melpar-a-graph

MELPAR, INC. A SUBSIDIARY OF WESTINGHOUSE AIR BRAKE COMPANY

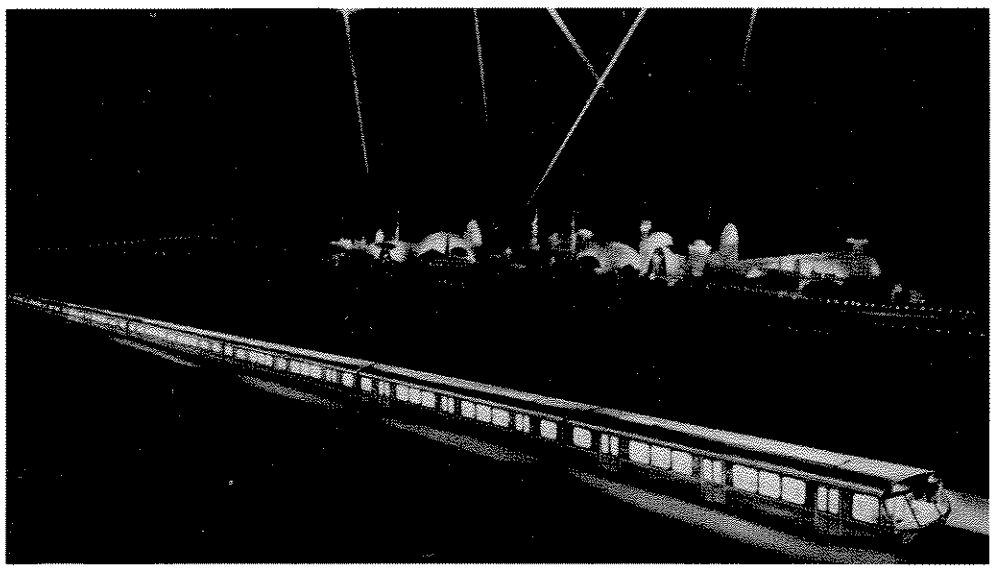
Volume 11, Number 2 **February, 1966**

Expo-Express

The concept of a fully automated "rapid transit" system, on the drawing boards for many years, will become a reality in the very near future. And Melpar is playing an important role in moving this concept from the drawing boards onto the tracks.

The first fully automated train system is being built by the Union Switch and Signal Division of Westinghouse Air Brake Company for the 1967 World's Fair in Montreal, Canada. Called the Expo-Express, it will be a fully-automated passenger carrying rapid transit system consisting of eight, six-car trains.

(Continued on Page 4)



The Expo-Express—the World's first fully-automated, passenger carrying, rapid transit system—is shown in this artist's sketch against a background of Montreal's 1967 World Exhibition.

MEMO

The warm welcome you have given me as your new Chief Executive Officer is indeed gratifying. I have met many employees, and it is my desire to meet all of you as time allows. I want to know Melpar, and this means that I must know Melpar people.

As President, I have a responsibility to each of you because you are the company, and through you we grow and prosper. I can serve that responsibility best if I know your needs and your problems.

To make certain that I do know about them, we need open lines of communication. I want you to feel free to discuss whatever is of concern to you with your supervisor and to do that in complete confidence. However, do not hesitate to let me or the Personnel Department hear from you as we will make certain you get a chance to talk with us about whatever bothers you.

It would be helpful, when you want to talk with me or the Personnel Department, if you would have your supervisor advise us of your desires.

I am looking forward to building an ever closer relationship among all of us here at Melpar. A free discussion of our mutual problems is one way of accomplishing that.

Jay Mulcahy

Miller Appointed Contract Man. VP

W. C. Purple, Vice President and General Manager of Melpar, Inc., announced the appointment of Robert E. Miller as Vice President for Contract Management.

Mr. Miller joined Melpar in 1954 as a Section Head in charge of the Company's B-58 Data Handling Systems. In 1955 he was appointed Project Manager of B-58 Systems, including airborne reconnaissance and ground data handling systems. In 1957 he was named Manager of Melpar's Reconnaissance Systems Engineering Department in charge of major programs in the reconnaissance field. In 1960 he was appointed Vice President for Advanced Development, and, from 1962 until his new appointment, Mr. Miller was Vice President for Engineering Services.

Mr. Miller, a native of Pennsylvania, received his professional education at the Pennsylvania State College, Northwestern University, and George Washington University. He is a member of the IEEE and Sigma Tau, and holds patents on a direction finder, and multichannel communications system. He is a registered professional engineer in the District of Columbia and has served as a consultant to the Department of Defense since 1954.

Robert E. Miller

The Word On Zero Defects

FROM THE ZD ADMINISTRATOR

"The response to DCI week was so large that the Zero Defects Committee is having difficulty supplying immediate answers to the originators. Your patience is requested while each DCI is carefully reviewed and a positive answer prepared. Each Melpar employee who submitted a DCI is to be commended for assuming the responsibility and taking the time to document those defect causes that make him unable to "do it right the first time," or that limit his ability to "be a pro." Each DCI adds to the total visibility we have in identifying those things that stand between present performance and the ZD goal.

"The DCI's fell into three general categories: (1) Those which identify causes of defects that can be eliminated by simple actions within your own group —either by you as an individual or by your supervisor. Many of these have already been answered. (2) Those that refer to actions or attitudes of others upon which you must depend to do your job right the first time. Most often, these DCI's involve the functions of several groups or the interplay of several operating procedures and require more detailed evaluation. For them, answers take more time. (3) Those DCI's which were repeated many times and that are of broad interest and application. The best resolution for many of these is to make all Melpar employees aware of them by disseminating them widely through the *Melpar-a-graph*. This will be done, starting with this issue."

DCI'S OF GENERAL INTEREST

Typing errors

Many typing errors are caused by poorly written manuscripts and unreadable penmanship, misspelling, poorly written equations, inconsistencies, failure to establish format, inadequate proofing and editing *before* the manuscript goes on mats, misunderstood instructions, and constant unnecessary interruptions. *(A large portion of these typing defects could be avoided by better penmanship on drafts,* DOUBLE SPACED *handwritten drafts, and more care in spelling.)*

Use the Proper address

Outgoing mail from Melpar directed to individuals in large companies is frequently returned because the individual has terminated. This mail is often of importance, involves a time factor, and was sent via air. After the correspondence is returned to the originator, retyping may be necessary before it is resent; this results in duplication of effort and loss of time, money, and information. *(Whenever possible, direct mail to a title, service, or division rather than to an individual.)*

Supervisors leave secretaries uninformed

Supervisors should advise the secretary as to their destination when they leave the office; also, the secretary should be informed of meetings and appointments arranged without her knowledge and other pertinent information that will permit the secretary to perform more efficiently. A secretary should be given adequate knowledge of the activities to be undertaken by the group so that she may function as a "member of the team" in her own field.

Transfers

Supervisors delay in notifying Personnel of transfers in their group. This creates problems in scheduling merit reviews. Also, payroll authorizations are typed and processed with the wrong supervisor. *(When transfers are made, the supervisor should advise Personnel in advance of the effective date.)*

Unnecessary delay

Resumes on professional applicants are routed to technical supervisors on a "buck" slip, usually listing more than one supervisor on a slip. The first supervisor many times disregards the supervisor listed next on the slip and sends the resume back to Personnel. Personnel then has to reroute the resume to the next supervisor. *(The buck slip should go to the technical supervisor listed first and then be routed on to the next supervisor as listed, etc.)*

Not responding to pages

Failure to respond to an audio-system page causes much unnecessary delay and duplication of page announcements. Listen carefully and answer pages promptly. *(It has been suggested that the appropriate secretary answer pages for those in the group who are unavailable because of closed conferences or absences.)*

Merit reviews

Supervisors are scheduled to make out merit reviews at least one month before the reviews become effective. Most supervisors either show up at the scheduled time or telephone to make a new appointment. But there are always a few who neither show nor call. One supervisor can hold up many other reviews since reviews for the second-line supervisor held until all are completed by the first-line. *(When receiving a schedule to write merit reviews, the supervisor should either meet his appointment or call immediately to arrange a new schedule.)*

Photometric Detector

Melpar, Inc., announced that it has entered into an exclusive arrangement with Micro Tek Instruments, Inc., Baton Rouge, Louisiana, for the marketing of a Melpar-developed flame photometric detector. Under the terms of the agreement, Melpar will manufacture the detector and Micro Tek will market the detector and associated electronics through its domestic and foreign marketing outlets.

According to Dr. P. E. Ritt, Vice President for Research & Engineering of Melpar, "the flame photometric detector represents an important breakthrough in analytical instrumentation. Difficult analysis problems in the vital fields of air pollution, pesticide contamination, and stream pollution are greatly simplified by the detector's use. Additional important applications in the natural gas and petroleum fields are being developed. The agreement with Micro Tek, a leader in the gas chromatography field, permits us to maximize the distribution of this unit to domestic and international markets."

The detector, which may be used independently, or adapted to use with gas chromatographs, will detect less than one billionth (10^{-9}) of a gram of phosphorus compounds, and less than one part per million of sulfur compounds. An additional feature is the incorporation of hydrogen flame ionization electrodes for ionization response readout. Micro Tek's dual channel electrometer system has been adapted to the new Melpar detector to facilitate its use in laboratory analysis application.

The unit will be introduced by Micro Tek at the 17th Pittsburgh (Pa.) Conference on Analytical Chemistry and Applied Spectroscopy, 21–25 February 1966.

melpar-a-graph

Published by
MELPAR, Inc.
A Subsidiary of
Westinghouse Air Brake Co.

7700 Arlington Blvd. Falls Church, Va.
Editor . . . . . Dan Appleton, Ext. 2350

Manufacturing at LP

Melpar's major manufacturing efforts for the U.S. Manned Space Program are now centered in the Leesburg Pike facility. The clean rooms at LP 5 and 6, formerly used for the Minuteman program, are now humming with activity to support the Saturn launch vehicle for the Apollo program which is scheduled to put American astronauts on the moon by 1970.

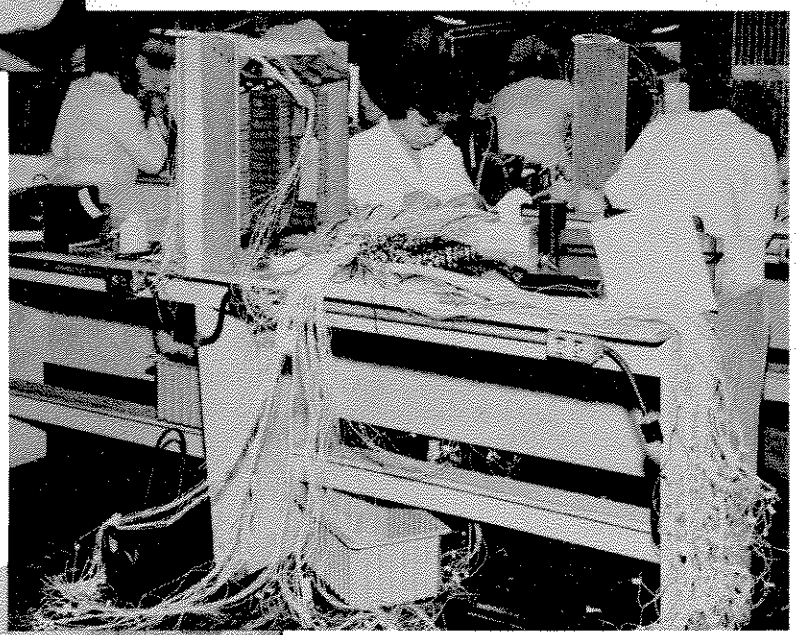
Component systems with precision-made electrical circuits require wiring, soldering, assembling and coating to extremely high degrees of precision to meet the standards required for the complex missiles and computers. Each unit is assembled in a room where the air temperature, humidity, and dust content can be tightly controlled.

THIS ONE GOES HERE, AND . . . Following a number chart, Light Assembler Grace Ford solders the wires of an electronic system into place.

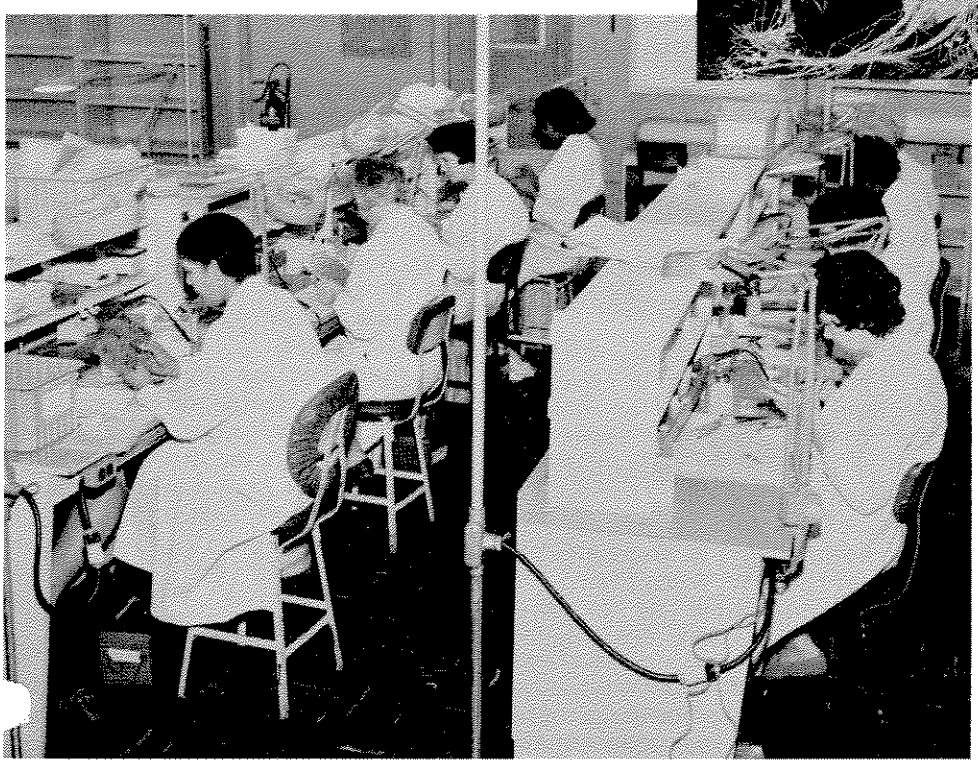
In addition, each unit goes through a multitude of inspections. But neither clean rooms nor inspections can supply the skill and patience needed to produce the finished product. These come from the people: assemblers, technicians, inspectors, and support personnel, over three hundred strong.

Working with Assembly Superintendent Ivan Johnson and Assembly Supervisors James Bledsoe and Paul Crismond, the personnel at Leesburg Pike have recently been displaying their skills day and night to deliver the first item to General Electric at Huntsville, Alabama.

The pictures on this page show some of the reasons why the next firing of a Saturn booster will be of keen interest to Melpar personnel.



LIKE SO MUCH SPAGHETTI . . . Light Assembler Jean Trenary labels each wire so that it can be identified for assembly.



HARD AT WORK . . . This is part of the assembly line where components are inserted into the printed circuit boards and soldered into place. Pictured are (first row, left to right) Light Assemblers Delories Glenn, Penny Markarias, Doris Henson, Lizzie Mae Jones (second row, left to right) Virginia Lambert, Kitty Miller, Marlene Rawls, and Leonnie Duquette.

Have you heard about Melpar's new pension plan and life insurance?

Details on the pension plan and life insurance have been announced and will be explained in group briefings. If you would like to attend a briefing and ask questions about these new plans, let your supervisor know.

Life insurance cards should be returned to the Personnel Department by March 4th. Pension cards will be accepted until March 11th.

Employees who do not have one year of continuous service may join the new plan on their first anniversary.

Dr. Bramely New IEEE Fellow

Dr. Jenny Bramley, Technical Assistant to Center Manager Edward Ditz, has been named a Fellow to the Institute of Electrical and Electronic Engineers (IEEE). Dr. Bramley has the honor of being the first woman to be made a Fellow of the IEEE. The official citation was made to Dr. Bramley "for achievement in spectroscopy, optics, and mathematical techniques and their application to electronic engineering."

Dr. Bramley

Before coming to Melpar in 1962, Dr. Bramley was a National Research Fellow (at Johns Hopkins University) and also a University Fellow while at New York University. She has published some 45 papers in recognized journals such as Physical Review, Journal of the Optical Society, Proceedings of the National Academy of Sciences, Journal of Chemical Physics, and Applied Optics. She has presented numerous papers before scientific societies, holds nine patents (under which she has issued licenses), and has several patent applications filed with the Patent Office.

Dr. Bramley received her Sc.B. in Mathematics from the University of Paris, cum laude, and her Sc.M. and Ph.D. in Physics from New York University.

Expo-Express

(Continued from Page 1)

As a subcontractor to USS, Melpar designed and developed the velocity control programmer (VCP) that will augment the basic signal and control apparatus to provide automatic operation. The signal and control system is the most advanced produced to date.

The VCP, a servo-mechanism, will automatically initiate applications of propulsion power and braking as they are called for by the cab signal and speed control system and the wayside controls. According to Union Switch and Signal engineers, the VCP will perform train running and stopping functions more accurately and efficiently than has ever been possible with manual controls.

Built into the VCP is a "fail-safe" device. Failure of any signal element will result in immediate restrictions on the system to stop the train and assure complete passenger safety.

The automated operation will begin when the attendant closes the train doors and pushes a start button. The control system will then conduct the train to its next station, maintaining correct speeds and distances, and bring the train to a smooth, precise stop. (The train will stop within *one* foot of a predetermined spot.)

The basic concepts of the velocity control programmer were developed by B. D. Smith, Staff Assistant to the Vice President for Research and Engineering. Bradley R. Koch, Senior Engineer in Melpar's Communications Laboratory, has been responsible for the design of the specific circuits for the VCP. Product Director William Anderson includes this item in his portfolio of future market growths for Melpar.

Going Up!

Paul F. Combs to Planning Coordinator
Raymond V. Dipboye to Planning Coordinator
Paul R. Crismond to Assembly Supervisor
Ryland W. Wright to Construction Foreman
Philip L. Montague to Shop Foreman
Robert E. Davis to Planning Supervisor
Benjamin F. Hale to Sr. Methods Engineer
Peggy J. Jenson to Secretary
Donald A. Rowley to Field Research Assistant
William D. Piggott to Engineering Design Assistant

Plans for Progress

Melpar was represented at the Plans for Progress Fourth National Conference in January by Melpar President Jay V. Wilcox and Personnel Manager Thomas L. Wood.

Plans for Progress is a national program to provide leadership in expanding employment opportunities for minority groups. It currently enlists more than 315 major corporations employing over eight million persons.

Main speakers at the conference were Vice President Hubert H. Humphrey and Secretary of Labor W. Willard Wirtz.

The conference theme was "Industry's Challenge to Create New Opportunities for Progress."

SUPERVISOR'S FORUM

Training Program for Supervisors

It is never wise to underestimate the value of training in leadership, for even the best and most experienced leader can learn new and better techniques of supervision. It is with this idea in mind that Melpar is instituting a new training program for supervisors.

The new training program began February 23 and consists of two courses, each ten weeks in length. Each course is divided into two classes which meet weekly in the Main Conference Room at the Falls Church plant. Each class is attended by 25–30 Melpar supervisors. (Names of the supervisors attending the first class have been submitted to the appropriate vice presidents.)

The courses cover five main subjects: Employee Relations, Labor Law, Communications Skills, Basic Economics for Supervisors, and an explanation of Personnel Practices and Policies.

Classes are being conducted by Mr. Allen Hartnett, Company Consultant, for the first four weeks. Remaining sessions will be led by Larry Shaw and Thomas Wood of the Personnel Department.

COST REDUCTION

Mr. C. B. Raybuck, Vice President for Administration, has announced that Melpar surpassed the $1 million cost reduction goal set for 1965. Total savings under the 1965 Cost Reduction Program of $1,110,000 were reported by Melpar to the Department of Defense.

Mr. Raybuck also announced the projected figures for the 1966 Cost Reduction Program. In keeping with DOD guidelines, Melpar will aim at savings of $550,000 in 1966.

A good start has already been made toward achievement of the 1966 goal. Mel Allen, Cost Reduction Administrator, announced that in the first month of the year, five Value Improvement Proposals (VIP's) have been accepted. According to Mr. Allen, "We have a good start in the VIP portion of our 1966 Cost Reduction Program. Let's keep up the good suggestions."

The five VIP's were submitted by: William J. Watson, *Research and Engineering;* Edmond H. Haugen, *Control-Management;* Harold I. Gerson, *Contract Management;* Charles Wild, *Research and Engineering;* and John J. Adams, *Contract Management.*

PRES. SPEAKS TO KANSAS CITY FINANCIAL ANALYSTS

On January 19, 1966, A. King McCord, President of Westinghouse Air Brake Company, and Jay V. Wilcox, President of Melpar, Inc. and Wilcox Electric Company, addressed the Kansas City Society of Financial Analysts.

The general subjects of Mr. McCord's remarks were the 1965 financial status of WABCO and the projected budget for 1966. Mr. McCord painted a bright picture of WABCO's future and stated that, "while the audit for 1965 has not been completed, it appears that we (WABCO) will report sales near $270 million and net profits somewhere between $3.30 and $3.40 per share." (Editor's note: WABCO has since reported sales of $247,300,000 and net profit of $3.38 per share. Melpar has reported earnings in 1965 of $407,000, or 16¢ per share on sales of $47,580,000.)

Mr. Wilcox's remarks to the meeting concerned the anticipated results of the Melpar-Wilcox merger which occurred in September of 1965. Below is the text of Mr. Wilcox's remarks.

"As President and Chief Executive Officer for both Wilcox and Melpar, I have the assignment to weld the capabilities of the two organizations to a common goal as rapidly as possible.

"Wilcox Electric Company, founded in 1931 in Kansas City, is a technically based, product oriented company. We produce a variety of communications and navigational equipment, primarily used in civil aviation and ground applications, including general aviation, commercial air transport, and airways installations. However, many of standard commercial products are purchased by the U.S. Government for military aircraft and ground installations. Our business is aviation—so the world is our market. At the present time we can list the governments of over 90 countries as customers. As Mr. McCord has just said, Wilcox Electric had sales of approximately $6,000,000 in 1963 and $11,000,000 in 1965. We expect to be at the $15,000,000 level in calendar 1966. Our Kansas City payroll will be this year approximately 5 million dollars, and we will spend an additional 2 million in local purchases.

"Melpar, Inc., whose stock is 90% owned by WABCO and the remainder traded over the counter, combines research development and a manufacturing capability. Melpar is located just out of Washington, D.C. at Falls Church, Va. The plant and research labs are well equipped and occupy approximately 600,000 feet of modern facilities on 50 acres of land. The business strategy is to employ top talent in the fields of science, especially those of interest to agencies of the U.S. Government, as for example, the Army, Navy, Air Force, NASA, Health and Welfare, Bureau of Mines, etc. The object is to participate on a selective basis in programs which have a reasonable opportunity for follow-on work. From 1951, the year Melpar was acquired by WABCO, the business has averaged 2.6% return on sales and a 9.9% on average equity capital invested.

"Melpar currently holds a number of significant contracts for the manufacture of simulators to train helicopter pilots; airborne detection devices; special search lights for night combat; and others. Melpar developed prototypes that have "flown" on the Gemini, Mercury, Thor, Atlas, Scout, Mariner, and on the B-58 and B-47 bombers. Other Melpar research, in food technology for example, will be part of the future Apollo missions in space. Another segment of Melpar's R&D talent has been applied in developing components for the WABCO mass transit system. These components are now being tested and evaluated in the San Francisco Bay Area Rapid Transit District (BARTD). Melpar has had a decline in sales that began in 1964 and continued in 1965 due to the completion of large production contracts as, for example, an $80,000,000 contract for production of printed circuit boards for the Minuteman. The level of the basic business: research and development, however, has increased consistently so that we now enter 1966 on a strong base of research programs, and from these we expect to add production volume.

"Melpar has searched, like most similar organizations, for a commercial oriented company to join so as to take advantage of some of the major fallout from research and development efforts. They began to explore the possibilities with Wilcox in 1963—fully two years before the acquisition.

"Wilcox can, and will, draw on Melpar's capabilities in electronics, particularly large programs involving a combination of capability in research and development and manufacturing.

"The adjustments necessary to maximize benefit from the acquisition are made easier by the concentration of the Chief Executive responsibility in one person. WABCO has plans to recognize opportunities common to both Melpar and Wilcox, wherein their joint strength and abilities can increase market penetration and resulting profit. I see opportunity for substantial growth, and I intend to do my best."

Melpar Takes New Cancer Study

Dr. Gordon C. Blanchard will be principal investigator for Melpar's efforts on a new cancer study to be conducted under a Public Health Service contract.

Hospitals throughout the country participating in studies of a bone marrow cancer will contribute to a pool of information for improvement of diagnosis and prediction of response to drug treatment under a cooperative project inaugurated by the Public Health Service, U. S. Department of Health, Education, and Welfare.

The project is an important segment of a program to investigate immunological approaches to the cancer problem being developed by the Public Health Service's National Cancer Institute at the National Institutes of Health.

Hospitals will send blood serum and urine specimens from patients with multiple myeloma and non-cancerous but related blood disorders to a central laboratory. There, analyses will permit relatively rapid classification of the abnormal proteins of multiple myeloma, a cancer of the bone marrow characterized by an excess of certain immune (antibody) proteins, and blood disorders, such as agammaglobulinemia, which involve a deficiency of the same proteins. It is this information that will assist in diagnosis and may permit prediction of the course of disease and response to drug treatment.

The analyses to determine protein patterns will be made with a variety of immunochemical and other techniques developed by National Cancer Institute scientists. They will be performed in a new immunodiagnostic laboratory to be operated by Melpar, Inc. The laboratory will provide the hospitals participating in national chemotherapy studies services now available to only a few through their own facilities.

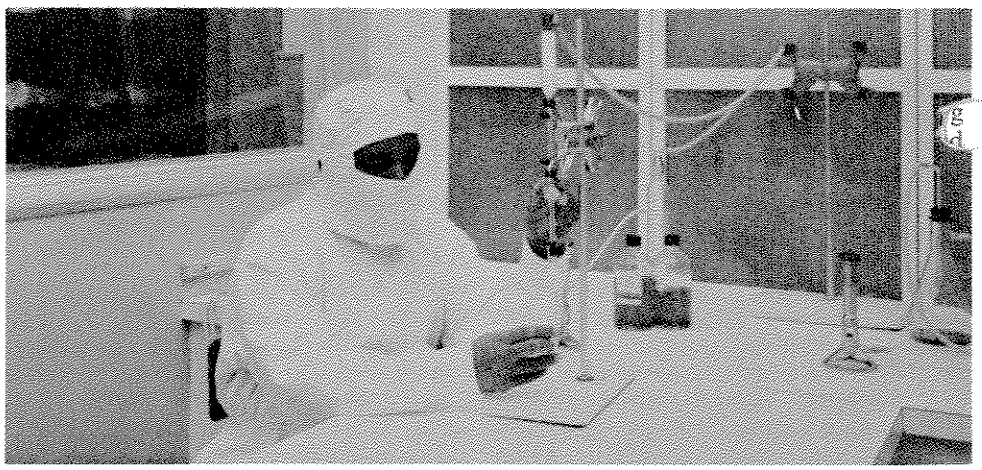
Dr. John Fahey, Chief of the National Cancer Institute's Immunology Branch, and a widely recognized investigator in the field of protein immunology, is project officer for the contract operation, budgeted at $174,500.

Super Clean Rooms

Melpar scientists at Shirley Research assisted by Plant Engineering & Safety personnel have made another advance in scientific research techniques: the development of two sterile rooms for use in Cell Biology. The rooms are currently employed for preparing cells to be used in cancer research at Melpar and other laboratories.

With the technical assistance of Richard Andree, Senior Safety Specialist, Dr. John Verna carried out a program to exploit new advances in clean room technology. The program was initiated to develop an environment in which germ-free experiments in Cell Biology could be performed. The result is a room which is more than 100 times cleaner than the Air Force Standard Clean Room. Actual tests conducted at Melpar by Lartius T. Dupree, Biologist, have shown that there is no detectable bacterial count, during 30 minute test periods, on the upstream side of laboratory workers.

The sterile rooms are specially constructed to utilize the "Laminar Flow" or "Minimum Turbulence" principle. One entire wall of each room consists of a bank of absolute air filters. The air flow drives a pison-like body of filtered air through the room, filling it from side to side and floor to ceiling.



Lartius Dupree carries out an experiment in the newly developed clean rooms at Shirley Research. The air enters through the absolute filters (at right in picture), circulates around the worker and his instruments, and then up and out of the room.

The velocity of the air entering the room is one (1) mile per hour. This speed is calculated to minimize the amount of turbulence caused by the air stream striking an object in the room. When the air stream contacts an object, it merely passes around it, much as a stream of air passes around the wing of an airplane in flight. The air flow, however, is not strong enough to impact minute particles which have been generated by investigators working in these rooms. These sub-microscopic particles are kept suspended in the air and flow out of the room with the air circulation to be filtered in the next cycle.

The working areas within these sterile rooms consist of formica tables in a "T" arrangement. Electrical, gas, and other required utilities are conveniently placed to accommodate one or two individuals working together or independently. The operations are designed to take advantage of the clean air at one end of the room with workers positioned downstream from the work area.

This design provides an efficient, versatile, and economical method for creating sterile working conditions vital to cell culture research.

ANNUAL AWARDS DINNER

The Annual Awards Dinner honoring Melpar's Author of the Year, Inventor of the Year, and Value Improvement Man of the Year is scheduled for the evening of March 15, 1966. Five finalists have been selected for each of the three awards, and the winner of each award will be named at the dinner to be held at the Springfield Country Club in Springfield, Virginia.

Winners will be selected from the finalists by the Melpar Policy Committee. Nominations for the awards were made by the Patent Committee, Publications Committee, and Value Improvement Committee. The author of the Year, Inventor of the Year, and Value Improvement Man of the Year will each receive a personal trophy, and his name will be engraved on a plaque which is permanently displayed in the lobby of the Falls Church plant.

The award nominees are:

AUTHOR OF THE YEAR

S. S. Nelson, A. F. Hadermann
"Fractionation of Biological Material by Magnetically Stabilized Electrophoresis"

H. L. Wilson, W. A. Gutierrez
"Cadmium Selenide Thin Film Field Effect Transistors"

L. J. Stief, V. J. DeCarlo
"Origin of $NH(A^3\pi) \longrightarrow NH(X^3\Sigma^-)$ Emission in Comets"

G. C. Blanchard, C. R. Goucher
"Metabolic Products Formed by Hydrocarbon Oxidizing Microorganisms"

M. Hacskaylo
"Investigations of Vacuum Deposited Magnetic Thin Films of Fe_3O_4-B_2O_3 Mixture"

INVENTION OF THE YEAR

M. Schuman
"Adiabatic Compression Infrared Emission Vapor Detector"

J. Bramley
"High Intensity Laser"

E. M. Connelly
"Multi-Output Statistical Switch"

M. Hacskaylo
"Thin Film Capacitor"

S. S. Brody, J. E. Chaney
"Flame Photometric Detector for Gas Chromatography"

VALUE IMPROVEMENT OF THE YEAR

H. N. Broeder
"Reduced computer time and printing costs for Budge Control Reports"

K. Hepburn
"Simplified and expedited repair of printed circuit boards"

D. C. Hinchey
"Reduced cost of calibrating the Mueller Bridge"

R. J. Kincaid
"Reduced reproduction costs and time for processing Material Estimate forms"

J. K. Smith
"Simplified paperwork to record changes in employees' status"