

# MELPAR-A-GRAPH

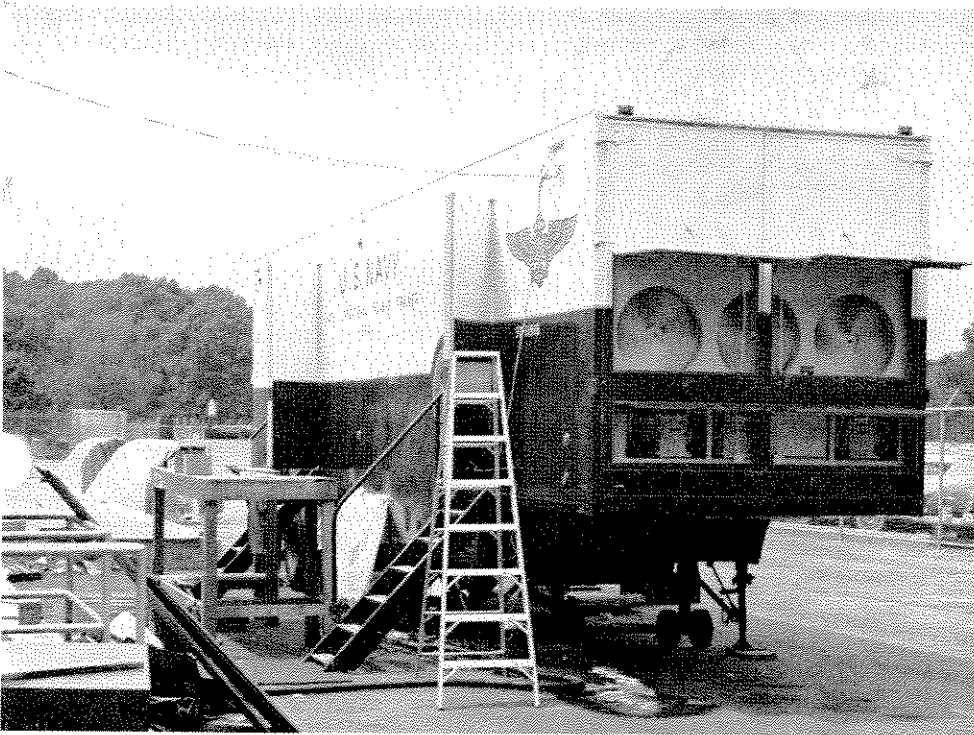
MELPAR, INC. • A SUBSIDIARY OF WESTINGHOUSE AIR BRAKE CO.

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## RISING SALES VOLUME TELLS GROWTH

### A4D-1 NAVY TRAINER SOON SHIPS OUT



OUTSIDE is where the camera had to stay, while covering the progress of the A4D-1 Trainer installation in this U. S. Navy van. Inside are too many classified items. Suggesting the bulk of the equipment being packed into it is the van's announced gross weight: 22,500 pounds loaded.

Photo by Norton

Carrying realism even to the point of reproducing the antics of an airplane in flight, Melpar's A4D-1 Operational Flight Simulator Trainer is rapidly nearing completion. Scheduled for shipment in late August, the Trainer is being combed over by Project Manager J. L. Clark's people on a 'round-the-clock basis.

The Trainer "package" is a 40-foot trailer spotted inside the security fence at the Falls Church laboratory; into it is being fitted an imposing maze of computing and display devices, airplane cockpit instructor's station, power sources, and an air-conditioning system.

Though the Trainer affords the utmost in practice and instruction to pilots in bombing technique, navigation, and the

use of radio aids, perhaps its most striking characteristic is the hydraulically actuated simulation of pitch, roll, yaw, and the violent buffeting experienced by the airplane as it nears the stall point. Just about the only element lacking to make the A4D-1 Trainer a full-fledged on-the-job teaching tool is the aroma of sea spray.

Developed for the U. S. Naval Training Device Center in Port Washington, New York, the Trainer conforms to Douglas Aircraft's carrier-based attack bomber which currently is in fleet service. The A4D-1 Trainer is to be followed by Melpar-developed devices adapted to the A4D-2, a specialized version of the basic airplane.

### 1ST HALF TOTAL EXCEEDS 1956 PACE BY 8 MILLION

During the first six months of 1957, the gross new business written into Melpar's order book totalled 23.3 million dollars; for the same period in 1956 the number was 15.3 million. Of the many changes on a theme which could be rung by an ingenious numbers player confronted with comparative data, that sample seems to tell the story best.

With first-half sales adding up to 21.6 million dollars, a direct comparison with the first half of 1956 ought not to be emphasized lest we be accused of boasting (the figure was 12.4 million). Candor, however, compels the comment that our sales for the entire year of 1956 were 23.5 million and it does seem likely that we will exceed that amount before this year is done.

Also expressive of the Company's rising tempo of activity is a capsule summary of the diverse equipment delivered to customers throughout the country. Our shipments have ranged from the bulk of an RF-101A Flight Simulator to the smallest of microwave components.

Among many types of radar beacons turned out was our contribution to Project Vanguard's earth satellite. Antennas of all shapes and sizes, for many purposes, fuzes for a variety of missile applications, and the prototype of a versatile data transmission system appear on the shipping lists.

To many of the military services, as well as to aircraft companies and government and industrial laboratories went shipments noncommittally identified as "ordnance items," communications equipment," or "test equipment." A busy time was had by the Shipping Department, indeed.

Of course, this rising output was not accomplished without an equivalent increase in the tools we work with; incoming machinery, process installations, and test equipment have kept Receiving busy also.

## OPINION

Always good for a laugh, of sorts, is the line: "I didn't know it was loaded." How foolish can you get, not to take precautions in handling something as obvious as a scatter gun?

This foolish you can get . . . pick up a chunk of rectangular tubing shaped like an L, with a couple of pin-shaped pieces stuck in it. It's badly discolored; somebody's been practicing on it with a welding torch. All in all, it looks like a fitting from a discarded gas stove. Heave it in a tote box along with some other odds and ends and send it away.

That was a two-hundred dollar bill which may never be cashed. Fabricating a microwave assembly such as that is a delicate operation; the relationship of its parts is most precise. A nick, a scratch, a bent pin—and you have two bits' worth of scrap metal.

Even that is not the whole of it. After all, money isn't everything. The man and

machine hours sunk into that item are long gone; time is something we only get one helping of. Now look to the future: the voices which soon will be calling for the item won't hear even an echo, and some project with good potential will slow down until that "to replace spoiled material" thing is sweated out.

Just as we all are for motherhood and against sin, everyone at Melpar frowns on spoilage and waste. Never knowingly are we responsible for such foolishness. Our problem lies in the fact that, in our business, the value added to output often is not obvious. A couple of turns on a lathe, a brief processing operation, and shape and finish have been added to commonplace metal which may appear still commonplace.

Exhorting all hands to treat everything in the house like fine jewelry would be silly. It is urged only that we all regard the material we handle as time and money to be well spent.

## WEATHER FORECAST TECHNIQUE SOUGHT BY MELPAR-BOSTON

Whether we like it or not, weather persists in happening. Bad weather has a habit of happening at the worst possible time. One of the worst of all possible times can come in the fleeting moments when the pilot of a jet aircraft takes off or lands his machine.

Under the provisions of a contract recently awarded Melpar by the Air Force Cambridge Research Center, a research team at Melpar-Boston is seeking to develop techniques and procedures for short-term weather forecasting which will enable air base weather men to predict ceiling and visibility limits at intervals as brief as fifteen minutes.

The primary research tool to be used in the effort is Boston's DATATRON computer, correlating several years' accumulation of weather data from many points so as to identify the variable factors which go to make up a change in the weather.

USAF has estimated that approximately 75% of weather-connected accidents occur during landing or take-off.

## NAVAL RESERVE COMPANY VISITS MELPAR LAB ON TRAINING TOUR

Business executives and government officials comprising Naval Reserve Composite Company 5-49 (Management Engineering) recently visited Melpar's Falls Church laboratory in furtherance of the group's training program. Management and operating problems encountered in research and development work were outlined to them by Melpar representatives E. H. Pierce, J. P. Chambers, W. C. Purple, and P. F. Whitaker.

Thus the projected quick-look forecast technique is expected to be of great value to the Air Defense Command, whose fighter missions may take place at any time.

Not only is local weather a factor when fighters must scramble on command; a crucial fifteen- to thirty-minute terminal forecast problem exists because of the peculiar operating characteristics of jet aircraft. Normal let-down for a jet fighter from flight altitude to the landing field takes about ten minutes; once committed to land, it is usually impossible for a pilot to recover and seek an alternate base. Few men could be more interested in receiving a reliable prediction of the state of things to come, weather-wise.

## PHOTO METHOD CUTS COST OF ENGRAVING

"Printing in paint" is the newest production process installed by Melpar's Arlington Division in its continual campaign to reduce its manufacturing costs and boost the quality of its product. Largely photographic, the process is similar to that used for printed circuitry in that a photosensitive film permits controlled removal of a top paint layer, exposing an under layer of contrasting color.

The result is a faithful reproduction of cleanly defined lettering almost flush with the finish paint surface. Although no Mil or Federal specifications as yet apply to the process, Arlington Division already has won its acceptance for equipment delivered to both the Navy and the Air Force.

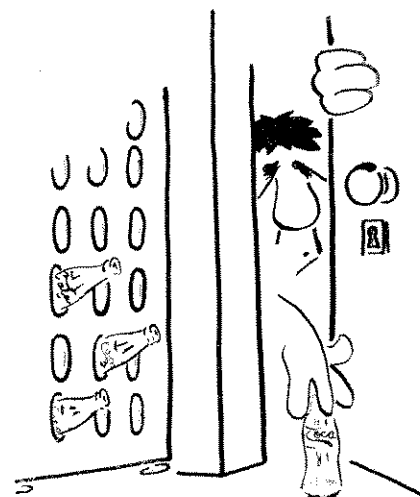
Cost savings over engraving will vary greatly, depending upon panel size and number of characters, since "printing in paint" takes the same length of time without regard to the lettering volume while engraving time varies directly with the number of characters. When equipment designs require small dial or designation plates in quantity, the photo method capable of producing up to twenty pieces simultaneously.

The Arlington process was developed by Foreman E. W. May, Paint Spray Leadman Alston Sandy, and Senior Engineer Thomas Moore in cooperation with the Falls Church Chemistry Laboratory.

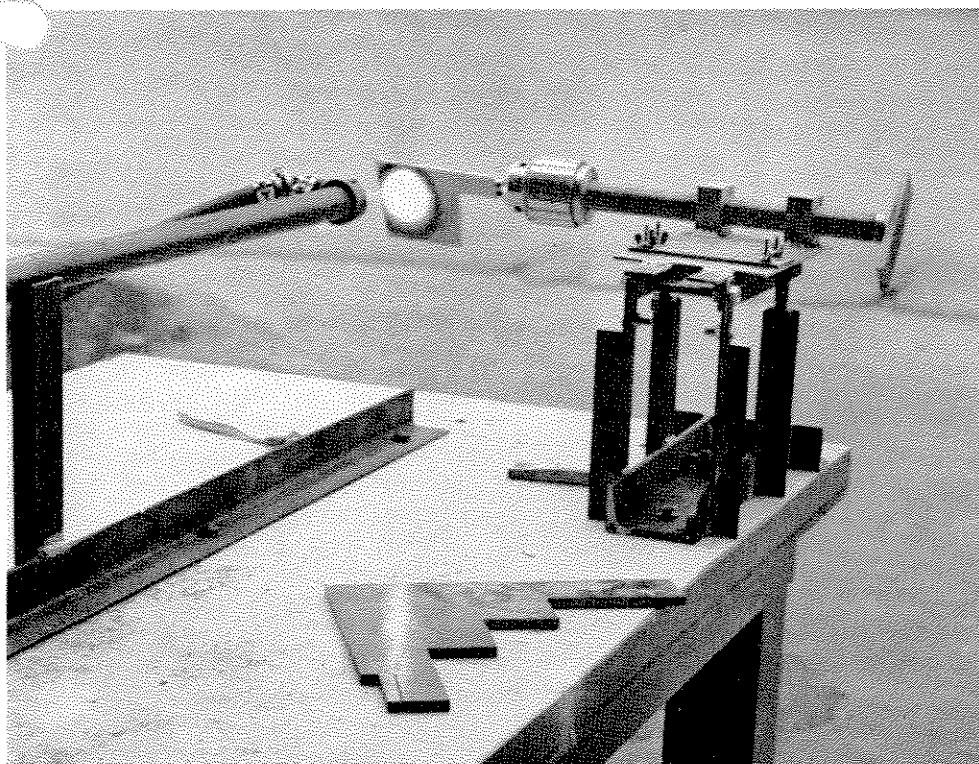
### SAFE CONDUCT

by Walt DeGroot

YOU might fall over  
It, Buster!



Temperature: 4000F; Wind: 3800 MPH



**HOT ENOUGH** for anybody is the nearly invisible flame of Chem Lab's new jet torch, here aimed at a piece of quarter-inch thick silicone glass laminate. The sample was incandescent almost instantly, and in less than seconds the 4000° F. flame had bored a neat round hole in the heat resistant material.

Photo by Tatroe

Even to ears packed with cotton, the sound gushing from an improvised test cell in the Falls Church garage building was fit for a belligerent banshee—first an explosive roar, then a rising, sharpening cry which approached the threshold of pain. It was generated by the first blast-off of the Chemistry Lab's new jet torch, creating temperatures as high as 4000°F and velocities on the order of Mach 5, or 3800 miles per hour.

The basic tool is a Linde Air Products Co. jet torch normally used to bore holes in taconite formations to set dynamite charges in open-pit mining.

Chem Lab head P. E. Ritt's group then devised modifications boosting its fuel rate and imposing close control over both its temperature and its velocity to provide the necessary basis for precise measurement of its performance.

Faced with the need for investigating materials to be used in high speed, high altitude flight, the Chem Lab resorted to torch development when they were unable to locate any facility capable of establishing both extreme environmental conditions and close controls.

In addition to materials research, the Lab anticipates using the torch (officially

named Screaming Minnie after its first tests) for research on signal transmission through the heavily ionized layers which naturally result from the combination of great speed and inevitable heat.

Fueled with a mixture of oxygen and kerosene, the torch attains a flow rate of 1000 cubic feet per hour; the oxygen is fed in under a pressure of 145 pounds per square inch and the kerosene at 120 psi, while cooling water flows through the tube under pressure of 100 psi.

Senior Engineer J. L. Pentecost was chiefly responsible for the work of adapting the Linde torch for research use. Joined with him to conduct the heat-speed tests are Technician R. W. Nichols and Technician Assistant R. N. Horn.

#### PROFESSIONAL GROUPS NAME LEVINE

In recent elections by IRE organizations of Washington, D. C., Senior Engineer Sidney Levine of Bailey's Cross Roads Engineering Department was named to ranking posts on two working groups: Vice-Chairman of the Professional Group on Component Parts, and of the Professional Group on Production Techniques.

## ARLINGTON TO USE NEW TECHNIQUE IN WIRING EQUIPMENT

For too many years tradition, and MIL-E-16400 (SHIPS), have demanded a painstaking, artful, and time devouring mechanical wrap of component leads around terminal lugs and posts in electronic equipment before soldering for the essential electrical connection. Exhaustive tests conducted by the U. S. Navy Electronics Laboratory at San Diego, California, over a 19-month period have now proven that the mechanical wrap adds nothing to the integrity of the solder connection and is entirely unnecessary.

Melpar's Arlington Division, in producing sets of terminal equipment under a recent Bureau of Ships contract, will become one of the first contractors in the country to apply the recommendations contained in NEL's formal research report and use a straightforward lead-to-lug solder connection in assembly operations.

NEL Report 755, published on 6 March 1957 and written by T. H. Hamm summarizes the test results thus: "Simple, unwrapped wire solder joints offer advantages of greater reliability; major savings in time and money; easier, faster inspection; and easier, faster maintenance".

Arlington's Methods engineers have been following the progress of NEL's research for more than a year; as soon as the approved report was issued, permission was obtained from BuShips to apply the simplified technique on that agency's contract.

## ANTENNA TEST EQUIPMENT ORDERED BY PATRICK AFB

Airborne equipment capable of measuring the field intensity and overall patterns generated by ground based transmitting antennas will be designed and built by Melpar as the result of a contract recently awarded by ARDC's Air Force Missile Test Center at Patrick AFB in Florida.

In addition to developing the specialized test system required for the task, it is required that we plan and carry out the installation of the equipment in a C-131 aircraft to be used in its field operations by the Missile Test Center. The work has been assigned to Project Manager K. S. Kelleher at the Falls Church laboratory.

MURGATROYD MISFIT



Murgatroyd.....You're Losing Friends and Costing Money.

## GOING UP!

Appointment of George Baker to the post of Administrative Project Engineer was announced at Bailey's Cross Roads Engineering Department. R. D. Sly, of that plant, rose to Senior Engineer.

At Falls Church, S. J. Campanella was promoted to Project Engineer. Advancement to Senior Engineer was won by L. P. Glekas, G. H. Jones, E. M. Connelly, and P. L. Bachman.

D. W. Sawtelle, former Project Engineer at Arlington Division, has been appointed Section Head. Also at Arlington, G. A. Solier and A. D. Robbins were promoted to Project Engineer. J. A. Conner advanced to Engineer.

Quality Control Department announced the promotion of A. C. Panolias, stationed at Falls Church, to Chief Inspector. At Falls Church, R. A. Maltby, S. J. Mintz, and J. E. Schaeffer rose to Senior Draftsman.

At Bailey's Cross Roads, promotion to Senior Technician was won by R. L. Howard, E. G. Rabold, J. S. McKee, and T. W. Beswick. C. B. Way is now an Instrument Maker Lead Man. New Spares Planners are F. H. Free and A. T. Chason. L. M. Yournicky rose to Senior Clerk-Typist. C. E. Francis was named Section Planning Supervisor.

W. T. Lynch and R. D. Hurley rose to Electro-Mechanical Inspector 1st Class at Falls Church. E. J. Luebker rose to Wire Technician 1st Class. M. E. Biondi is a Lead Clerk-Typist, and D. L. Bennefeld is a Senior Clerk-Typist.

At Arlington Division B. E. Serrin has become a Project Planning Supervisor.

R. W. Freed won promotion to Scheduler. S. H. Auer was named Mechanical Inspection Group Leader. W. G. Ferland moved up to 1st Class Light Assembler; D. E. DeJulius became a 1st Class Heavy Assembler. J. C. Knox is now a Sheet Metal Lead Man.

Former Senior Engineer R. A. Mauller, now stationed at the Alexandria plant, has been promoted to Project Engineer.

At Melpar-Watertown, L. J. Pouliot rose to Junior Engineer. L. J. Kelly is now a Secretary.

R. C. Thompson and J. W. Blevins became Carpenter Group Leaders at Falls Church, while O. K. Willt and R. L. Payne moved up to Electrician Group Leaders. In Purchasing, A. C. Sorrell rose to Buyer.

## ADDED AREA AT MELPAR-BOSTON BOOSTS TOTAL TO 30,000 FEET

Remodelling work, including not only electrical wiring and partitioning but construction of an interior staircase as well, is proceeding rapidly at the Research Department, Melpar-Boston. The activity has leased an additional 12,500 square feet of space on the second floor of its Leon St. headquarters, bringing its total area to approximately 30,000 feet.

Most of the Research Department's Electronics and Physics laboratory work will be carried on in the new space, permitting expansion of the Digital Computation Lab and the administrative and staff office area on the first floor. Occupancy of the additional work area is expected in late August.

## MELPAR-BOSTON INSTALLS ANOTHER DATATRON UNIT

Eight months after its first computer went into operation, Melpar-Boston has received and installed a second Electro-Data Corp. DATATRON to cope with the growing volume of work assigned to the research center which demands a high-speed output of involved calculation.

Availability of this second digital computer, with an input potential of 541 decimal digits per second and output capacity of ten characters per second, will enable Melpar-Boston to provide computation and data handling service on a growing list of development projects now active in the Company's various engineering sections whose pace can be quickened through machine computation.

Though most of the data-handling projects in work at Melpar-Boston are highly classified, two unclassified tasks typify the variety of fancy figuring the equipment makes possible. While computing daily the activity of 500 Big Board stocks which make up Standard & Poor's widely published stock index, the computing center is analyzing design data proposed for the Falls Church laboratory's helicopter simulator. In essence, DATATRON is "simulating the simulator" and predicting its performance in advance of construction.

## At Last - The Answers

The Standards Committee of the Institute of Radio Engineers, having labored long, has brought forth some definitions which should aid us all in getting over those conversational rough spots which occur when someone asks where we work—and, moreover, what we do there.

Now, instead of having to say "Melpar is an electronics company, ma'am" and receive a look of befuddlement for our pains, we can declare: "Melpar is engaged in electronics, that field of science or engineering which deals with electron devices and their utilization."

That should silence a Hottentot. If it doesn't, "electronics" can be further explained as something which signifies of or pertains to the field of electronics. And to enlighten the real, genuine ignoramus we now are able to carefully explain that Melpar develops and manufactures electron devices, which things in which conduction is principally by electrons moving through a vacuum, gas, or semiconductor. There should be no further questions.