MELPAR-A-GRAPH

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

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Merry Christmas and a Happy New Year

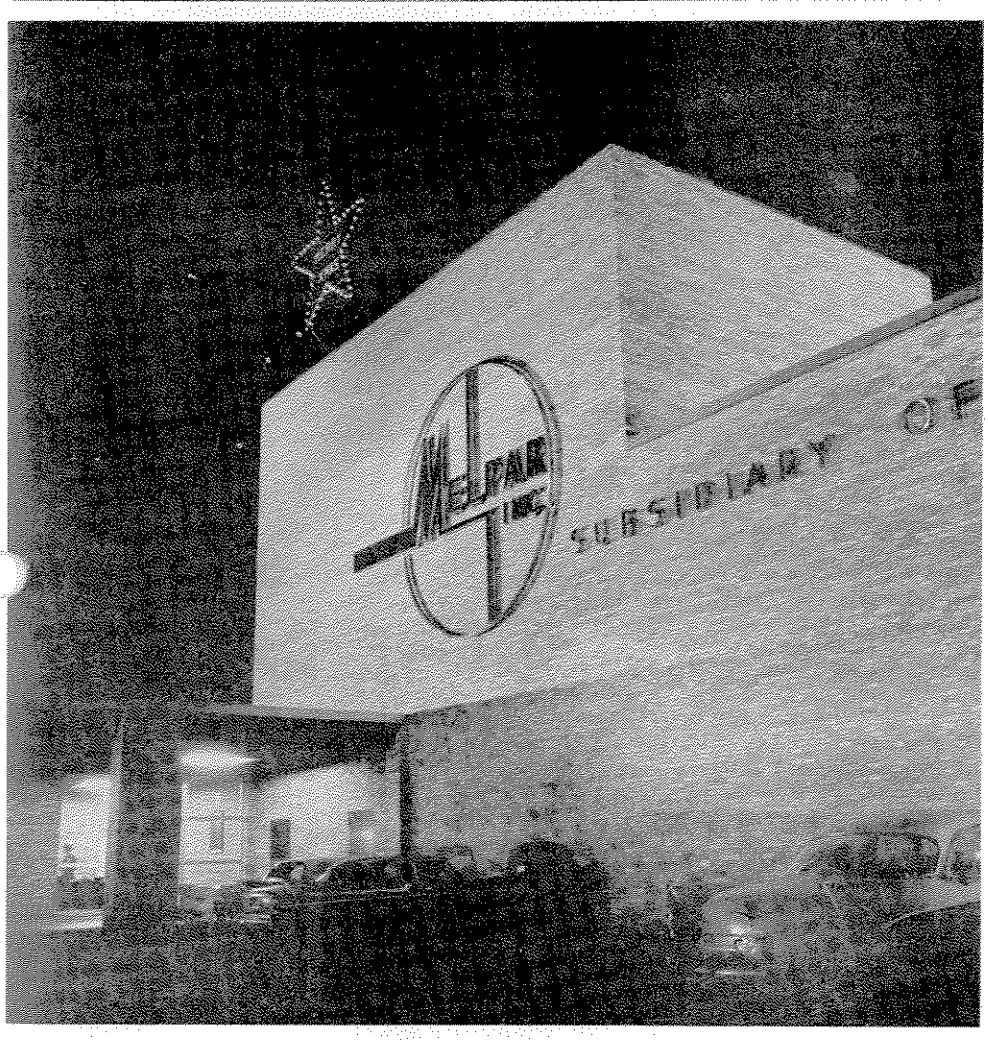

Photo by Glittenberg

HAPPY HOLIDAYS

Again this Yule season, Melpar employees will enjoy two 3-day weekend holidays. Christmas and New Year's will fall on Sunday this year and we will observe Monday, December 26, and Monday, January 2, as holidays. We are scheduled to begin our first workday in the new year on January 3, 1961.

BIONICS CONTRACT AWARDED MELPAR

Melpar will expand its efforts in an exciting new area of scientific inquiry—the science of Bionics—as a result of a new contract awarded December 1, 1960, by the USAF Air Research and Development Command, Wright Air Development Division. Those who attended the first of the 1960 Fall Series of Evening Technical Lectures will recall that Bionics was defined as the science of simulating biological functions.

The new contract, assigned to the Systems Analysis Groups, provides for the study and investigation of generalized machine learning including the fabrication of a bread-board model electronically simulating a single nerve cell. The development of computer systems having self-programming capabilities endowing them with the capacity to learn from their own errors and therefore possessing a kind of intelligence now appears to be an attainable goal of computer science.

Finder Training Contract Assigned to Field Services

A contract has been awarded Melpar to provide Familiarization Training to Air Force personnel on the capabilities, organization, and operation of Finder. This contract has been assigned to the Field Services Division. Instructional personnel will be furnished by the Ground Data Handling Equipment Laboratory with Consulting Project Engineer, W. M. Stone as Chief Instructor.

The Finder Familiarization Training contract will be accomplished in two phases; the first phase being conducted here at Melpar, and the second phase of the Familiarization Training at the Air Force site.

Finder is believed to be the largest special purpose computer system ever developed and features data display systems developed by Melpar for use in Finder that are said to be faster and larger than any now in use. These data display systems represent a substantial advancement in the "state of the art" of computer applications.

New Products Corner

(This is the ninth in our series of reports on new products being marketed by Melpar's Special Products Department)

PHOTOELECTRIC READER MODEL 200

The latest addition to Melpar's expanding line of photo-electric components, the Model 200 Photoelectric Reader, utilizes a design similar to that employed in the previously reported (July 1960) Model 100 Photoelectric Reader. The Model 100 Reader was designed for use in small, limited access areas, with a range of up to one inch. While the Model 200 Reader is somewhat larger in size, it will detect the difference in reflected light intensity from a target located at a distance of one to twelve feet. The revolutionary single lens combination utilized in the Model 100 has been adapted for use at long range for position control, color discrimination, counting, cueing and routing. Either model may be used as an input to control the operation of counters, relays, solenoids and signal lamps.

Dr. Schmidt Addresses Air Force and Navy Groups

Dr. L. A. Schmidt, Melpar Company Consultant, was guest lecturer recently at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. Dr. Schmidt's topic for this lecture was "Defense Industries' Ideas on Organizing for Procurement." Return dates have been scheduled to present the same lecture to other classes at the Air Force Institute.

Dr. Schmidt's topic on November 17 at the Naval Annex in Arlington, was "Operating Leadership." This lecture was presented to a class of 100 officers and civilian administrators and was one of a series of lectures in that installation's leadership development program.

Pay-Day Schedule Will Change for Some Employees

Beginning December 30, 1960, all employees will be paid on the same schedule of paydays, according to Vice President for Operations, A. C. Weid. This change is made possible by the reduction in the time required to prepare the Company payroll through the use of the newly installed IBM 1401 Data Processing System.

On December 23, Northern Virginia Indirect Charge Personnel—frequently referred to as "Overhead Personnel"—and all personnel located at the Tucson plant, will receive their regularly scheduled payroll checks covering the two-week pay period ending December 18. One week later, on December 30, they will be paid for the one-week period ending December 25. Thereafter, beginning with the checks to be issued on January 13, 1961, they will be paid biweekly—January 27, February 10, etc.—on the same schedule as is in effect for Direct Charge Personnel and the Field Service Division.

One week's group insurance contribution and the normal percentage pension contribution will be deducted from checks received by Indirect Charge Personnel on December 30, but no bond deductions will be made from these checks.

Wildlife Service Now Using MEL-INK

Chalk up another score for the Company's Special Products Department in their aggressive pursuit of new markets. They have recently received their first order from a branch of the U. S. Fish and Wildlife Service for MEL-INK Marking Compound. This is the first order to be received subsequent to an evaluation of MEL-INK samples by a Fish and Wildlife Service regional office.

The Wildlife Service was particularly interested in finding a material which would be resistant to weathering and retain its brightness on wooden, smooth surface, and routed signs. Special Products Department Manager, E. H. Bradley has been advised that MEL-INK met their requirements and is being suggested for use on all Wildlife Service signs.

MEL-INK Marking Compound (Type M-100A) is one of the new products now being marketed by the Special Product Department and is available in eight different colors in addition to black and white. This is an improved version having a pot-life up to four times that of its predecessor Type M-100. Tests have also demonstrated that the new colors have the same superior solvent resistance as originally obtained with black and white pigments. MEL-INK Marking Compounds can be applied equally well to metal, plastic, glass or wood.

2000 Get Flu Shots

Approximately 2000 Melpar employees in Northern Virginia and Watertown, Massachusetts, recently received free influenza immunization shots according to Chief Nurse, P. E. Griffith.

The immunization shots are offered annually to all employees.

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1960 FALL SERIES OF TECHNICAL LECTURES FEATURES COMPUTER SCIENCE and APPLICATIONS

Computer science and the applications stemming from its rapidly advancing "state of the art" were featured in the three technical lectures given this fall as part of the Company's continuing effort to facilitate inter-laboratory communication of technical information.

Bionics

Mr. L. O. Gilstrap, Senior Member of the Systems Analysis Group, presented the first lecture in the fall series on October 19, and discussed bionics, the new science of applying knowledge of biology and biological techniques to the design of electronic devices and equipment. Mr. Gilstrap described the research being conducted at Melpar and elsewhere in applying computer technology to the simulation of biological functions. This research leads Mr. Gilstrap to believe that machine learning will be possible with the development of more sophisticated self-programming computer systems. As reported elsewhere in this issue, Melpar has recently received a contract to conduct research for the Air Force in bionics.

New Generation Computers

"The New Generation of Electronic Computers" was the subject of the second lecture in our 1960 Fall Series of Technical Lectures presented on November 21 in the Falls Church cafeteria by James M. Farrar, Technical Staff Assistant to the Laboratory Manager, Systems Analysis Group.

Mr. Farrar discussed the organization and performance of the STRETCH, LARC, ATLAS, and GAMMA 60 computer systems. A trend in the organization of these computer systems toward the employment of multiple arithmetic, memory and input-output units was noted. This trend has resulted in the necessity for a "Master Control Program" of considerable complexity. Mr. Farrar indicated that perhaps the most significant feature of the new generation computers is the capability for simultaneous running of many entirely different programs in the system at an average rate of one to five micro-seconds per instruction.

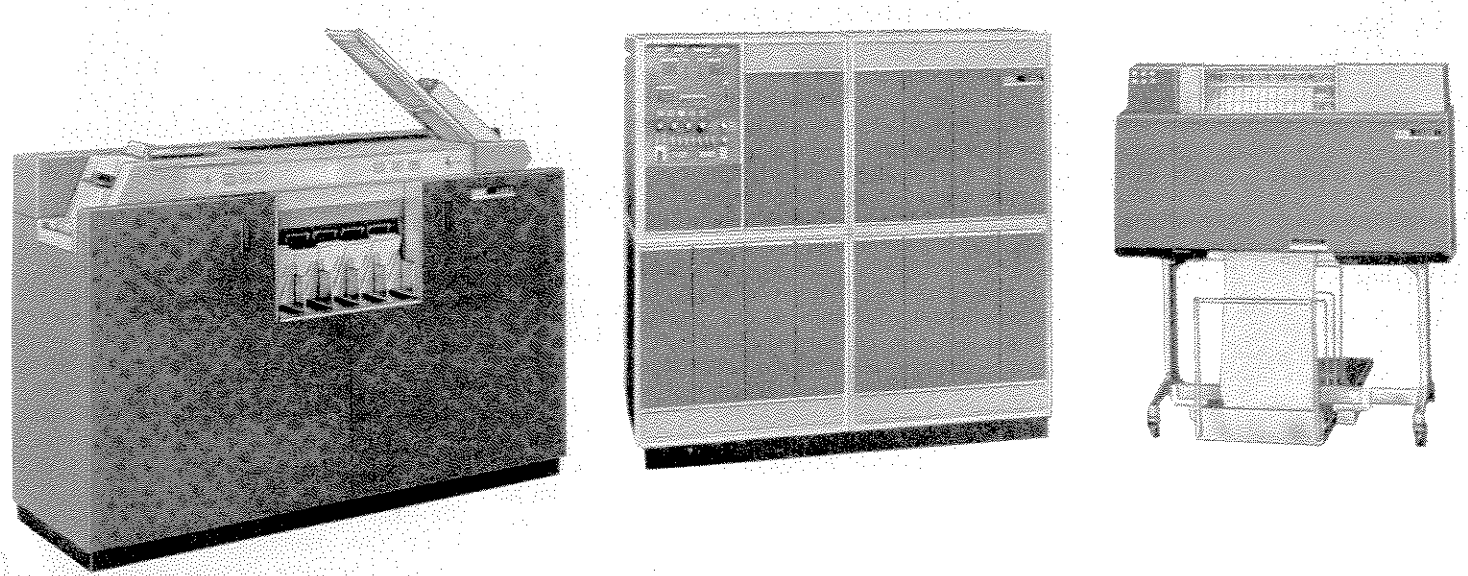
Automated Industrial Management

The third and final lecture of the 1960 Fall Series of Technical Lectures was scheduled to be delivered on December 14 by Senior Procedures Analyst, Woodford S. Montgomery, of the Company Consultant's Office. However due to weather problems, it has been temporarily cancelled and will be rescheduled in January, 1961.

Mr. Montgomery will present a general discussion of the 1400 Series Computers in the performance of the six basic management operational functions common to most companies. The application of automated data processing to sales forecasting, materials planning, inventory management, scheduling, dispatching, and operations evaluation will be described with special attention to budget control and cost analysis.

Mr. Montgomery notes that modern competition demands the reduction of the time factor in planning cycles and quick reaction to changing conditions. Management can meet these demands through the use of computer systems to automate the processing of management control information. He emphasizes however, that the degree to which management automates the management control cycle will determine the degree to which a company will be able to fully utilize the capabilities of its computer system for the automated data processing of management information.

The evening technical lectures are held in the Falls Church cafeteria and all employees are invited to attend. Speaker, subject, and date for the first of the 1961 Spring Series of Technical Lectures will be announced soon.



AVANTE GARDE . . . . . Melpar's management team has installed the first IBM 1401 Data Processing System in the Greater Washington Industrial Area. This computer system consisting of a Card Reader (left), Processing Unit (center), and Printer (right), is of the same series of computer systems as that to be discussed in the next technical lecture on Automated Industrial Management which will be presented by W. S. Montgomery of the Company Consultant's Office. The IBM 1401 is a fully automated transistorized unit which will be used in providing for cost reports and budget controls on the Company's various projects. It has the capacity to do the following in one minute: up to 260,000 additions or subtractions, up to 25,000 multiplications, up to 833,000 logical decisions at 72 micro-seconds each. The new system will also enable the company to process its payroll in eight hours, as against the 16 to 18 presently required.

REAL CRAZY BUMPER—Melpar's Special Products Department Manager, Emmett Bradley and Bureau of Public Roads Research Psychologist Dr. Richard Michaels adjust the Road Eye—a Lateral Displacement Detector which will measure normal driving deviations in a new BPR highway research program. Study will include tests to determine subconscious affect near the highway on "swerve and curve" conrtol. Roadeye was developed by Melpar's Special Products Department to the Bureau's specifications.

Melpar's New Detector To Measure Highway Driving Swerve and Curve

Melpar has just delivered a "swerve and curve" indicator to assist the U. S. Department of Commerce, Bureau of Public Roads in a new highway research program. The unique electronic device known as a Lateral Displacement Detector (or Road-eye) was designed to the Bureau's specifications to measure normal driving deviations on both unobstructed highways, and those dotted with such roadside obstructions as sign standards, light poles and guard rails.

The detector, measuring 6 feet by 18 inches by 1 foot, will ride the bumper of a standard make car while it is driven a given distance over an invisible line. The device's 37 photoelectric eyes will pick up lateral deviations from the line of up to three feet.

Dr. Richard Michaels, Research Psychologist at the Bureau, said the studies will give some insight into how accurately and reliably a driver can control his car, what causes a driver to move away from an object that is not directly on the highway, and how soon he gets back on course.

When all the facts are in, Dr. Michaels thinks it may be possible to space objects near the highway in such a way that they will subconsciously move the driver toward a particular lane without consciously distracting him, unlike the fixed barriers and signs now used in detouring traffic around new road construction.

Development and fabrication of the detector underscores Melpar's recent policy of stepping up diversification through the Special Products Department, according to Executive Vice President and General Manager E. M. Bostick.

GOING UP!

Promotions include L. B. Williamson to Senior Engineer, W. R. Leighty to Senior Design Engineer, N. E. Crider to Field Service Engineer A, and J. P. Andrews to Publications Editor.

O. C. King and J. C. Debrie advanced to Junior Engineer, J. T. Warzecha and R. L. Watson to Junior Engineering Assistant, D. J. Moriarty to Lead Welder First Class, and R. C. Zolenski to Lead Storekeeper.

Williams Authors Magazine Article

"Human Factors Engineering" is the title of an article by Human Factors Engineering Supervisor H. L. Williams, published in the October-November issue of Industrial Research Magazine.

In the article, Mr. Williams traces the history of this growing science and describes its present "state of the art." He gives the case history of a computer system from inception to delivery and depicts the role of the human factors engineer at each stage of design, fabrication, and preparation of technical manuals.

Mr. Williams predicts that "missile and space operations are certain to accelerate the growth of human-factors engineering" as these factors are most critical under these conditions. He further predicts in his article, that in the commercial equipment industries, styling will continue to dominate over functional operation and maintenance, although the automobile industry gives some evidence of leading the way in this field toward giving more attention to the human factors of design.

ANTENNA ENGINEERS PRESENT PAPERS AT IRE CONFERENCE

Two engineers from Melpar's Antenna Laboratory presented technical papers at the Seventh Annual IRE East Coast Conference on Aeronautical and Navigational Electronics held in Baltimore during the week of October 24, 1960.

Senior Engineer J. R. Tomlinson delivered a paper entitled "Non-Contacting RF Commutator for Large Circular Arrays." In his paper, Mr. Tomlinson described a radio frequency commutator capable of scanning a pencil beam from a large circular array of the Wullenweber type.

Senior Engineer L. P. Tuttle, Jr., gave his paper on "Design Parameters for the Loop-Vee Antenna" in which he presented complete design parameters ar performance data resulting from a theoretical and experimental analysis of the loopvee antenna. This paper was coauthored by Tuttle and J. H. Moore of the Philco Corporation.