dale, and in the background (l. to r.) Harry Crawford, Orba Alderman, Rudolph Benson, and Mary Beavers.



LAST CHECK. Gloria Dale makes sure that Melpar frequency standards meet requirements in their final checkout.

ENGINEERS STUDY COMPUTER CONCEPTS AND PROGRAMING

A course in computer concepts and programing is bringing 20 Melpar engineers up to the minute on the use of computers for solving complex engineering problems. The course covers FORTRAN programing for the 1410 and 7090 computers, as well as methods of numerical analysis. Because of its obvious and immediate usefulness, the course has drawn an enthusiastic response from the class members.

Melpar Subsidiary

(Continued from Page 1)

completed the longest aerial survey on record at that time, between Ankara, Turkey, and Karachi, Pakistan, by way of Iran, and is currently serving as engineer in construction of the 3000-mile, $18 million telecommunications network.

Dear Melpar: Please Send Me

". . . a used ruby rod, a corkscrew xenon lamp, and any razor blade with a hole cut by a laser."

". . . all the information you have on making a bionic mouse."

". . . instructions for building a pneumatic press."

In the spring a young man's fancy turns, not so lightly, to thoughts of science fairs. At any rate, that's what you'd think from the letters, some excerpted above, that Melpar gets from high school and junior high school students.

Although used lasers or parts thereof are not available for the asking, information is—within limits. Answering students' letters is one of the ways that Melpar takes to encourage budding scientists.

Even more substantial help is proffered the younger set through the Company's cooperation with the Summer Science Research Participation Program. Under this program, supported by a grant from the National Science Foundation, four area high school students spent last summer in the Research Division's laboratories, pursuing a research problem under the direction of a Melpar scientist.

R.H. Wood Elected Director

President E. M. Bostick recently announced the election of Richard H. Wood to the Company's Board of Directors. Mr. Wood, who is Vice President and General Counsel, Westinghouse Air Brake Company, has been Corporate Secretary of Melpar since August 1958. With his election at a board meeting on March 8, 1963, the number of directors rose to seven.

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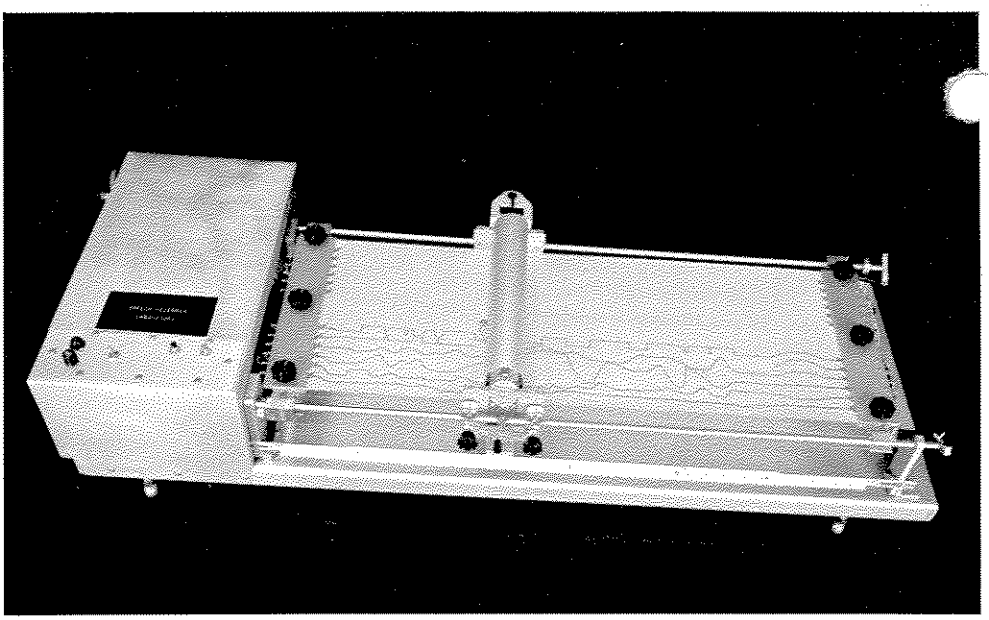
Electronics Research Lab "Remakes" Human Speech

Scientists of Melpar's Electronics Research Laboratory are "remaking" human speech in an attempt to determine the minimum of information needed to distinguish one speech sound from other speech sounds. The instrument with which they do so is EVA (Electronic Vocal Analog device), a research tool unique in the United States, according to S. Joseph Campanella, head of the laboratory and contributor of many original concepts in speech bandwidth compression.

On the grid of EVA, the scientists can plot as many as 12 types of information about speech sounds. The photo shows plots of six types of information, which together represent speech with good fidelity. Among them are the pitch, or frequency of larynx vibrations, and the formant frequencies, or natural resonances of the vocal tract. The plots are inscribed on the grid in conducting ink.

To re-create the plotted speech, a carriage is driven across the grid. The carriage electrifies the traces with voltages varying according to the position of the traces on the grid. The six analog voltages thus generated are fed to a speech synthesizer, which, as its name implies, combines them to produce intelligible sounds.

What has been described so far is merely a novel way to reproduce speech. David C. Coulter, principal investigator of the speech research program, explains why and how EVA is used to remake speech.



EVA. To the left of the carriage are plots of a man's voice saying "I enjoy the simple life"; to the right, plots of a woman's voice saying "Neat plans fail without luck." The sentences were chosen not for their sentiments, but for their interesting phonetic structures.

"Once we have plotted the sounds and listened to the reproduction, we begin investigating the relationships between what we see on the grid and what we hear from the synthesizer.

"We might ask 'What effect has the frequency of formant 3 on the intelligibility of the sound represented at point *x*?' With EVA, it's easy to find out. We simply erase the trace for formant 3 in the neighborhood of point *x* and redraw it so as to represent a higher or lower frequency. Another traverse of the carriage, and the synthesizer reveals the effect of changing the formant frequency."

The carriage can be slowed down to give the researcher a chance to observe the microstructure of the sounds.

The immediate objective of the research engaging EVA is to establish the relative importance of the various speech parameters and the accuracy with which each must be transmitted. Acquiring such knowledge will permit a great reduction in the information rate needed to transmit speech. A long-range goal is to determine the invariant parameters of speech sounds, that is, the characteristics which do not change from speaker to speaker. Achieving this goal would open the way to voice control of phonetic typewriters and to speech communication with deep-space flights at a feasibly low digital rate.

ORDNANCE ASSOCIATION CITES SYMANOSKIE

Joseph V. Symanoskie, Chief Draftsman, was recently cited by the American Ordnance Association for his work as chairman of a special committee organized to make recommendations to the Air Force concerning the proposed MIL-STD-28A.

Maj. Gen. Edward P. Mechling, USAF (Ret.), writing on behalf of the officers and members of the association, expressed warm thanks for the "superb job" done by Mr. Symanoskie and his committee. The job, according to Gen. Mechling, "was accomplished in a most professional manner and the finished report is indeed a credit to the Association."

Special Safety Instruction For Fab Shop Employees

When a supervisor opens the *Supervisor's Safety Manual* (the bible of Melpar's Safety Program), the first statement that hits his eye is a reminder that he is responsible for the safety of all personnel under his direction.

In March, Robert Moneyhon, superintendent of the Minuteman fab shops, instituted a new way to meet that responsibility. He drew up a plan for 153 employees of the shops to get special group instruction in safe practices. Then, after having his plan checked and approved by Melpar Safety Engineer Stephen E. Bush, he put it in operation. The instruction supplements the intensive on-the-job safety training that MM'ers receive individually from their foremen.

The safety sessions, conducted by Alexander Sacks, Technical Assistant to Mr. Moneyhon, spread the word on some of the broad aspects of safety, such as proper handling of materials, good housekeeping procedures, and actions to be taken in case of emergency. They also got down to specifics. In his talks, Mr. Sacks spelled out precautions employees should take to safeguard themselves and their coworkers from preventable accidents—and that, in his book, means all accidents.

If anyone was not converted to the gospel of safety by this positive approach, he was surely reached by a sobering statistic offered by Mr. Sacks: *An unsafe practice repeated 330 times results, on the average, in 29 minor injuries and 1 disabling injury.*