DRAFT --- DRAFT --- DRAFT Folder Record

Title: Ken Olsen Collection

Author: Olsen, Kenneth H.

Arrangement: Series I: Letters to/Letters from

Imprint: 1965

Subjects:

Description: One folder

Notes: Letters to

Summary: Mar 2 from Michael F. Wolff, *International Science and Technology*: details on panel discussion on topic of "The Science Entrepreneur" with attached panelist bios

Mar 4 from George Sideris, *Electronics*: detailing topics for projected articles

Apr 2—Jun 4 from David Packard, Hewlett-Packard: suggesting cooperation between DEC and HP; arrangements and visit of Packard to Maynard

Jul 2 from William N. Papian, Washington University: note acknowleding delivery and thanking KO for gift of PDP-5

undated from Edward B Roberts, MIT Research Program on the Organizational Management of R & D, MIT Sloan School: portion of questionnaire on "new enterprise formation and growth" with growth history filled in from 1959 for revenues, numbers and types of employees, and R & D

ASSOCIATION FOR COMPUTING MACHINERY 211 EAST 43 STREET, NEW YORK, N.Y. 10017

December 29, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

ACM INVOICE #27592

Renewal Institutional Membership in ACM 1966	$500.00
TOTAL DUE	$500.00

It was decided at the Wrkshp Comm. on 1/19/66 not to renew this membership.
E. Carlson

ASSOCIATION FOR COMPUTING MACHINERY 211 EAST 43 STREET, NEW YORK, N.Y. 10017

December 29, 1965

Mr, Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

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Renewal Institutional Membership in ACM 1966	$500.00
TOTAL DUE	$500.00

Leonard A. Seder and Associates QUALITY CONTROL CONSULTANTS

AREA CODE 617
TELEPHONE 324-5446

267 HAWTHORNE STREET
MALDEN, MASS. 02148

December 28, 1965

Mr. Kenneth Olsen
Digital Equipment Corp.
Maynard, Massachusetts

Dear Mr. Olsen:

I am pleased to submit herewith our plan for conducting the series of lectures and discussions at your plant for your engineers.

TITLE: Practical Statistical Tools for Engineers

SUBJECT MATTER: Six 2-Hour and Two 4-hour sessions on the material attached outline.

INSTRUCTORS: L. A. Seder, W. R. Purcell, D. J. Harrigan

SIZE OF GROUP: 25 Maximum

DATES: Jan. 12, 15, 19, 26; Feb. 2, 5, 9, 16

TIMES: Wednesdays 4 PM-6 PM
Saturdays 8 AM-12 AM

TEXT MATERIAL: Notes and Seminar Workbooks to be furnished by us.

HOME ASSIGNMENTS: Problems on material covered will be assigned to the extent of about 1 hrs. work between sessions.

Our all inclusive fee for preparation, handout material, presentation, transportation is hereby quoted at $1100.

We would like to hear from you as soon as possible so as to get all our planning completed.

Thank you for the pleasant visit we had last week.

Sincerely yours,

LEONARD A. SEDER & ASSOCIATES

Leonard A. Seder

Leonard A. Seder

LAS:lj
Enclosure

OUTLINE OF SUBJECTS

FOR

DIGITAL EQUIPMENT CORP.

PREVENTING QUALITY LOSSES

The Costs of Quality Failures--Scrap, Rework, Repair, Tool Revision, Downtime, Design Changes, etc.--How to study your quality costs and identify areas for profitable improvement--How to get paybacks of 5/1 and 10/1--Role of Engineering in Quality Loss Reduction--Pareto's Principle.

ANALYZING ENGINEERING DATA

Simple statistical methods for discovering whether the data really prove what they seem to--The meaning of "significant difference"--what to do when differences are not significant--interactions among variables.

ENGINEERING FOR MAXIMUM CUSTOMER SATISFACTION

How to determine what the customer really wants--New methods of analyzing field and complaint information to improve designs--Using customer's opinions to avoid costly overdesign--Determining the reliability of equipment in the field.

ENGINEERING FOR PRODUCTION

How to set tolerances that achieve the proper balance between functioning and manufacturing cost--The fallacy of "merry-go-round" tolerances--Can waivers be avoided?--Proper tolerancing for mating fits--Tolerance build-ups--Tolerances in the chemical industries--How to develop "feedback" to keep specifications up-to-date.

SPECIFICATIONS FOR THE "MASS"

Why the blueprint is not enough--The growing trend toward specifying what percentage must conform to the blueprint--How to set the Acceptable Quality Level--What is meant by "classification of defects?"--Other methods of specifying the "mass"--What is happening in the electronics industry.

PROCESS TROUBLE-SHOOTING

A new concept of variation--Systematic procedures for uncovering the trouble spot--Simple methods for dissecting variation to discover the main variable--Trouble-Shooting by remote control--Applying Pareto's rule--How to distinguish between tools, machines and operators as the cause of defects.

LAUNCHING OF NEW DESIGNS

Steps to take that can shorten the "debugging" period--Special considerations in prototype testing--Planning the pilot run to get maximum information--What data to take--Special problems of the vendor and sub-contractor.

RELIABILITY ENGINEERING

Probability concepts involved--the several types of life pattern--Relationship of reliability of parts to that of the assembly--Sources of unreliability--Specific techniques for improving reliability--how to handle environment that cannot be simulated--Evaluating reliability.

PLANNING OF EXPERIMENTS

New techniques for getting better answers from experiments--in research, development, manufacturing--The problem of establishing whether or not a real cause and effect relationship exists--Pre-planning the collection of data to avoid confounding of results--The fallacy of trying to hold "everything else constant"--How much data is needed--Simultaneously investigating the effects of several variables in an experiment--Optimizing the combination of important variables.

St. Bridget's Rectory
MAYNARD, MASSACHUSETTS

December 28, 1965

Dear Mr. Olsen:

I would like to express my thanks to you and the Digital Equipment Corporation for your overwhelming generosity in donating Christmas toys to many needy families in the town. Rev. Taylor and I worked in cooperation with the Welfare Department and also with other ministers in the town in the distribution of these toys. Thus the toys were given to those most in need.

We have you to thank, therefore, for the fact that a spark of hope and happiness entered many homes this Christmas.

Sincerely,

David C. Murphy

Rev. David C. Murphy

THE FOXBORO COMPANY

NEPONSET AVENUE
FOXBORO, MASS. 02035

December 27, 1965

Mr. Kenneth Olson, President
Digital Equipment Corporation
Maynard
Massachusetts

Dear Mr. Olson:

I would like to express my appreciation for the willingness and effectiveness you have shown in straightening out our mutual problems. You have given us a sense of confidence that our own scheduling and planning can be effected without concern for late deliveries of computers from DEC.

In addition, your cooperation on our problems at Wheeling Steel and Puerto Rico is particularly appreciated because of the serious Foxboro-customer relationships involved and the occurrence of these problems just before the Christmas holidays. I think much has happened in the past week to improve the situation and I look forward to a very satisfactory business relationship for some time to come.

Very truly yours,

THE FOXBORO COMPANY

Roy S. Fine

Roy S. Fine
General Manager
Digital Systems Division

RSF/vn

cc: R. A. Bristol - Foxboro
N. Mazzarese - DEC

THE FOXBORO COMPANY

NEPONSET AVENUE
FOXBORO, MASS. 02035
Bldg. #41

December 21, 1965

Mr. Kenneth Olson, President
Digital Equipment Corporation
Maynard, Mass.

Dear Mr. Olson:

A short note to express my pleasure in having had the opportunity to work with Bob Maxcy in his capacity as the representative of Digital Equipment Corporation at The Foxboro Company.

Bob has demonstrated his exceptional sales ability and keen business sense. I am sure that in his new position he will justify your confidence in his management potential.

Very truly yours,

THE FOXBORO COMPANY

Paul H. Anderson
Purchasing Agent
Systems Division

PHA:sm

TECHNOGRAPH
INC.

P. O. BOX 5376
920 NORTHWEST BLVD.

WINSTON-SALEM, N. C. 27103

TELEPHONE
AREA 919 No. 723-0767

20 December 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Enclosed is a copy of a letter mailed to our stockholders on 17 December. It will serve to bring your file up to date on our various litigations in which we are involved.

Cordially yours,

Hubert L. Shortt
President

HLS/arh
Enclosure

TECHNOGRAPH
INC.

P. O. BOX 5376
920 NORTHWEST BLVD.

WINSTON-SALEM, N. C. 27103

TELEPHONE
AREA 919 No. 723-0767

17 December 1965

To Our Stockholders:

- I -

At the Annual Stockholders Meeting held on 26 November 1965, a total of 398,755 shares out of 491,857 shares outstanding were represented in person or by proxy. It was voted to reduce the number of directors to seven and the following were elected to serve until the next Annual Stockholders Meeting.

Sidney Bender New York, N. Y.	William Carduner Miami Beach, Florida
Walter J. Blenko, Sr. Pittsburgh, Pa.	Oliver R. Grace New York, N. Y.
Shirley D. Brinsfield Wood-Ridge, N. J.	M. Victor Leventritt New York, N. Y.

Hubert L. Shortt
Winston-Salem, N. C.

- II -

In my last letter to the stockholders I reported on various litigations in which we are involved. The following matters of interest have transpired since that time:

1) Our appeals in the printed circuit cases now before the Court of Appeals for the Seventh Circuit were argued on October 27th. Our principal argument was that the District Court should not have disposed of our cases by a summary judgment but should have tried them because (i) a summary judgment is proper only where there is no genuine issue as to any material fact and the moving party is entitled to a judgment as a matter of law, and (ii) there are genuine issues of material fact in our cases which we are entitled to have tried. Our appeals now await decision by the Court of Appeals.

2) In our case in the Court of Claims the Government has filed three motions for summary judgment. Each motion was based on different grounds, but each sought dismissal of our petition as respects various of the patents involved.

   The first motion was based upon the proposition that the Government was immune from suit because of the provisions of the Boykin Act, Public Law 690. Public Law 690 was enacted after the end of World War II in

recognition of the fact that the timely filing of many patent applications had been prevented because of war-time conditions. It permitted late filing in certain circumstances but provided that no patent granted pursuant to the Act could be the basis of a suit against the Government. The Court of Claims, after an oral argument in which we contended that issues of fact were involved, referred the matter to one of its Commissioners for a determination of those facts. The motion is still pending before the Commissioner.

The second motion was based upon the proposition that our Petition should be dismissed as to Patents 2,441,960 and 2,706,697 because those patents had been invalid in the Bendix case and the Government had brought Bendix into the Court of Claims case as a Third Party Defendant and because the court could reach the same decision on the prior art cited in that case. We opposed the motion on the grounds that there are genuine issues of material fact and that the motion was unsound in law in any event. On November 19th, the Court of Claims denied the Government's motion without prejudice and returned the case to the Trial Commissioner for further proceedings. The Government has asked for reconsideration of its motion.

The third motion was based upon the proposition that we should not be allowed to recover for unauthorized use by the Government of such of our patents as had not been litigated against non-Government users. We opposed this motion on the grounds that we have granted licenses in this group of our patents and that the motion was unsound in law in any event. The Government thereupon withdrew the motion.

In the case against the Houdaille Company on the issue of infringement of Patent Re. 24,017, (under which we have an exclusive license) the U. S. District Court at Chicago decided on December 15th that the patent had been infringed by the Houdaille Company and at the same time denied a motion for summary judgment by the defendant. A judgment of validity had been entered against the Houdaille Company in January of this year. Unless Houdaille takes and successfully prosecutes an appeal, the case will be ripe for an accounting for royalties due from 1952 forward. The patent covers a method of forming metals, for example, automobile bumpers and bumper parts.

Season's Greetings.

Respectfully submitted,

Hubert L. Shortt
President

BRITISH INDUSTRIAL DEVELOPMENT OFFICE
BRITISH CONSULATE-GENERAL
845 Third Avenue, NEW YORK, N.Y.
Telephone: PL 2-8400

Replies should be addressed
P.O. BOX 3434
NEW YORK 17, N.Y.

December 16, 1965.

Mr. Kenneth H. Olsen,
President of Digital Equipment Corporation,
146 Main Street,
Maynard, Massachusetts.

Dear Mr Olsen,

I am sorry that I did not have a chance to talk to you at the lunch given last week by Mr Curle, the British Consul-General, for Mr. Catherwood, Chief Industrial Adviser to the British Department of Economic Affairs

I hope your investigation of possible sites for production in the United Kingdom will be successful. I am enclosing some literature about this office and about the facilities and assistance available for new or expanding manufacturing operations in the United Kingdom.

If I can be of any further assistance at this stage, please let me know.

Yours sincerely,

K H Huggins

K.H. Huggins,
Director

Brochure in file

Enclosures.
KHH/gmj.

BRITISH INFORMATION SERVICES

Reference and Library Division

November, 1965

Ken attended 12/8/65

FREDERICK CATHERWOOD

Mr.H.F.R.Catherwood was appointed Chief Industrial Adviser in the Department of Economic Affairs in October, 1964. For two years before joining the newly created department he was Managing Director of the British Aluminium Company Limited, and before that had been assistant managing director from 1960-1962.

Because of his connection with British Aluminium, which is a $200 million firm jointly owned by the Reynolds Metal Company and Tube Investments, Limited, Mr.Catherwood has first-hand experience of direct industrial investment on a large scale and of the application of American practice and experience to British markets, labor and management. He has visited the United States almost every year for the last ten years.

Mr.Catherwood, an Ulsterman, was born on January 30, 1925. After reading history and law at Clare College, Cambridge, he qualified as a chartered accountant in 1951.

For six years he was with Richard Costain Limited,

international/

845 Third Avenue, New York, N. Y., 10022, Telephone: PLaza 2-8400

international construction engineers with an annual turnover of about $60 million. He was appointed their chief executive after a year's service at the age of 30.

Besides his post in the Department of Economic Affairs, Mr.Catherwood is a member of other official bodies concerned with economic problems of Britain. He is on the National Economic Development Council, which, since 1962 has been working to improve the economic performance of the nation; and he is also on the British National Export Council which is making a concerted drive to increase Britain's exports. He is also a member of the Councils of two influential independent bodies, the Royal Institute of International Affairs and the British Institute of Management.

Mr.Catherwood is married and has three children.

MR/MMcC

8408 Royce Court
San Diego, Calif. 92123
(714) 278-4560

15 December 1965

Digital Equipment Corp.
146 Main Street
Maynard, Mass. 01754

Attention: Mr. Kenneth H. Olsen, President

Gentlemen:

Straza Industries of El Cajon, California, is offering to sell their Data Handling Group, which is a separate portion of their present organization. You are being informed of this opportunity because the products produced by the Group are a natural extension of your present products and would extend your overall market potential. A list and summary description of the items available has been enclosed, as well as the Annual Report of Straza Industries.

Straza' s Data Handling Group has recently completed the development of two different models of Microfilm Recorders. This type of equipment records computer generated output data (either printing or plotting) directly onto microfilm. In addition, they have developed outstanding display generators for Display Systems, and have submitted patent applications for two of these units.

I am sure your organization is aware of the growing demand among computer users for display and recording capability. The market for equipment providing this capability has shown a steady increase over the past two years and certainly the trend is continuing. Straza Industries has chosen to sell the Group because the type of necessary marketing techniques for this equipment is incompatible with those presently used by the company. It has been decided that Straza will gain more by investing in their well-established areas rather than establishing a new and unfamiliar marketing effort. For this reason, the writer has been given the exclusive right to coordinate the sale.

Naturally, examination of the Group, equipment, and facilities, is invited, as well as discussion concerning the Group. An indication of your degree of interest would be appreciated at your earliest convenience. Please contact the undersigned.

Thank you for your interest in this matter.

Very truly yours,

Robert Campbell

Robert Campbell
Consultant

ITEMS INCLUDED IN SALE

of

STRAZA INDUSTRIES'

DATA HANDLING OPERATION

The items included in the sale of the operation called "Data Handling" are listed here and described below:

A. List of Items

1. Microfilm Recorders

   a). Model 1201

   1 unit and complete documented design.

   b). Model 1311

   Complete documented design with performance records.

2. Symbol Generators

   a). Model 11-64 (Dot Format)

   2 units and complete documented design.

   b). Model 14-64 (Stroke Format)

   Complete documented design (possiblity of equipment). Patent application in process.

3. Line Generator, Model 52

   Complete documented design (equipment in Model 1201 Microfilm Recorder only - patent application in process).

4. Originator and Group Manager of Operation.

5. Related Inventory and Material.

B. Description of Items

1. Microfilm Recorders

a.) Model 1201

Operates off-line with magnetic tape units at tape speeds up to 62,500 characters per second. Includes the capability of printing a maximum of 132 characters per line and 68 lines per page, plotting symbols (characters or dots) at any point in 1320 x 1360 raster of addressable points and generating lines from any one raster point to other raster point.

Since data is used at tape speeds and a tape control circuits stops the tape unit while "action" commands are being performed (such as advancing film), the model needs no buffer for storing data received from the tape.

The type of characters (symbols) generated depends upon the symbol generator used in the recorder. However, the general capabilities and specifications are given here:

Plotting Capabilities and Accuracies - three symbol sizes; normal, small (2/3 normal), and large (4/3 normal) are available for plotting in one of two symbol orientations; North or West. Plotting accuracies are $\pm$0.30% of full scale relative to the actual calculated position. Over a time period, plotted points will maintain an accuracy of $\pm$0.25% relative to previously plotted points after 10 minutes and $\pm$0.5% after 24 hours. Plotting dot size is less than 1/680 of full scale or less than 2 raster points in diameter.

Printing Capabilities and Accuracies: The same character sizes are available for printing as for plotting, but only one character orientation is available. As previously mentioned, page format is a maximum of 132 characters per line and 68 lines per page. The accuracy of the position of each print line is the same as for plotting. In addition, misalignment of individual characters within a print line is less than $\pm$5% of a symbol height.

Line Generating Capabilities and Accuracies: The specific capabilities and accuracies are given below under "Line Generator Model 52".

Recording Camera: The camera is 35 mm with pin registration which allows extreme accuracy in positioning while giving fast film advance times. The camera requires less than 34 milliseconds for film advance or may provide 30 frames per second advance (with no recording).

b). Model 1311

The Model 1311 is similar to the Model 1201 but is designed for on-line operation. This allows the model to be built without much of the logic necessary for off-line operation and is therefore less expensive ($60,000 range). In addition to the capabilities of the Model 1201, this model has a 17 inch visual display tube with light pen included.

2. Symbol Generators

a) Model 11-64

Generates symbols or characters in a dot format from a dot matrix of 15 x 16 using a maximum of 16 dots per character.

Characters can be generated up to a rate of 140,000 characters per second. A maximum of 64 characters may be generated, but characters or the shape of characters may be changed by replacing or modifying a printed circuit card. Provisions are made for adding cards to increase the number of characters available to 128, but is then called Model 11-128.

b) Model 14-64

Similar to the Model 11-64 except that characters are generated by strokes from 33 x 33 matrix using a maximum of 16 line segments per character (lines start at any of the points in the 33 x 33 matrix and end at any other designated point). Characters can be generated up to a maximum of 200,000 characters per second.

3. Line Generator, Model 52

Generates voltages which produce lines on the CRT, originating at any designated raster point and ending on any other designated raster point. Lines are generated by a constant velocity dot(eliminating variation of intensity regardless of length) and requires 60 microseconds for a full length line (full scale). Repeated full scale lines may be drawn at 10.000 lines per second. When used in the Model 1201, the tape unit need not be stopped for line generation as long as six tape characters are used for each line (instruction and "no operation" per characters).

Four types of lines may be generated; solid line, dashed line, dotted lines and dashed and dotted line. Line linearity is better than $\pm$0.2% of full length line and accuracy of stop point, relative to start point, is $\pm$ plotting position.

A patent application is in process for this unit.

DIGITAL MAYN
9.50 AM PST

TO 710-347-0212 NORMAL
FM 910-444-1600 NBR C024 SEATTLE WASH 12-7-65 9.29 AM PST DRP

DIGITAL EQUIPMENT CORP MAYNARD MASS
ATTN- MR KENNETH H OLSEN, PRESIDENT

REF. NO. 2-2650-029

REGRET TO INFORM YOU THAT BOEING TOP MANAGEMENT HAS CALLED OFF JANUARY 1966 DEMONSTRATION IN LOS ANGELES. CONCEPT TO BE DEMONSTRATED WAS NOT IN QUESTION IS IN FACT BEING ENTHUSIASTICALLY ADOPTED. JUDGMENT WAS THAT THE LOS ANGELES SHOW WOULD BE PREMATURE AND THAT WE WOULD NOT BE READY TO MAKE MEANINGFUL PRESENTATION OF OUR NEW REMOTE MANAGERIAL TECHNIQUES. IN LIEU DEMONSTRATIONS WILL BE MADE ON LOCAL EQUIPMENT. APPRECIATE YOUR COOPERATION AND HOPE WE HAVE NOT COST YOU TOO MUCH INCONVENIENCE.

THE BOEING CO E F CARLBERG MAIL STOP 24-09 SEATTLE
TTWX 910-444-1600

DIGITAL MAYN

DEPARTMENT OF PHYSIOLOGY
HARVARD MEDICAL SCHOOL
25 SHATTUCK STREET, BOSTON, MASS. 02115

December 7, 1965

Mr. Kenneth Olson
Digital Equipment Corporation
Maynard, Massachusetts

Dear Ken,

Your FORTRAN for the PDP-8 is terrific! We really appreciate having it.

Sincerely,

Bill

Bill Simon

December 7, 1965

TWX from Boeing - E. Carlberg

Regret to inform you that top management has called off the January 1966 demonstration in Los Angeles. Concept to be demonstrated was not in question; is, in fact, being enthusiastically adopted. Judgment was that the Los Angeles show would be premature and that we would not be ready to make a meaningful presentation of our new remote managerial techniques. In lieu, demonstrations will be made on local equipment. Appreciate your cooperation and hope we have not caused you too much inconvenience.

T. A. O. GROSS AND ASSOCIATES
LINCOLN, MASSACHUSETTS 01773

CONSULTING ENGINEERS
MAGNETICS AND ELECTRONICS

TELEPHONE (617) 259-8263
(617) 259-8580 (RESIDENCE)

4 December 1965

Mr. Kenneth H. Olsen, President
DIGITAL EQUIPMENT CORPORATION
146 Main Street
Maynard, Mass. 01754

Dear Ken:

Your suppliers of magnetic core materials tell me that you are rapidly increasing manufacture and use of pulse transformers for memory drivers. I think we could be useful to you as consultants on the design of these transformers.

Most of my clients hire us to execute specific designs which involve sophistications either because state of the art performance is required or because they will be produced in important quantities. Several clients use us to acquaint their own engineers in the latest techniques; I have just completed a three day seminar at Hazeltine.

The fee for my time is $150/day, my "Associates" who do not exist in any formal sense work on a fixed price job basis.

The consulting business has been very good during the past half year but my problem is that two clients take 80% of my time. I am anxious to broaden my base a bit.

Sincerely,

Tom

TG:g

T. A. O. Gross

Copies to Nick Mazzarese 12/6/65 Win Hindle Harry Mann

Leasco Data Processing Equipment Corporation

STATION PLAZA EAST

GREAT NECK, N. Y.

516 HN 6-9500

December 3, 1965

Mr. Kenneth H. Olsen, President
DIGITAL EQUIPMENT CORP.
Main Street
Maynard, Mass.

Dear Mr. Olsen:

We are pleased to enclose a description of the services offered by Leasco Data Processing Equipment Corporation, a company devoted exclusively to aiding data processing companies of stature to increase sales and profits through unique and imaginative leasing programs.

The leasing of data processing equipment has become increasingly prevalent throughout the American economy. It has become readily recognized, by the business sector, that leasing as a technique for acquiring the use of such equipment has many distinctive advantages. The trend to leasing though, has created major problems for all but the biggest firms within this field. For now, instead of being able to recapture its necessary heavy investment through the sale of such equipment, most firms have to wait 2 or more years to recoup their outlays. In addition, they are forced to use up much of their debt capacity to finance such leases when it should be used for manufacturing and research expenditures. In simple terms, the manufacturer most often finds himself concerned in the finance function instead of his primary function as that of a manufacturer.

Leasco Data Processing Equipment Corporation currently services such companies as National Cash Register, Burroughs, SCM Corporation, Bell & Howell, etc., with soundly constructed leasing programs. Through these programs, it has developed relationships with over 3000 lessees from all the sections of the American economy.

Leasco's programs, being unique, differ considerably from other programs available, for we pride ourselves as being a marketing as well as a financial service.

In the marketing area, Leasco's trade representatives, all who have come from the data processing and office equipment field, work constantly with the manufacturers' sales force. They educate the sales force through seminars on the proper usage of leasing as a sales tool: supply the sales force with considerable sales literature, and work consistently with them on individual programs.

Programs of incentive and special promotions are offered for the sales force.

In the financial area, Leasco offers the opportunity to the manufacturer of increasing the sales by offering the leasing alternative, yet still effectively having every sale a cash sale. Special programs which enable the manufacturer to participate in the leasing profits are available as well.

In summary, Leasco offers a variety of leasing programs which are tailor-made to meet the specific needs of the manufacturer and his customers. It is nationwide in scope, which allows the national manufacturer to deal with one major professional lessor in a coordinated effort. It is our feeling that a wonderful application exists for the leasing of Digital Equipment Corp. equipment.

We would appreciate the opportunity to further discuss with you the many advantages of our program and the possible applications it might have within the specific context of your company. With this thought in view, one of my associates or I shall plan to telephone you in the near future with the hope of arranging a mutually convenient appointment.

Sincerely,

LEASCO DATA PROCESSING
EQUIPMENT CORPORATION

Selig Zises

Selig A. Zises
Vice President

SAZ:mb
cc: Stanley Olsen, Sales

INDUSTRIAL RESEARCH

SPOKESMAN FOR THE $23-BILLION RESEARCH INDUSTRY

7 STRAIGHT YEARS OF ADVERTISING GAINS. REQUEST CIRCULATION: 70,000

December 3, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
Module Division
146 Main Street
Maynard, Massachusetts 01754

Dear Mr. Olsen:

Enclosed are the two complimentary tickets for the I·R 100 awards luncheon in Boston on January 28. We hope you and your associates will be able to attend the luncheon.

Sincerely,

INDUSTRIAL RESEARCH

Victor J. Danilov
executive editor

enclosures
jb

Ken attended

WOODS HOLE OCEANOGRAPHIC INSTITUTION
WOODS HOLE, MASSACHUSETTS 02543
AREA CODE 617-548-1400

copies to: John Jones
Nick Mazzarese
Bob O'Hagan

December 2, 1965

Mr. Kenneth Olsen
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen,

Now that the ATLANTIS II expedition around the world is finished, and as we, the scientists, get into the rhythm of data work-up and analyses, I feel compelled to make some comments on certain aspects of this cruise.

First, from me to you, I wish to express my personal appreciation for your interest in the concepts we discussed some time ago and your willingness to extend to us educational grants making it possible to build up an extremely capable and versatile computer system. Since that time it has become an accepted reality that computers can go to sea and produce useful work. When we were discussing the situation, the concept was considered to be an unreliable luxury better left to the future. Now, it seems almost a necessity.

Second, after 10 months at sea the computer is off the ship and working in the laboratory with no service requirement except that provided by our own man. The interest shown in every port was to our credit and yours as well. We have not been home two weeks and already a stream of visitors have come by for inquiry. Various representatives from other functions sailed with us to take note of our computer complex and acquisition program.

It is true that we have been annoyed and frustrated with software problems. Initially some of the basic programs were rather poor. But then, our time schedule did not permit checking out our gear to any reasonable extent. Hence, during the long voyage, our learning and program capabilities had to

start from scratch, and build up with time. The situation has improved and we now have software compatability with our main computer system.

It is a powerful tool.

Sincerely yours,

Arthur R. Miller

Arthur R. Miller
Physical Oceanographer

ARM/bh

12/7/65

Win Hindle
John Jones

Ken would like your thoughts on this before answering it.

tell abt
8
338
ed. dir.

reply to Win

Elsa.

REED COLLEGE

PORTLAND, OREGON 97202

December 1, 1965

Mr. Kenneth Olsen, President
Digital Equipment Corporation
Maynard, Mass.

Dear Mr. Olsen:

The very rough proposal enclosed with this letter is an attempt to outline a project of a very ambitious nature where time sharing C.R.T. terminals would be used within the teaching of physics. I am quite excited personally about the educational possibilities inherent here. I realize that it would take a rather large project to be able to do the kinds of things suggested here.

My purpose in writing to you is two-fold. First I would appreciate advice on matters of feasibility and equipment. I know that D.E.C. has had a long record of experience with the use of cathode ray tube output from computers, perhaps more experience over a longer period of time than any other manufacturer. Hence your comments in this direction would be most valuable.

My second reason for writing is to raise tentatively the question of some possible support from your company for a project of this kind. It seems possible that we will be able to get some support from government agencies, and some tentative moves have been made in that direction. But because it is a large project it isn't at all clear that we could obtain sufficient government funds to carry out the project. Hence we hope that it will be possible to interest manufacturers such as yourself in cooperating with us.

Sincerely yours,

Alfred M. Bork

Alfred M. Bork
Associate Professor
of Physics

mh
enc.

October 4, 1965

COMMENTS INVITED

PRELIMINARY DRAFT OF A PROPOSAL TO STUDY THE USE OF COMPUTER REMOTE TERMINALS WITH CATHODE RAY TUBE AND LIGHT-PEN FACILITIES AS A PEDAGOGICAL TOOL

Alfred Bork
Department of Physics
Reed College
Portland, Oregon

General context: Proposed Reed Computer Research Center, as described in Appendix II.

Specific uses: In physics classes and in science courses designed for non-science students. See attached examples, Appendix I. Other uses as developed.

Introduction:

The computer has come into the university environment because of its importance as a research tool, and somewhat because of the role it can play in administrative data processing. But, almost by chance, it has been found that it also serves pedagogical functions. There has been very little systematic thought given to the question of how computers can be used in an educational context, contributing to the teaching of particular subject areas. (There are some projects in specialized directions, such as the use of computer terminals in programmed instruction.)

Given the enormous potentialities of the computer as an information handling machine, and given the problems which face education in the next few years, it seems reasonable to try to exploit in some more systematic fashion the capabilities of the digital computer for

pedagogical purposes. This particular project does not claim to do this in all areas; rather it picks one aspect which is now feasible because of developments in computer technology, and seeks to explore some directions of that particular aspect. It directs itself not at the needs of one particular school, but rather it hopes it will produce materials usable in many schools.

Phase 1. Possibly September 1966 to September 1967

Equipment:

One computer, one terminal with cathode ray tube and light-pen (possibly would want to extend to 3 or 4 terminals at mid-year.) Possible auxiliary equipment as indicated below. The computer should have the speed and memory size needed to handle the kind of examples sketched in Appendix I. Because of the extensive time required for writing and testing the programs, it is assumed that this computer will be devoted entirely to this project.

Some possible terminals:

DD-40
DD-80 (for camera)
IBM-2250
plus IBM 2282 (for camera)
DEC-338

One "hand tablet."

Programming:

The first aspect of programming will be the development of one or more software packages for the use of the cathode ray tube and light-pen within some higher level language such as FORTRAN, ALGOL, OR PL/1. Careful thought needs to be given to a "visual language" that will enable the individual teacher

with some programming experience (but not an experienced programmer) to write his own programs for facilities of the type discussed here. Some relevant languages are the North American 7090-SC4020 package, the Bell Laboratory 7090-SC4020 package, Computer Sciences Corporation 1107-SC4020 package, the G.M.-I.B.M. Alpine language, and the Livermore Computer Center's DD-80 code. Several months will be spent in the discussion of the details of the language. This part of the project will bring in outside consultants.

Parallel to this the sample programs (Appendix II) will be directly implemented, so that they will be available for testing by students as soon as possible.

Possible additional project in phase one:
Consideration will be given to developing the language so that it is also a "movie" language, capable of generating computer-produced films.

Design:

Since the material to be shown to students is visual material, the project will explicitly involve a graphic designer. It is felt that the uses of design in education are very important and should not be underrated. They can contribute to making the presentation more effective. The designer would be involved both in the individual problems to be implemented and in the design of the visual language itself.

Testing:

The project will also have associated with it a full-time educational consultant. His role will be to consider how the material can be used effectively with students. This includes the provision within the program for feed-back to the instructor concerning student performance. He will also plan the procedures for testing of the programs and of the language with students, to be conducted in phase 2 of the project.

People:

1 Project director, full time.

3 Faculty members, part time. The primary function of the faculty members will be to develop, both directly and in conference with others, particular uses of the facility in specific courses.

1 Language consultant. His primary purpose will be to formulate the "visual language" and to design the general details of the compiler or interpreters.

3 Programmers.

1 Design consultant.

1 Educational consultant.

Several undergraduates, part time.

Hardware development:

The project will explore:

(1) The use of storage type cathode ray tubes to reduce some of the information-transfer needed.

(2) The use of video presentation by scanning rather than using random access to tube face.

(3) The possibilities of other kinds of terminals.

(4) The use of alternatives to the light-pen, such as "joysticks," "mouses," Rand tablets, etc.

Phase 2. Possibly September 1967 to September 1968

Equipment:

Time-sharing computer with about ten remote cathode ray tube terminals at various places on campus. Possibly similar equipment at another school (see "testing" below).

Programming:

Completion of visual language compiler. Continuing work on particular programs in many academic areas, using the visual language as it becomes available. Modification suggested by testing.

Testing:

Evaluation of teaching effectiveness of programs. Many remote consoles will make it possible to use the facility with a sizeable number of students. It would be very desirable to involve another school with a different academic environment, so that testing could cover a wider range of student abilities. Testing of new hardware, if any is developed in phase one.

People:

1 Project Director, full time.
4 Faculty members, part time.
2 Programmers.
1 Design consultant.
1 Educational consultant.

Possible Financial Support:

Office of Education

Computer manufacturers

National Science Foundation

Local Foundations

Appendix I

SOME EXAMPLES OF COMPUTER USAGE IN TEACHING PHYSICS WHICH USE CATHODE RAY TUBE INPUT AND OUTPUT

In some of these problems the possibility of using a "tablet" device, or other similar device, for input will be considered as an alternative to a light-pen.

1. Forces and Motions

PROBLEM: To give the student (freshman level, either science or non-science major) the ability to explore in detail the relation between forces, initial conditions, and the resultant motions.

EQUIPMENT: Computer or remote terminal with typewriter, cathode ray tube, and possibly light-pen.

SAMPLE OF USE:

(1) The student types in his name and the program name.

(2) The c.r.t. or typewriter asks him what (one or two dimensional) force function(s) he wants to work with.

(3) The grid appears on screen. The student is allowed to modify size of grid if he desires.

(4) The student indicates initial position by the light-pen. The light-pen is not essential; this information could also be

entered from the typewriter).

(5) The student selects initial velocity, entering it either from the typewriter or by drawing (with the light-pen) a velocity vector. If this second alternative is used, it is necessary to display a velocity scale on the c.r.t.

(6) The motion is then traced out by a particle moving on the tube face. The "path" traced is left on the screen. The student can still alter the scale if he desires, shrinking or enlarging the entire picture.

(7) The student stops the motion when he desires. The following choices are then available to him:

(a) He can keep the previously traced orbit on the screen, or he can erase it.

(b) He can choose a new set of initial conditions, keeping the same force, or he can enter a new force.

(c) He can terminate the program.

2. Potential Functions and Motions

PROBLEM: To allow the student at the elementary level to see the motions which result with various potential functions.

EQUIPMENT: Computer or terminal with typewriter, cathode ray tube, and light-pen.

SAMPLE OF USE:

(1) The student types in his name and the identifying program name.

(2) The typewriter or the c.r.t. asks him to designate the potential function he wants. Two options are allowed. He can enter an analytic function at the typewriter, or he can draw the function

with the light-pen on the cathode ray tube. In the second case he can choose the energy and distance scales. In either case the function so entered appears on the screen.

(3) He is asked whether he wants to give a value for the total energy as one of his initial conditions. If he says yes, he indicates this by drawing an energy on the potential diagram. If he says no, he is asked then to give both initial position and initial velocity. If he specifies energy he is also asked to specify a second initial condition (presumably position). He then sees on the tube (above the potential curve) the particle moving under these initial conditions and with the given potential function.

(4) He can stop the motion at any time; then several alternatives are provided. He can terminate the program, he can enter a new potential function, or he can use the same potential function with different initial conditions.

3. The Law of Areas

PROBLEM: To allow the student to experiment with the law of areas as applied to many different curves.

EQUIPMENT: Computer or terminal with typewriter, cathode ray tube, and light-pen.

SAMPLE OF USE:

(1) The student types his name and the desired program name.

(2) He is asked to designate the force center with the light-pen.

(3) A marked point appears there.

(4) He is asked to draw the curve the particles will move on.

(5) He does so with the light-pen. The curve appears. (As an alternative, an analytically determined curve can be entered.)

(6) He is requested to designate the initial position on the curve.

(7) He is asked to designate the position one second later.

(8) After he does this, a particle appears on the curve and moves according to the law of areas, using the above information. As an option, the cathode ray tube might also show lines from the force center to the particle at integer times, or at all times.

(9) As an alternative, he is allowed to guess at the position of the particle at successive seconds, before he sees the motion.

4. Variational Principles and Classical Mechanics

PROBLEM: To give the student (sophomore or junior level science major) a feel for Hamilton's principle, and more generally any variational principle.

EQUIPMENT: Computer or remote terminal with typewriter, cathode ray tube, and light-pen.

SAMPLE OF USE:

(1) The student types his name and the program name.

(2) C.r.t. or typewriter asks him if he would like to specify the lagrangian or the potential function.

(3) Student replies; is asked to type the function. (Perhaps might also specify the scale on the axis, or perhaps be able to change this later.)

(4) Axes appear on the screen with full labels. They remain during the rest of the program.

(5) Student is asked to mark the end-points with his light-pen, and points (with labels "initial" and "final") appear and stay on the screen.

(6) Student draws any curve between the two points, and the valve of the action (with label) for the given Lagrangian and path appears on the cathode ray tube face.

(7) Student draws another possible path which appears with the first path. The action for this path also appears on the scope. The path with the least action of the two stays on the screen, with the valve of its action, and the other path fades. The action is labeled "best path drawn."

(8) The student continues in this fashion, trying to make the action smaller and smaller.

(9) When he decides that he has tried long enough he asks for the physical path and its associated action. This is drawn in a way that is distinguishable from the "best" path of the student. If desired, the student can terminate the program here.

(10) The student can ask for his best path to be erased.

(11) He can then draw paths in the neighborhood of the physical path and see directly that any deviation increases the action.

(12) Termination.

5. Quantum Mechanical System and Wave Packets

PROBLEM: To study the development of quantum mechanical wave packets in time. Senior or graduate student in the physical sciences.

EQUIPMENT: Computer or terminal with typewriter, cathode ray tube, and light-pen.

SAMPLE OF USE:

(1) The student types his name and the program name.

(2) He is asked to specify the potential function desired. It can be given a) analytically, from the typewriter or b) graphicly, drawn with the light-pen on the cathode ray tube. One dimensional problems only, unless sterioptical facilities are available. If analytic, the curve also appears on the cathode ray tube.

(3) He is asked to specify the wave packet at $t = o$. Again, this might be done either analytically or graphically. The program demands that it be small at each end. The potential function continues to be on the screen, but it is weaker.

(4) The wave packet changes in time in accordance with the time-dependent Schrödinger equation. If the change is too fast or too slow, the student can alter the time scale (perhaps by touching an appropriate point with the light-pen.)

(5) The following options are available to the student:

a) He may enter another initial wave packet, keeping the same potential function.

b) He may enter another potential function.

c) He may terminate the program.

Appendix II

PROPOSED REED COMPUTER RESEARCH CENTER

I. Main emphasis of Center--Study of problems associated with people-machine interaction.

A. The Role of Computers in Education

1. Contributions possible to individual college areas. Physics, sociology, chemistry, but also major consideration to be given to areas with little present computer contact. How can computers be effectively used anywhere in the teaching process? What effects will such usage have on the curricula in individual areas?

Some of the staff members of the Center to have this as their specific task, so that it would have some steady stimulation.

2. Role of Computers in Liberal Education--Computers and their place in general education. Computer as an important component in contemporary society. Important theme, little studied so far. What contact should every well-educated person have with computers? This would be a major project; it is not independent of one, above. There is little present investigation of the problem. One of our consultants commented: "I believe that the computer--even the idea of a computer--nurtures the seed for transforming every intellectual aspect of western civilization, and most of its physical aspects as well. ...it is important that every liberally edu-

cated person comprehend the nature of this automation and its meaning for the future man." Would consider specific uses in particular courses, such as the science courses for non-science majors.

3. Pre-college uses. (MINIMATH, other high school programs). Where should particular kinds of students first encounter the computer?
4. The Computer as a Teaching Machine--PLATO, CLASS, IBM CORSEWRITER PROJECT, and other experiments as the starting point. Emphasis on content as well as machinery. Construction of some explicit examples of such programs, after evaluation of the areas in which they could be useful. Not only use IBM's present research format, but consider new languages for writing such material.
5. Computer production of teaching materials. Computor produced films, function libraries, etc.

B. Development of new people-machine languages. Programing languages to make equipment more usable for particular groups of people or for particular purposes. Would consider in particular languages particularly useful in the educational uses outlined above. Languages using functions as basic elements, languages performing algebraic manipulation, etc. A visual language for cathode ray tube usage.

C. Artificial Intelligence Studies. Heuristic problem solving, learning machines, self-reproducing machines, self-organizing machines, etc. Many interesting possibilities, involving many different disciplines.

D. Documentation and abstraction techniques. Library applications. This is a large area, somewhat unrelated to the other material, perhaps should be omitted.

E. Computer evolution to ease people-machine interaction. Development of variable control panels, new types of remote display and input units including visual displays and inputs, multiprogramming, special panels for special areas, languages for such use, etc. Again this is closely related to the educational uses.

II. Other Emphasis of Institute--support research projects needing computer, particularly those generated by new graduate programs. Support for other such programs in Portland area--possible remote consoles at other schools, etc.--possible data processing center for this area (Northwest, or more limited), emphasizing the use of remote consoles. Data processing of Reed administrative offices. Possible time-sharing with Portland public schools.

BULL CORPORATION OF AMERICA

1 EAST 57TH STREET - NEW YORK, N. Y. 10022

CABLE ADDRESS BUGLI-NEW YORK

TELEPHONE: PLAZA 2-6250

HUGH S. JACKSON
EXECUTIVE VICE PRESIDENT

30 November 1965
HSJ-6066

Mr. Ken E. Olson, President
Digital Equipment Corporation
146 Main Street
Maynard, Mass.

Dear Mr. Olson:

Confirming our telephone conversation of yesterday afternoon, we plan to visit your Company at 2:00 PM, Tuesday, December 7th, to present the Bull General Electric line of computer peripheral equipment.

I will be accompanied by Mr. H. R. Friederich of this office and by Mr. Bernard Griveaux of Cie. Bull General Electric, Paris.

We look forward to meeting you and your associates.

Yours very truly,

H. S. Jackson

HSJ:hr

Copy to Henry Crowe

NUCLEONIC

COMPONENTS AND DEVICES DIVISION

A group division of NUCLEONIC PRODUCTS CO., INC.

3133 EAST 12TH STREET • LOS ANGELES, CALIFORNIA 90023

November 29, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Please refer to your letter of 19 November addressed to Mr. Arnold Haase-Dubosc, the President of American Radio.

Mr. Haase-Dubosc has forwarded your letter on to us since Nucleonic Products Co. Inc. is the American end of the semi-conductor division of the CSF Corporation. Your Drawings Nos. TRS-0043, TRS-0044, TRS-0045, TRS-0038, TRS-0046, DIS-0008, DIS-0015 have been forwarded to us and we are currently evaluating them and we will shortly determine our ability to meet your requirement.

It is interesting to note that in Europe the CSF Corporation is one of the largest suppliers of semi-conductors to such computer companies as IBM, Remington Rand, National Cash Register and others. Here in the United States, Nucleonic Products Co. Inc. supplies between 50 to 80% of all of the general types outlined in your specifications to both the computer industry as well as the industrial, commercial and entertainment markets. We are currently supplying components to such computer companies as Ampex, Friden, National Cash Register, Honeywell Inc., Bendix as well as our deep penetration into the industrial and entertainment customers throughout the country.

We appreciate the opportunity you have given us to evaluate your requirements, and it is important to call to your attention that we are represented in your territory by Bordewieck Engineering Sales Company, located at

221 Grove Street,
Braintree (Boston) Mass. 02184

We will be in contact with you just as soon as we have concluded our evaluation of your specifications.

Very truly yours,

NUCLEONIC PRODUCTS CO. INC.

Anthony J. Jolles
Executive Vice President

AJJ:HKC:cal

TELEPHONE: (213) 268-3464 TWX: (213) 266-6756 CABLE: NUCLEONIC

File

Advertisers
ENGRAVING COMPANY
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November 26, 1965

Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts.

Attention: General Manager

Gentlemen:

The writer is identified with a group of men who have financed the invention and development of a high speed electronic input keyboard for computers.

This high speed, light touch, simple electronic input adapts itself to various data processing systems.

We have incorporated this "Live Ten Keyboard" into an automatic printing calculator, the prototype of which is now in existence.

We propose to sell this invention, including the calculator, as none of the financial backers are identified with a computing or calculating machine business.

This electronic keyboard is covered by patents in all the western free countries of the world, along with Japan.

We are enclosing specifications of this device which we suggest you have your engineers examine.

The prototype can be displayed at our laboratories in Connecticut, or it can be brought to an agreeable geographic point for demonstration.

We solicit your interest in our most revolutionary keyboard input and automatic calculator.

Sincerely,

ADVERTISERS ENGRAVING COMPANY

R.B. Stapleton
President.

RBS:kh
Enc.

R. M. STARRETT CORPORATION

SPECIFICATIONS FOR

"LIVE TEN KEY" ADDING / CALCULATING MACHINES

SIZE:

Desk Space - $9\frac{1}{2}$ inches wide by 16 inches long.
Platen Center - $7\frac{1}{2}$ inches from desk surface.

CAPACITY:

13 column list.
13 column total.
5-digit multiplier for multiplication.
10-digit quotient for division.

SPEED:

Main Shaft - 170 c.p.m. Rotary action.
Keyboard Actuation Shaft - 220 r.p.m.

KEYBOARD:

The keyboard has a standard arrangement of zero and 1 to 9 digit keys.

The digit keys (0 to 9) transmit their respective values to the storage unit by electro-mechanical means thus providing a 3 ounce key touch and a rapid rate (13 per second) of digit value storage. This is an innovation in adding machine design and eliminates the conventional pin basket and related components.

In addition, it has a vastly simplified arrangement of functional keys. Seven keys and one lever enable the operator to control the machine throughout all the functions of addition, subtraction, multiplication, division, non-adding correction, totaling, and sub-totaling.

See Keyboard Diagram attached.

PAPER ADVANCE AND FEED:

Single space between item entries and automatic double space after totals and sub-totals.

TYPE PRINTING:

Six (6) numerals per inch - horizontal spacing.
Single vertical space-up equals .131 of one inch.

CORRECTION KEY:

Motorized correction key rapidly eliminates the entire incorrect entry.

"LIVE TEN KEY" ADDING / CALCULATING MACHINES

SIGNALS:

All negative entries and results are printed in red.
All positive entries and results are printed in black.
See description below.

Subtract Entry: red - (i.e. red minus sign)
Negative Sub-total: red S with minus sign above it.
Negative Total: red T with minus sign above it.
Positive Sub-total: black S
Positive Total: black T
Negative Multiplicand: rod X (i.e. red multiplication sign)
Positive Multiplicand: black X (i.e. black multiplication sign)
Divisor: red divide sign (÷)

NON-ADD KEY:

Permits printing of folio or identification numbers on paper tape.

REPEAT KEY:

Repeat items, either negative or positive, are entered into the machine by simply holding down the add bar or subtract bar for required number of repeat cycles.

CREDIT BALANCE:

Credit Balance is entirely automatic. Machine receives and computes negative and positive items; holds and prints the correct Credit Balance negatively, or the true overcharge positively.

PRINTING:

A new method of quiet printing has been developed for this machine. It is the reverse of the conventional pressure print in that the type bars are pressured against the platen instead of the platen pressuring against the type bars. This method eliminates the possibility of eventual carriage distortion which results in light printing of the most used low order figures.

RIBBON:

In shifting from Black to Red instead of the ribbon, the ribbon spools are lifted, thus assuring a straight and taut ribbon at all times.

MULTIPLICATION AND DIVISION OPERATIONS:

On the basic Adder model, multiplication is accomplished by entering the multiplicand in the keyboard, setting the automatic step-over lever and then using the Add Key as a multiply control bar.

On the full printing calculator, multiplication and division are performed simply and directly by using what we call the "1-2-3 System"

"LIVE TEN KEY" ADDING / CALCULATING MACHINES

MULTIPLICATION AND DIVISION OPERATIONS (concluded):

Multiplication: For example, the operator wishes to multiply 123 by 321.

Step 1. The operator enters the multiplicand figure "123" into the 10-key keyboard and then depresses multiplicand key, M-1.

Step 2. The operator next enters the multiplier figure "321" into the 10-key keyboard and then depresses multiplier key, M-2.

At this point the paper tape shows the multiplicand figure with the multiplier figure directly below it, together with the multiplication sign, exactly as multiplication is taught in grade school.

Step 3. The operator now moves the equals (=) lever forward and the machine automatically takes over and works out the problem, printing the product figure (answer) on the tape directly below the previously printed multiplicand and multiplier figures.

See Keyboard Diagram attached.

Division: For example, let us assume the problem to be calculated is 1326 by 35.

Step 1. The operator enters the dividend figure "1326" into the 10-key keyboard and then depresses the dividend key, D-1.

Step 2. The operator next enters the divisor figure "35" into the 10-key keyboard and then depresses the divisor key, D-2

At this point the paper tape shows the dividend figure with the divisor figure directly under it, in red, together with the division sign.

Step 3. The operator now moves the equals (=) lever forward and the machine automatically computes the problem and then prints the quotient figure (answer) and the remainder, if any, directly below the previously printed dividend and divisor figures.

See Keyboard Diagram attached.

"LIVE TEN KEY" ADDING / CALCULATING MACHINES

GENERAL CONSTRUCTION AND SERVICEABILITY:

The machine is completely modular or sectional in design, all major sections, ten in all, comprising the basic Adder, being easily and quickly removable for either replacement or repair. For example, the Credit Balance unit is a self-contained mechanism secured in position by eight screws which can be removed or installed into a completely assembled machine. This illustrates how free from entanglement this section is from the basic machine as a whole. The modular design concept has been carried through and applied to the Multiplication and Division mechanisms which, also, are essentially self-contained units within the limits of practical design.

There are a minimum of adjustments [fifty (50) in the basic machine] and all are of the eccentric or elongated slot type of adjustment.

All functions and effects achieved are accomplished by the simplest and most direct mechanical approach.

SUMMARY:

(1) The general keyboard concept of light touch and rapid figure entry and storage is specifically designed to meet the requirements of modern business. At this point we wish to emphasize the difference between the STARRETT ADDING/CALCULATORS and all other presently marketed adding and calculating machines, both domestic and foreign, because of its new concept high-speed electrified imput keyboard. This new concept permits an unprecedented simplification in basic design throughout all the primary functions of adding, subtracting, non-adding, credit balance, etc., etc., and with this new imput keyboard device we have been able to achieve fully automatic keyboard multiplication and division in a logical and straight forward manner, with an economy of parts heretofore unknown in the business machine industry. The new keyboard imput design virtually eliminates the traditional and cumbersome pin basket construction which has been the only digit storage device in use in all adding, multiplying and accounting machines for more than half a century.

The conventional pin basket and its related mechanisms perform only two (2) functions, namely (a) the storage and (b) the column indexing of numerical entries. In the STARRETT KEYBOARD, the thirteen (13) storage wheels with their attendant frames perform not only these same two functions of storing and indexing but in addition become the sensing mechansim for the basic functions of addition, subtraction, sub-totaling, totaling, and automatic credit balance, and further provide the "memory" for the simplest method of keyboard Multiplication and Division ever conceived.

"LIVE TEN KEY" ADDING / CALCULATING MACHINES

SUMMARY (concluded):

(2) The overall concept employing economy of parts, simplicity of part design, ease of assembly and sectional construction results in a low manufacturing cost which is readily competitive with equipment produced overseas.

(3) Most importantly, the present Adding/Calculator Foundation Design permits expansion and inclusion of the following variety of upper-market features which can be added as attachments rather than as complex built in features:

(A) Multiple zeros device which, on the STARRETT machine, because of the novel imput device and keyboard may be expanded to permit multiple entry of any number from zero through nine.
(B) Jump space after total.
(C) Recall of memory item
(D) Recall of Multiplicand or Dividend factors for use in chain problems.
(E) Expansion of present 13 columnar printing capacity to 20 printing columns or more, to compete with the non-printing high capacity rotary calculators.

(4) The STARRETT KEYBOARD was originally designed as a high speed device for electronic computers and, obviously therefore, lends itself to various data processing systems in addition to the basic standard Adding and Calculating machines or combinations of such as demonstrated in our models. Furthe applications of thie imput device that we have already explored are:

(A) Rapid handling of numerical factors by means of punched tape or signal generation.
(B) Simplification of the general construction of multi-register Posting machines by mechanical expansion of the quotient wheel assembly and extension of the present imput wheel shaft.

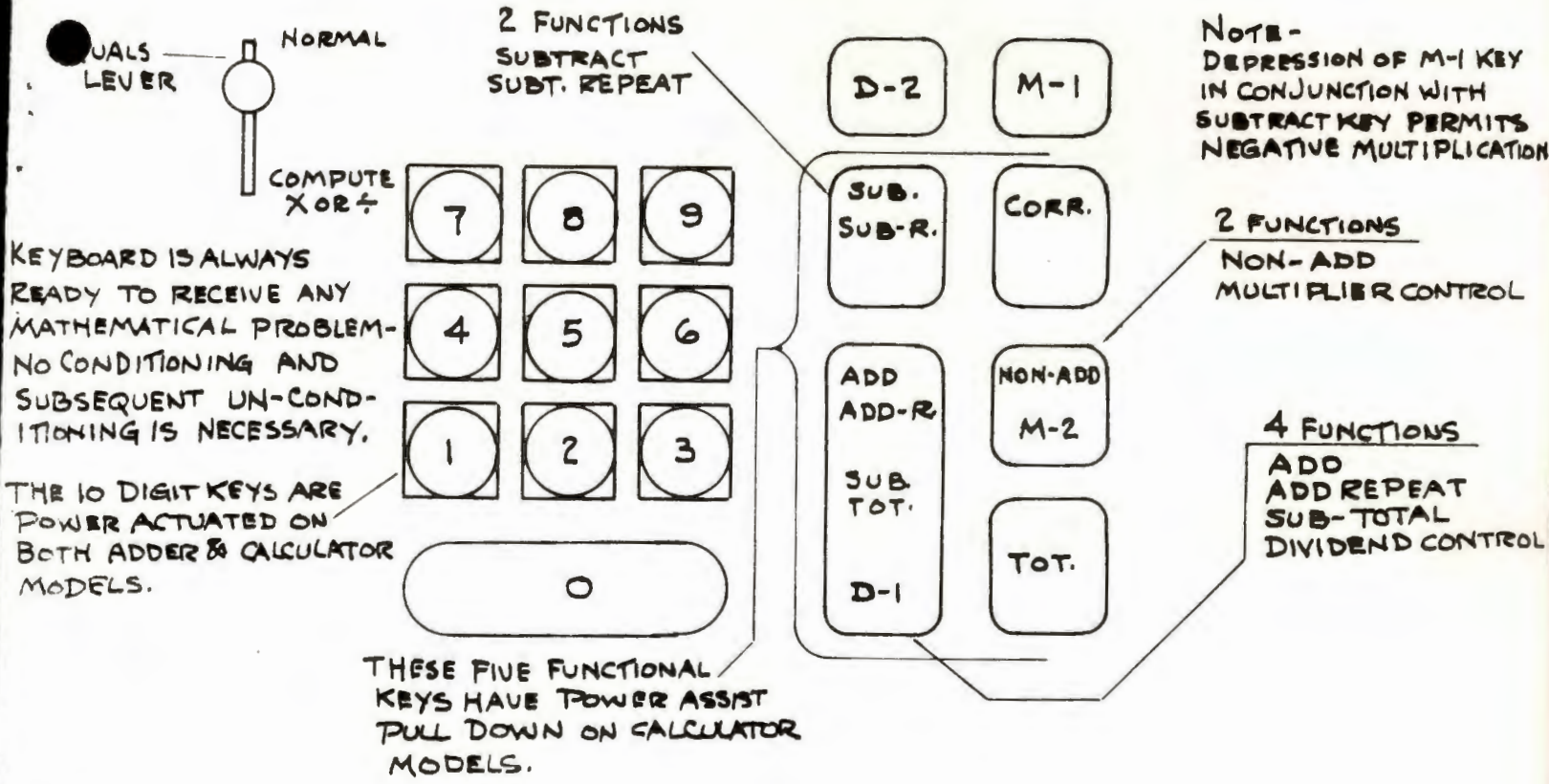
It may be noted here that Posting machines are more than ever required as peripheral equipment in the greatly expanding electronic computer systems.

(C) It can be applied to cash registers.
(D) It is adaptable to postage metering machines.
(E) It can be applied to print out numerical data from remotely positioned counting devices.

(5) Our development program in its present stage offers the following marketable product-line:

1. A full featured, heavy duty Adding machine with subtraction, credit balance, automatic step-over, and up to thirteen (13) columns List and Total capacity.
2. A fully automatic keyboard Multiplier.
3. A fully automatic printing Calculator.

KEYBOARD DIAGRAM OF FULL AUTOMATIC KEYBOARD PRINTING CALCULATOR (MULTIPLIER AND DIVIDER)

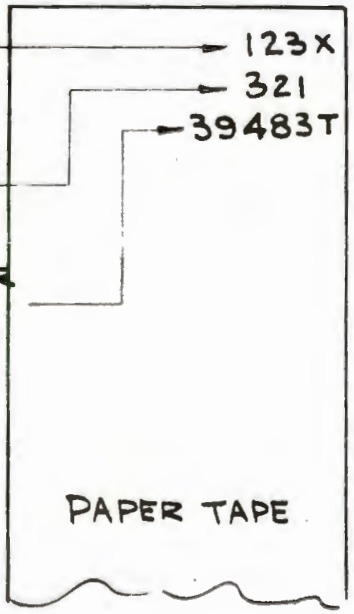


AUTOMATIC KEYBOARD MULTIPLICATION ACCOMPLISHED AS FOLLOWS:-

STEP(1) ENTER MULTIPLICAND IN KEYBOARD & DEPRESS M-1 KEY.

STEP(2) ENTER MULTIPLIER IN KEYBOARD & DEPRESS M-2 KEY.

STEP (3) MOVE EQUALS LEVER FORWARD. MACHINE SOLVES PROBLEM & PRINTS PRODUCT. (OPTIONAL TOTAL OR SUB-TOTAL)

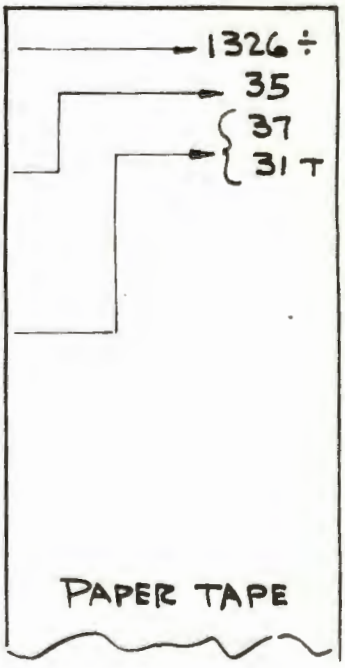


AUTOMATIC KEYBOARD DIVISION ACCOMPLISHED AS FOLLOWS:-

STEP(1) ENTER DIVIDEND IN KEYBOARD & DEPRESS D-1 KEY.

STEP(2) ENTER DIVISOR IN KEYBOARD & DEPRESS D-2 KEY.

STEP(3) MOVE EQUALS LEVER FORWARD. MACHINE SOLVES PROBLEM & PRINTS QUOTIENT AND REMAINDER.



After any operation x or ÷ Lever and machine reverts to normal add & sub. position automatically.

AMERICAN RADIO COMPANY
Incorporated

445 PARK AVENUE
NEW YORK, N. Y. 10022
212 - PLAZA 3-5046
CABLES: AMRADIOCOM

November 23, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

I wish to thank you for your letter dated November 19. I have immediately contacted my associates, but I think you will hear directly from them in the very near future.

Again please accept my thanks for giving us the opportunity to study this question. Hoping to see you soon, I remain

Sincerely yours,

A. Haase-Dubosc
President

AHD/lb

BULL CORPORATION OF AMERICA

1 EAST 57TH STREET - NEW YORK, N. Y. 10022

CABLE ADDRESS BUGLI - NEW YORK

TELEPHONE: PLAZA 2-6250

HUGH S. JACKSON
EXECUTIVE VICE PRESIDENT

20 November 1965
HSJ-6026

Mr. Ken E. Olson, President
Digital Equipment Corporation
146 Main Street
Maynard, Mass.

Dear Mr. Olson:

Bull Corporation of America is the sales subsidiary in the United States of Cie. Bull General Electric, Paris, France. We are engaged in selling computer peripherals and other punch card equipment manufactured by our parent company to American computer system manufacturers. We are able to offer these equipments at favorable OEM prices.

We are currently marketing a variety of peripheral card readers and punchers, printers, as well as key punchers, verifiers, sorters, and other special units. Some of these equipments are already being used by other American computer manufacturers; we believe they might also be of interest to Digital Equipment Corporation.

We would very much appreciate having an opportunity to present our equipment to your specialists, and to discuss your technical requirements in detail. To determine if you are agreeable with this , and to learn the names of the persons at Digital Equipment Corporation we should contact, I propose to call your office during the early part of next week.

We look forward to renewing our contacts with Digital Equipment Corporation.

Yours very truly,

H. S. Jackson

HSJ-hr

Copy to Dick Mazzarese.

SPACE ASTRONOMY LABORATORY
THE UNIVERSITY OF WISCONSIN
35 N. PARK STREET
MADISON, WISCONSIN 53706

November 19, 1965

President
DEC
Maynard, Mass.

Dear Sir:

We have had the pleasure of owning and operating your PDP-8 for a period of about six months, and we are very happy with it. However, after spending many frustrating hours in vain attempts to run simple FORTRAN programs; after failing to get revisions of the system when available, and after getting them, finding them to be no improvement at all; and after being told the system specs are not even correct; it is my considered opinion that you would be better off not claiming a FORTRAN system at all!!

Very sincerely yours,

Terrel L. Miedaner

Terrel L. Miedaner
Project Assistant

TLM/ba

HARRIS-INTERTYPE CORPORATION

55 PUBLIC SQUARE · CLEVELAND, OHIO 44113

GEORGE S. DIVELY
CHAIRMAN

November 19, 1965

Mr. K. H. Olsen, President
Digital Equipment Corp.
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

It was nice meeting you at General Doriot's party.

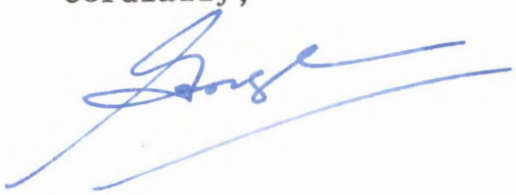
Following through on our discussion, enclosed is a copy of our recent annual report. I understand you will send me yours at your convenience.

I feel it might be well worthwhile to get better acquainted and to know more about our respective operations and corporate objectives.

Should you be in the Cleveland area before my next trip to Boston, just give me or Ben Harrison, our Vice President for Corporate Development, or Paul Brentlinger, our Manager of Industrial Development, a call and we will arrange a visit.

In the meantime, I expect to be in Florida next week, but hope to be in touch with you or Doriot before too long.

Cordially,



Electronics

A McGraw-Hill Publication
McGraw-Hill Building, Copley Square, Boston, Mass. 02116
Telephone: [617] CO 2-1160

November 16, 1965

Dear Mr. Olsen:

On Thursday, December 2, Mr. C. C. Randolph, publisher of Electronics magazine, will be host to a small group of Boston-area electronics industry executives at a luncheon in the Kent Room of the Sheraton-Boston Hotel starting at 12 noon.

Mr. Randolph will be accompanied by Mr. Lewis H. Young, editor of Electronics.

The informal gathering will give the publisher and editor an opportunity to meet some of the industry leaders in the area. Mr. Young will report on his recent visit to electronics centers in Japan and the Far East. Both he and Mr. Randolph will have at their disposal the European marketing information gathered by the magazine's market research manager, Mr. Milton Drake, during his seven-week tour of seven European countries.

There will be no formal presentation. The emphasis will be on give-and-take chats about the state of the industry, here and abroad.

I hope very much that you will be able to join this gathering. In a few days, my assistant in the Boston office, Miss Robin Carlson, will call you on the phone to receive your answer. I hope it will be yes.

Cordially,

Thomas Maguire

Thomas Maguire
Regional Editor

TM:G

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts 01754

XEROX

P. O. Box 1540
Rochester, New York 14603

November 9, 1965

Mr. Kenneth Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

Just a note to thank you sir for taking the time to see me last week.

I certainly enjoyed my visit with you and was extremely impressed with the progress of your fine company.

I hope that if I can ever be of any help to you, you will feel free to call on me.

Once again, thank you for your time.

Sincerely,

Wallace M. Juechter
Manager, Product Planning

WMJ/ma

P. S. I just received the information on your PDP-8 Typesetting Systems, as well as the data on Inforonics, Inc.

It was very thoughtful of you to take the time to send them to me. Thanks again.

DEPARTMENT OF ELECTRICAL ENGINEERING

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

WASHINGTON UNIVERSITY

SAINT LOUIS, MISSOURI 63130

November 8, 1965

Mr. Kenneth Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

It was certainly a pleasure to have you attend the dedication of the Engineering Computer Laboratory, and visit the other facilities at Washington University. I am enclosing a clipping from one of our local newspapers relating to the dedication which I thought you might enjoy, even though they mistook the two of us.

Mort Ruderman has forwarded the "DEC blue" to me, and we are putting it to good use. The PDP-5, as you probably saw and heard, is creating quite an impact on our students and faculty, and the use is increasing every week.

Your gift is sincerely appreciated, and as we indicated, very helpful at this time because it can be counted toward our matching Ford grant. The development office is quite pleased with this.

I enjoyed meeting you, and hope you will visit us again whenever you are in the vicinity.

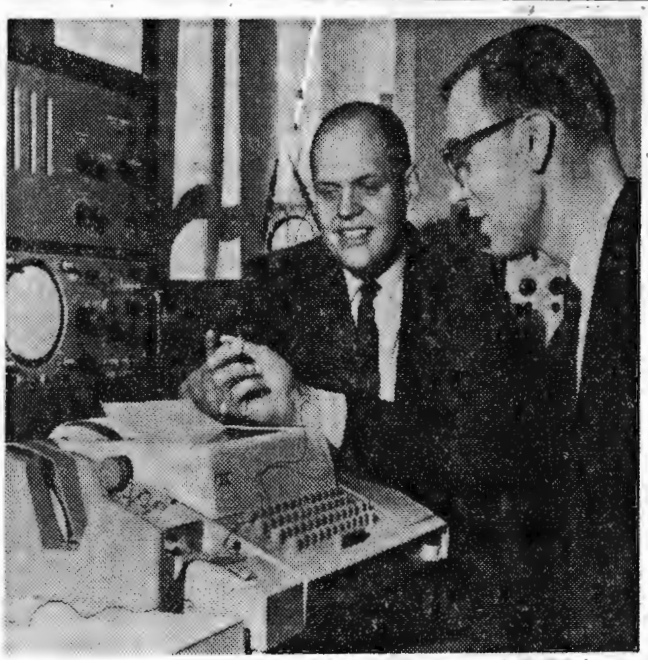
Sincerely,

Donald F. Wann

Donald F. Wann
Director, Engineering
Computer Laboratory

DFW/k

St. Louis Globe-Democrat Tues., Oct. 19, 1965



NEW ENGINEERING COMPUTER LABORATORY is dedicated at Washington University by Donald F. Wann (left), associate professor of electrical engineering and director of the lab, and Kenneth Olsen, president of the Digital Equipment Corporation, of Maynard, Mass., which donated a digital computer. The laboratory will be used to solve problems and analyze data as well as for research on the improvement of communication between computers and those who use them. —Globe-Democrat Photo

TRANSOLVE INC., 53 COMMERCIAL WHARF, BOSTON, MASSACHUSETTS 02110, TEL. 523-0532 AREA 617
FORMERLY: HERBERT SONTHOFF & CO. / INNOVATION INC.

November 4, 1965

Mr. Kenneth H. Olsen
Digital Equipment Corp.
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

Everyone is more inventive and creative than he thinks he is. If the creative potential of your people can be made actual, your company will obviously benefit in efficiency, sounder growth, higher profits.

In the last 10 years science has developed methods (especially in the defense and aerospace industries) which have proven effective in increasing the practical creative and innovative potential of people who make up companies such as yours. At the same time these methods greatly improve individual and group problem-solving skills. These methods - of which value engineering is one...but only one - can be applied to any operating problem from the most specific to the most comprehensive.

The need for creative action systems is becoming daily more urgent for industry and I have expanded my services into this area. Transolve, Inc. specializes in the installation of such systems.

We offer a 4-hour demonstration workshop at the nominal fee of $100 - which gives you and your group an idea of the immediate usefulness of such systems. It entails no further obligation. We would be happy to conduct such a workshop in your company.

Sincerely,

TRANSOLVE, INC.

Herbert Sonthoff
Corporate Partner and President

HS:jl

864 - 6900

The Massachusetts Institute of Technology

cordially invites you to attend a special

conference for New England executives

The Computer Utility

October 19,1965, at 1:00 p.m.

Kresge Auditorium

Cambridge, Massachusetts

Cancelled 10/18/65 pa

R.S.V.P.

The Computer Utility

A SPECIAL CONFERENCE
FOR NEW ENGLAND EXECUTIVES
KRESGE AUDITORIUM
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY
TUESDAY, OCTOBER 19, 1965

Experience with multiple-access computer systems at M.I.T. and elsewhere indicates that it is both feasible and economical to consider the utility concept of computer service for business corporations. This development holds far-reaching implications for the firm and for the business executive.

Much of a company's clerical operations and many managerial functions can be executed directly on a multiple-access computer system so that at all times an up-to-date description of the state of the company might exist within the computer. In addition to serving as a timely information source for the executive, the computer utility could provide facilities for a variety of company operations such as accounting, inventory control, and production scheduling. The benefits to internal communication and operating efficiency can be substantial, and a computer utility serving many companies could also provide improved communication between business interests, both corporate and individual.

The computer utility may represent special opportunities for certain firms; there is already a clear indication of the emergence of a potentially important new industry for New England.

Based primarily on the Project MAC experience of the last two years, this conference will report to New England executives on the problems and opportunities associated with the computer utility, with emphasis on its implications for top corporate management.

The Computer Utility

1:00 p.m.
Registration
Kresge Auditorium

1:30 p.m.
Welcome
Dr. Julius A. Stratton
President of M.I.T.

A report on two years of operating experience with the MAC multiple-access computer system. A demonstration from a remote terminal will be included. The implications for future, commercial systems and the advantages and disadvantages to both operator and user of the utility concept of computer service will be emphasized.
Professor Robert M. Fano

Intermission

A panel discussion to explore the implications of the computer utility for the firm and for the executive. After a brief presentation by each panelist, Professor Fano will moderate an open discussion period with the audience.
Professor Fernando J. Corbato
Mr. Charles W. Adams
Dr. Jordan J. Baruch
Professor Jay W. Forrester
Professor Charles A. Myers

5:00 p.m.
Adjournment

5:30 p.m.
Reception
President's House
111 Memorial Drive, Cambridge

7:00 p.m.
Dinner
Faculty Club, 6th Floor, Sloan Building
50 Memorial Drive, Cambridge

Address
Dr. James R. Killian, Jr.
Chairman of the M.I.T. Corporation

ROBERT M. FANO

Professor Fano has long been concerned with interdisciplinary teaching and research in the fields of information processing and transmission, and, as Director of Project MAC, has been instrumental in the conception and implementation of the MAC approach at M.I.T. Born in Torino, Italy, Professor Fano came to this country in 1939. He became a teaching assistant at M.I.T. in 1941 and served as a member of the staff of the Radiation Laboratory during World War II. After receiving his Sc. D. in 1947, he was appointed an Assistant Professor in the Department of Electrical Engineering, and in 1962 he was one of five faculty to be honored by being named a Ford Professor of Engineering. Professor Fano is the author of the book *Transmission of Information,* the co-author of two text books on electromagnetic theory, and has written numerous papers in the fields of communications, information theory, and electromagnetism.

CHARLES W. ADAMS

From 1947 to 1955, as both a student and faculty member, Mr. Adams was closely associated with M.I.T.'s early efforts in the area of electronic digital computation. He became a member of the M.I.T. Digital Computer Laboratory in 1947 and was named head of scientific and engineering computation in 1949. In 1952, as an Assistant Professor of Electrical Engineering, he organized the first M.I.T. special summer courses dealing with digital computers. After serving as an EDP advisor to the Westinghouse Electric Corporation and the Creole Petroleum Corporation, Mr. Adams in 1959 founded Adams Associates, a computer programming and consulting firm. Mr. Adams is President of Adams Associates and of a subsidiary firm, Keydata Corporation, which this spring demonstrated a computer time-sharing system for making centralized business data processing facilities simultaneously and independently accessible to many remotely-located users — the "utility" concept of computer service.

JORDAN J. BARUCH

Dr. Baruch received S.B. and S.M. degrees in Electrical Engineering and an Sc. D. in Instrumentation, all from M.I.T. From 1948 through 1955, he was an instructor and then an Assistant Professor in Electrical Engineering and since 1955 he has served M.I.T. as a Lecturer in Electrical Instrumentation. Dr. Baruch began his association with Bolt Beranek and Newman in 1949 and when the firm was incorporated in 1953 was named Vice President of Research. He has supervised programs in electronics, servo-mechanisms, bio-medical engineering, and systems research for the company and is currently directing the development of a time-shared, computer-based system which provides facilities for communication, storage, retrieval, and processing of information. The system is particularly designed to automate the information-handling needs of hospitals and an initial installation is both operational and under further development at Massachusetts General Hospital. Over 40 professional papers by Dr. Baruch have been published and he has been granted 10 patents.

FERNANDO J. CORBATO

Dr. Corbato is recognized as one of the country's foremost authorities in the computer field and is responsible for the design and development of the M.I.T. multiple-access computer system. He has played a major role in the M.I.T. Computation Center since its founding in 1956 and now serves the Center as Deputy Director. At present 47 colleges and universities throughout New England participate with M.I.T. in the Center. Dr. Corbato received his B.S. degree from the California Institute of Technology in 1950 and a Ph. D. from M.I.T. in 1956. He was appointed Associate Professor of Electrical Engineering in 1962 and this past July was named Professor in that Department. Dr. Corbato has authored numerous papers and is the co-author of several books, one of which *The Compatible Time-Sharing System: A Programmer's Guide* describes the techniques for using the M.I.T. compatible time-sharing system.

JAY W. FORRESTER

Dr. Forrester directs research and teaching in the new field of industrial dynamics, an experimental, quantitative philosophy for designing corporate structure and policies to achieve an organization's growth and stability objectives. Before becoming Professor of Industrial Management in 1956, Professor Forrester headed Lincoln Laboratory's Digital Computer Division during the years when it guided the military operational planning and technical design of the Air Force SAGE System. While Director of the M.I.T. Digital Computer Laboratory from 1946 to 1951, Professor Forrester was responsible for the design and construction of Whirlwind I, one of the first high-speed digital computers, and invented the magnetic core memory, the random-access, magnetic-storage system used in virtually all present-day computers. Professor Forrester has authored many widely known papers in engineering and management and in 1962 his book *Industrial Dynamics* was selected by the McKinsey Foundation as one of the five most valuable books for executives.

CHARLES A. MYERS

Dr. Myers is Professor of Industrial Relations in both the Alfred P. Sloan School of Management and the Department of Economics and, since 1948, has been Director of the Industrial Relations Section. He became a member of the M.I.T. faculty in 1939 after receiving his Ph. D. from the University of Chicago. Dr. Myers has been an advisor to, and a member of, numerous state and federal committees, commissions, etc. He also has long experience as an arbitrator in labor disputes and as a consultant to industry on labor relations and personnel administration. During the past year, he has particularly addressed his attention to a series of studies being carried on in the Industrial Relations Section on the impact of the computer on management organization and the nature of managerial work. Professor Myers has authored or co-authored 12 books and numerous papers.

M.I.T. INDUSTRIAL LIAISON PROGRAM
MEMBERS IN NEW ENGLAND

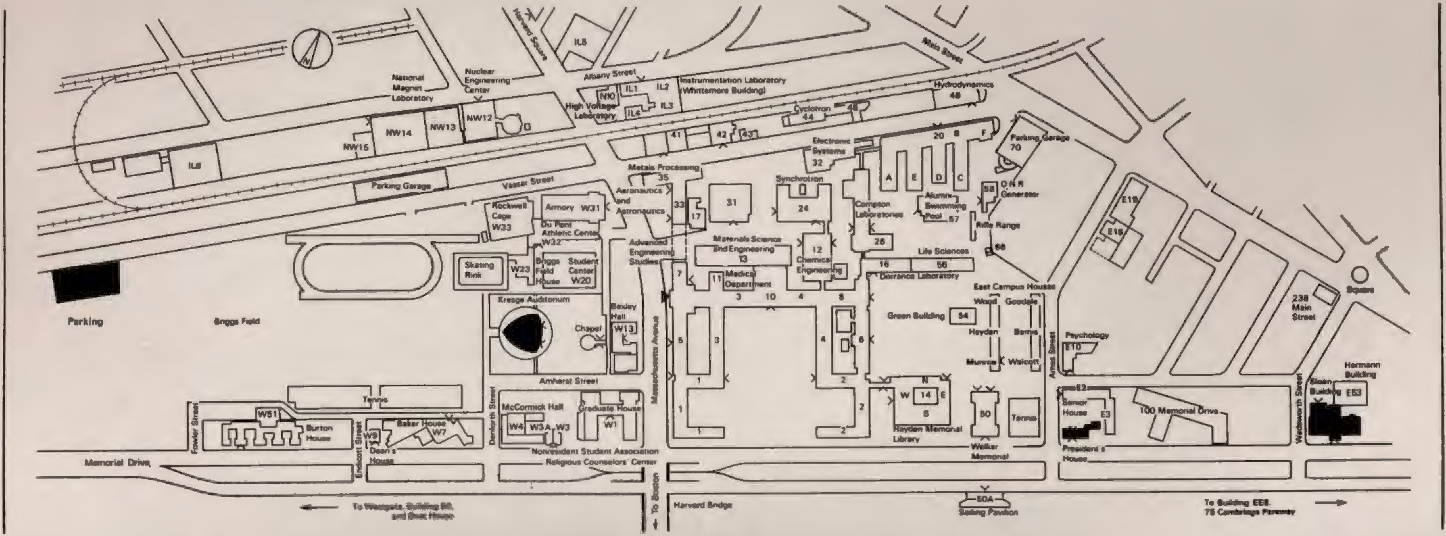
American Optical Company, Avco Corporation, Basic Products Corporation, Cabot Corporation, E. I. du Pont de Nemours & Company, Incorporated, Eastman Kodak Company, The Foxboro Company, General Dynamics Corporation, General Motors Corporation, The Gillette Company, Honeywell, Inc., John Hancock Mutual Life Insurance Company, Kimberly-Clark Corporation, Laboratory for Electronics, Inc., Liberty Mutual Insurance Companies, Arthur D. Little, Inc., Litton Industries, Inc., P. R. Mallory & Co. Inc., Monsanto Company, Northrop Corporation, Norton Company, Owens-Corning Fiberglas Corporation, Chas. Pfizer & Co., Inc., Phelps Dodge Corporation, Radio Corporation of America, Raytheon Company, Sanders Associates, Inc., Sperry Gyroscope Company, Sprague Electric Company, Sylvania Electric Products, Inc., Texas Instruments Incorporated, United Aircraft Corporation, United-Carr Incorporated, United Fruit Company, United Shoe Machinery Corporation.

PARTICIPANTS IN THE M.I.T.
ASSOCIATES PROGRAM

Adage, Inc., Alcorn Combustion Company, American Mutual Liability Insurance Company, American Science and Engineering, Inc., Applied Physics Corporation, Blanchard Machine Company, Bolt Beranek and Newman Inc., Cabot, Cabot & Forbes Company, Cambridge Thermionic Corporation, Dynamics Research Corporation, Edgerton, Germeshausen & Grier, Inc., General Electronic Laboratories, Inc., Globe Newspaper Company, Jackson & Moreland, Inc., Negea Service Corporation, Newport News Shipbuilding and Dry Dock Company, K. J. Quinn & Company, Inc., Simonds Saw and Steel Company, Mr. Earl P. Stevenson (Individual Member), Technical Measurement Corporation, Warren Brothers Company, Washington Engineering Services, Inc., Waters Manufacturing, Inc., Wolf Research and Development Corporation.

A NOTE ABOUT PARKING

Parking will be available, as indicated on the map, in the parking lot at the extreme west end of the campus. There will be shuttle bus service between this parking area and Kresge Auditorium from 1:00 to 1:30 p.m. Buses will also be available for transportation to the reception and dinner and for returning to the parking area at any time.



Harvard Square
IL5
Albany Street
National Magnet Laboratory
Nuclear Engineering Center
Instrumentation Laboratory (Whittemore Building)
IL1
IL2
IL3
IL4
N10
High Voltage Laboratory
Main Street
Hydrodynamics
48
Cyclotron
44
NW12
NW13
NW14
NW15
IL6
41
42
43
Electronic Systems
32
20
B
F
Parking Garage
70
Parking Garage
Vassar Street
Metals Processing
35
Aeronautics and Astronautics
33
17
31
Synchrotron
24
A
E
D
C
Alumni Swimming Pool
57
58
O N R Generator
Compton Laboratories
Rifle Range
26
66
E19
E18
Rockwell Cage
W33
Armory
W31
Du Pont Athletic Center
W32
Advanced Engineering Studies
Materials Science and Engineering
13
12
Chemical Engineering
Life Sciences
16
56
Dorrance Laboratory
Skating Rink
W23
Briggs Field House
Student Center
W20
7
11
Medical Department
East Campus Houses
Wood
Goodale
Kresge Auditorium
Bexley Hall
3
10
4
8
Green Building
54
238 Main Street
Square
Parking
Briggs Field
Chapel
W13
Massachusetts Avenue
5
6
Hayden
Bemis
Munroe
Walcott
Ames Street
Psychology
E10
1
2
N
W
14
E
S
Hayden Memorial Library
Amherst Street
Tennis
E2
Senior House
E3
100 Memorial Drive
Wadsworth Street
Sloan Building
E53
Hermann Building
Fowler Street
W51
Burton House
Endicott Street
W8
Dean's House
Baker House
W7
Danforth Street
McCormick Hall
W4
W3A
W3
Graduate House
W1
50
Walker Memorial
Tennis
President's House
Nonresident Student Association
Religious Counselors' Center
Memorial Drive
To Boston
Harvard Bridge
50A
Sailing Pavilion
To Building E68, 75 Cambridge Parkway

NORTHEASTERN UNIVERSITY

BOSTON 15 • MASSACHUSETTS

COLLEGE OF BUSINESS ADMINISTRATION
CENTER FOR MANAGEMENT DEVELOPMENT
OFFICE OF THE DIRECTOR

October 29, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

As Nick Mazzarese continues his work in the Management Development Program, you may wish to review the enclosed schedule of classes for November.

We have reminded the men of the sacrifice made by their sponsors in relieving them of regular duties for these periods at Andover. Preparation for classes will require the full-time attention and energy of each man while he is with us.

May we ask your help on two points:

1. Please discourage any interruptions even by telephone, except in an emergency.

2. As you know, three written reports are purposely spaced over the six months to help relate class work to matters of current interest in the firm. The enclosed outline of the Capital Budgeting Report is the first of these projects. Perhaps you may wish to go over this with Nick, making any suggestions you feel may help him.

You and Win are, of course, always welcome to visit Andover during these sessions. I hope you will plan to do so when it fits your schedule.

Best wishes,

Dick Santos

Richard J. Santos
Associate Director & Professor

RJS/sac Enc:

NORTHEASTERN UNIVERSITY
Center for Management Development

Schedule of Classes
November 14-20, 1965

Sunday Nov. 14	5:30 Social Hour 6:30 Dinner wives invited 8:00 Discussion His Excellency Gershon Collier Ambassador of Sierra Leone to the United States
Monday Nov. 15	8:30 - 12:00 PRODUCTION - Goetz 1:30 - 5:00 MARKETING - Whitney
Tuesday Nov. 16	8:30 - 12:00 INDUSTRIAL RELATIONS - White 1:30 - 5:00 MARKETING - Whitney 8:00 - CAPITAL BUDGETING - Slavin
Wednesday Nov. 17	8:30 - 12:00 1:30 - 5:00 POLICY & ORGANIZATION - Drucker 6:30 - CAPITAL BUDGETING FOR UTILITIES Burdette Johnson, Treasurer, N.E. Gas & Electric Assoc.
Thursday Nov. 18	8:30 - 5:00 HUMAN RELATIONS - Leavitt
Friday Nov. 19	8:30 - 5:00 HUMAN RELATIONS - Leavitt
Saturday Nov. 20	8:30 - 12:00 HUMAN RELATIONS - Leavitt 12:00 Adjourn

NORTHEASTERN UNIVERSITY
Center for Management Development

Capital Budgeting Report

There is no phase of business management where decisions have a more direct and tangible effect on the long-run welfare of the enterprise than in the area of capital expenditures. For this reason three of the Control sessions are devoted to capital budgeting.

Your company is probably now considering or has recently considered one or more of the following capital investment decisions to increase earnings or to reduce operating costs:

Addition or conversion of equipment or facilities

Equipment replacement vs. reconditioning

Purchase vs. lease of equipment or facilities

Make vs. buy

Alternative sales promotion plans and expenditures

Sale-and-leaseback financing vs. mortgage financing

Renovation or expansion of present facilities

The following project applies the techniques and concepts discussed in class to a practical business problem:

1. In conference with your superior, select a capital expenditure proposal of current interest involving a substantial capital investment and requiring analysis and projections of cash flows over a period of years. Specify alternative(s) to proposal.

2. Prepare a detailed written report quantifying pertinent factors:

   a. Estimated economic life of the proposed equipment, facilities, or activity

   b. Outlays required by the proposal both directly and indirectly for each year

      1. Purchase price, freight, installation
      2. Rearrangement, tooling, operator training

3. Working capital requirements, if any
4. Salvage value of facilities to be replaced
5. Auxiliary equipment required, if any
6. Tax write-offs, if any

c. Earnings or savings expected to result from acceptance of the proposal, for each year

1. Effects on sales or revenues, if any
2. Effects on operating and maintenance costs
3. Effects on income taxes

3. From the above, find the following for the proposal:

a. Payback period
b. Criteria used in your firm to assign priorities to items in the capital budget
c. Present value of cash flows
d. Discounted rate of return on investment

4. Repeat the above steps for each alternative to the proposal.

5. Summarize intangible or immeasurable factors.

6. Choose <u>one</u> of the alternative investments.

Confidential information should be protected by deletion of data that identifies product line, market, or technical specifics of proposal and alternatives.

Professor Slavin will discuss the methods and techniques of comparing capital budgeting alternatives in October and November. The usefulness of these discussions will be enhanced if you select your proposal and complete the initial outline before the November class.

The final report is to be submitted by December 17, 1965. He will return it with his written critique. You will also present your final report for discussion by members of your section. Representatives from each section will then be chosen to present their reports to the entire group at the December session.

Northeastern University

MANAGEMENT DEVELOPMENT PROGRAM 1965 · 1966

Chester C. Bach
Plant Engineer
Atlantic Gelatin
General Foods Corp.

Edward J. Best
General Manager
Spectroscopy Div.
Perkin-Elmer Corp.

Frank H. Botaish
Asst. Production Mgr.
Boston Envelope Co.

William J. Cavanagh
Plant Manager
Buell Industries, Inc.

Frank J. Clark
Asst. Sales Mgr., TiO_2
Cabot Corp.

Vaughn L. Cole
Northern Div. V.P.
Cole's Express

Eugene W. Coleman
Mgr., Value Assurance
Picker X-Ray Corp.

Daniel J. Crowley
Dir. of Engineering
Sylvania Electronic Sys.

Frank A. Depweg
Asst. Chief Engineer
The Bullard Co.

Rolland E. Erbentraut
Manager
Field Engineering Div.
Sperry Gyroscope Co.

William J. Farrisee
Production Manager
Behr-Manning

Dennis K. Feldtmose
Project Construction Mgr.
Stone & Webster Eng. Corp.

Charles R. Field
Market Manager
Union Carbide Corp.

Michael J. Fitzmorris, Jr.
Asst. to V.P. for Eng.
General Radio Co.

Joseph E. Goulart
Mgr., Field Audit Dept.
N.E. Mutual Life Ins. Co.

John S. Graves
Asst. Treasurer
Columbia Gas System
Service Corp.

Charles J. Hanrahan
V.P. & Plant Manager
Kingsbury Machine Tool Corp.

Robert F. Hargraves
Manufacturing Manager
Associated Spring Corp.

Robert G. Hargrove
Mgr., Project Eng.
The Badger Co., Inc.

John C. Herther
Deputy Division Mgr.
Itek Corporation

William R. Kane
Measurement &
Compression Supt.
Algonquin Gas Trans. Co.

Gaynor N. Kelley
Mgr., Industrial Eng.
Perkin - Elmer Corp.

James T. Killeen
Asst. Division Head
Boston Edison Co.

William E. Knight
Chief Mechanical Eng.
Stone & Webster Eng. Corp.

Floyd A. Lamb
Asst. Treasurer
John Hancock Mutual
Life Insurance Co.

Lenard E. Lauer
Manager
U. S. Envelope Co.

Paul R. Libbey
Treasurer
W.S. Libbey Co.

Lendal C. Mahoney
General Manager
Petroleum Division
Dead River Co.

Frank J. Mainolfi
General Supt.
Machine Division
Vermont Marble Co.

Nicholas J. Mazzarese
Computer Sales Mgr.
Digital Equipment Corp.

John F. McKiernan
Asst. District Supt.
of Distribution
Mass. Electric Co.

Travers J. O'Connor
Technical Director
Shanco Plastics &
Chemicals, Inc.

John W. Owen
General Supt.
Wyman-Gordon Co.

John H. Park
Mfg. & Eng. Manager
Maxwell House Div.
General Foods Corp.

George W. Phillips
Financial Analyst
Boston Safe Deposit &
Trust Co.

Alphonsus J. Polackwich
Manufacturing Mgr.
Saco Lowell Shops
Maremont Corp.

Robert J. Read
N.E. District Sales Mgr.
Reichhold Chemicals, Inc.

Archibald Robertson, Jr.
Asst. Branch Mgr.
Brown & Williamson
Tobacco Corporation

Joseph Rosenberg
Division Manager
Tracerlab Division
Lab for Electronics

John B. Savino
Employment Mgr.
Prophylactic Brush Co.

James E. Shugare
Purchasing Agent
Heinemann Elec. Co.

W. Arnold Slight
Asst. to V.P. in
Charge of Sales
Fram Corp.

Lothrop Smith
Transmission Eng. - Data
N.E. Tel. & Tel. Co.

Alvin B. Stambaugh
Chief Accountant
J.E. Baker Co.

Roger G. Stevens
Corp. Training Adm.
Polaroid Corp.

Arthur M. Stickney
Plant Manager
Lawson Mfg. Co.

John Q. Trice
Director, R&D Bldg.
Prod. & Flooring
Johns-Manville Corp.

David L. Turley
Coordinator - Public Rel.
Boston Gas Co.

John J. Vetere
Mgr., Project Coordination
Sylvania Lighting Prod.

Arthur T. Wallace
Personnel Manager
United Parcel Service, Inc.

William G. Westergan
Sales Manager
Union Carbide Corp.

Paul C. Williams
Div. Purchasing Agent
Babcock & Wilcox Co.

Guy Woodman, Jr.
Asst. to Regional Mgr.
Sperry & Hutchinson Co.

Nicholas Zinevich
Dir., Area Maint., N.Y.
Trans World Airlines, Inc.

INDUSTRIAL RESEARCH

OFFICE OF THE PRESIDENT

6 STRAIGHT YEARS OF
ADVERTISING GAINS.
CIRCULATION: 70,000

October 29, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
Module Division
146 Main Street
Maynard, Massachusetts 01754

Dear Mr. Olsen:

You will be pleased to know that one of your company's developments has been selected among the 100 most significant new technical products of the year in the 1965 I·R 100 Competition.

The digital logic laboratory was chosen by the distinguished 30-man Industrial Research Editorial Advisory Board for its uniqueness, importance, and usefulness in science and industry.

The product was selected from more than 800 entries in this third annual competition to identify and to honor the nation's most outstanding scientific and technical innovations.

The product was developed by your Module Division and entered by Joseph D. Nangle, public relations supervisor. A letter has been sent to Mr. Nangle notifying him of the award.

All the I·R 100 winners in your region will be honored at an awards luncheon at the new Sheraton Hotel in Boston on Friday, January 28. A beautifully engraved plaque will be presented to a designated representative of your company.

It is with great pleasure that I invite you and your associates to attend the luncheon, and for you to join me at the head table.

I will forward two complimentary tickets for the luncheon in the near future. Additional tickets are available at $10 each. You may be interested to know that many companies are reserving a table for 10 for their key research, advertising, and other personnel. If you would like to do likewise, I would be pleased to make the necessary arrangements.

All companies are being invited to display their winning products at the luncheon. There will be a cocktail-party reception and review of the displays at 11:30 a.m., followed by the luncheon and awards presentation at 12:30 p.m. The program should be completed by 2:30 p.m. Approximately 75 persons are expected to attend the affair.

Other details concerning the awards luncheon—such as the availability of I·R 100 award labels, reprints, and news announcements—have been sent to Mr. Nangle, as you can see from the enclosed copy.

Detailed announcements of the 1965 I·R 100 Competition results will be made in the December issue of Industrial Research and in a news release that will be released December 1. It would be greatly appreciated if you would withhold any public announcement of your award until that date.

Meanwhile, please let me know whether you will be able to join me at the head table at the awards luncheon on January 28.

Sincerely,

Neil Ruzic

Neil P. Ruzic

P.S. Incidentally, if you and your associates are not receiving Industrial Research regularly, merely complete and return the enclosed circulation qualification cards. I will see that you are added to our circulation list with my compliments.

enclosure

bs

JOHN B. CICCHETTI
ELECTRONICS CONSULTING ENGINEER

87, VIA ADDA
ROME, ITALY
PH. 84.59.151

October 28, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts 01754

Dear Mr. Olsen:

I am an American engineer heading a consulting office in Rome. I already informed you of my services and as you know, my activities include systems work for companies using computers, systems, evaluation, and computer selection. To carry out this work I must keep abreast of all new developments in the field of computers and peripheral equipment.

I should very much appreciate receiving from you the following information:

1. a complete (vertical and horizontal) products line;

2. reports on your computer systems, covering major characteristics, cost, rental, performance, reliability, delivery, operation problems, program library, application, etc.

3. information on your marketing organization, sales and sales-support service, and your business associations in Europe (with detailed information on Italy). If available I would like to receive your latest financial report on European operations, again with details on Italy;

4. a list of computer systems sold in Europe, itemized by customer application and cost (again with detailed information on Italy).

Thank you very much for your assistance. Waiting for your reply I am

Yours very truly,

John B. Cicchetti

JBC/ag

JOHN B. CICCHETTI
ELECTRONICS CONSULTING ENGINEER

87 VIA ADDA
PH. 84.59.161
ROME, ITALY

John B. Cicchetti has had 17 years of experience in the electronics field. Since 1961 he has been in Europe providing consulting services to American, European, and Japanese firms.

He organized and directed SELENIA-RAYTHEON's technical efforts in the area of air defense systems at national and NATO (NADGE) levels. He coordinated SELENIA's technical marketing efforts in air traffic control systems covering Europe (EUROCONTROL), Africa, and Asia.

He guided BREDA-GENERAL PRECISION in marketing and product planning, and acted as counselor to the Managing Director . Due to his action BREDA got into digital systems work and space programs (ELDO, ESRO). He was instrumental in setting up several of BREDA's joint ventures.

He advised HUGHES INTERNATIONAL in Paris and Geneva in the technical information field and in business strategies in Italy . He assisted NIPPON ELECTRIC COMPANY in the area of marketing and sales in Europe.

As a consultant to the AUERBACH CORPORATION in Zurich and The Hague he helped to redirect and extend to Europe their US services in information science and technology, systems design, and application of digital computers.

Prior to 1961 Mr. Cicchetti was in the United States, where he was associated with IBM as an advisory engineer in the Data Systems Division. At ITT he was assistant to the Vice President of Engineering. Earlier he was group head in the Ground Systems Division of the Hughes Aircraft Company, and a lecturer at the University of Southern California. His first position in the United States was that of research fellow in the Microwave Research Institute of the Polytechnic Institute of Brooklyn.

Mr. Cicchetti received a Doctor Degree in Electrical Engineering from the University of Rome in 1948; he did post-graduate studies at the Brooklyn Polytechnic Institute. In both the United States and Europe he was recipient of scholarships, fellowships, and grants which permitted him to pursue various courses and seminars.

Mr. Cicchetti is a member of the American Management Association, the Scientific Research Society of America , and a senior member of the IEEE . He is the author of published technical papers and is also a patent holder and university lecturer. He travelled extensively for business in Canada, Mexico, North Africa, United States, and Western Europe. He has knowledge of English, French, Italian, and Spanish.

HEWLETT-PACKARD COMPANY
1501 PAGE MILL ROAD
PALO ALTO, CALIFORNIA 94304

DAVID PACKARD
CHAIRMAN OF THE BOARD

October 27, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Company
Maynard, Mass.

Dear Mr. Olsen:

Congratulations on the excellent progress that you have made, as evidenced by your 1965 Annual Report.

My invitation is still open. We would be delighted to have you stop in for a visit any time you find it convenient.

Sincerely,

David Packard

DP/mmp

IDEA

THE PATENT, TRADEMARK, AND COPYRIGHT RESEARCH INSTITUTE
OF THE GEORGE WASHINGTON UNIVERSITY • WASHINGTON, D.C., 20006

October 21, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

PLEASE ADDRESS REPLY TO:
ROOM 911, 125 HIGH STREET
BOSTON, MASS. 02110

Dear Mr. Olsen:

The Patent, Trademark, and Copyright Research Institute of the George Washington University is holding a conference in Boston on November 17, 1965. As Chairman of the Advisory Committee of the Institute, I am extending an invitation to you to participate.

I believe the timing for this conference is most opportune. The 175th Anniversary of the Patent System is currently being observed nationally; the Committee of the Judiciary of Congress is reviewing a number of proposed bills directly concerning patent policy; and the Commission established by the President in June is making a vigorous study of the entire patent system. In light of the essentiality of patents and related property to furthering technological change, which, more than any other factor, is responsible for the nation's pre-eminence in technology and this region's economic growth, this conference will offer perspectives on the strengths and weaknesses of the system and on the various proposed alternatives toward its improvement.

As indicated in the enclosed program, the conference is especially designed for both corporate executives and attorneys. I hope it will be convenient for your patent counsel to accompany you to this meeting.

In order to help defray the cost of the dinner, there will be a charge of six dollars per person. There will be no charge for attending the afternoon session and the reception, the expenses of which are being defrayed by the fifteen regional industrial sponsors.

Sincerely,

Earl P. Stevenson

EPS/adm
Enclosures

GRUNTAL & CO.
MEMBERS: NEW YORK STOCK EXCHANGE • AMERICAN STOCK EXCHANGE
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NEW YORK 4, NEW YORK

BRANCH OFFICES
BALTIMORE
NEW HAVEN
NEW YORK

TELEPHONE HANOVER 2-5220
CABLE ADDRESSES
GRUNLILIEN, NEWYORK
BONDSTOCKS, NEWYORK

October 20, 1965

Mr. Kenneth Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Ken:

The address of the man I spoke to you about in respect to copper supplies is:

Mr. Jules L. Chender, Vice President
Philipp Brothers
Division of Minerals & Chemicals Philipp Corp.
350 Park Avenue
New York, N.Y. 10022
Telephone: PL 2-4000

Best regards,

Walter K. Gutman

WKG:jes

Copy to Mr. Chender

GRUNTAL & CO.
MEMBERS: NEW YORK STOCK EXCHANGE • AMERICAN STOCK EXCHANGE
FIFTY BROADWAY
NEW YORK 4, NEW YORK

BRANCH OFFICES
BALTIMORE
NEW HAVEN
NEW YORK

TELEPHONE HANOVER 2-5220
CABLE ADDRESSES
GRUNLILIEN, NEWYORK
BONDSTOCKS, NEWYORK

October 20, 1965

Mr. Jules L. Chender, Vice President
Philipp Brothers
Division of Minerals & Chemicals Philipp Corp.
350 Park Avenue
New York, N.Y. 10022

Dear Jules:

One of my investments is American Research & Development, which owns almost 70% of Digital Equipment Corporation. Digital is one of the miracle companies of the computer industry which started with a small amount of capital supplied by American Research and from then on has grown from its own retained earnings and the banks. One day I think it will be a public company and those who buy American Research now and are patient will get a worthwhile profit.

However, this is not the reason I am writing to you. Digital's sales are going great guns, but like the king of France who couldn't win the battle because he couldn't get a nail to shoe his horse, Digital's production is being threatened by inadequate copper supplies for certain manufacturers of certain very special parts for their computers. Apparently these sources are not big copper users and are therefore not being readily supplied by the big producers. I told Ken Olsen, president of Digital, that if there is anybody who might solve this problem for them, it would be you, and I therefore sent him your address. I am writing you this so that if he gets in touch with you, you will know what it's about.

Best regards,

Walter K. Gutman

WKG:jes

Copy to Mr. Olsen ✓

DATA-CONTROL SYSTEMS INC.
EAST LIBERTY STREET
DANBURY, CONNECTICUT

October 15, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Ken:

I appreciate very much your note of October 4, 1965, and the enclosed copy of your Annual Report for 1965. It makes pleasant reading and you all deserve hearty congratulations for the outstanding record you are compiling.

Bill Congleton keeps me posted in a rather remote way of your progress and some of our own people have been up recently talking with your Marketing personnel relative to a new product line which we are developing and which will potentially include one of your computers.

Because of our many mutual friends, I have long hoped that you and Harlan might get down to visit with us here in Danbury. I can well understand, though, looking at your business accomplishments, how busy you are. I do believe, however, and I know Bill Congleton shares this belief, that there are many areas of potential mutual interest relating to corporate growth which we might profitably explore. I would like, therefore, to again extend a most cordial invitation to visit with us sometime soon or if that does not appear possible and you would be willing to spend an hour or two in at least philosophical areas of mutual interest, I would be pleased to visit with you sometime when I am in the Boston area.

Cordially yours,

DATA-CONTROL SYSTEMS, INC.

Robert J. Jeffries (N)
Robert J. Jeffries
President

RJJ:n

EDWARD M. KENNEDY
MASSACHUSETTS

United States Senate

WASHINGTON, D.C.

October 15, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

Secretary of Commerce John T. Connor has recently notified me that the Digital Equipment Corporation has been selected to receive the President's E Award for excellence in exporting.

My congratulations to you for receiving this high honor, which reflects not only upon the fine initiatives of your firm, but also upon the progressive and fast-growing industrial development of the Commonwealth.

Sincerely,

Edward M. Kennedy

EMK/sch

WU2 GOVT WASHINGTON DC OCT 15 1247P EDT
KENNETH H OLSEN PRESIDENT
DIGITAL EQUIPMENT CORP MAYNARD MASS

VERY MUCH PLEASED TO HAVE WORD FROM SECRETARY CONNOR OF
THE PRESIDENT'S "E" AWARD TO YOUR COMPANY. CONGRATULATIONS
AND BEST WISHES

CONGRESSMAN PHILIP J PHILBIN

145P CLR

RWU2

Maynard Mass
Oct. 13, 1963

Mr. Kenneth Olsen

Dear Sir;-

Please believe that I am deeply appreciative of the fact that you sent me a delightful letter and a copy of the Digital Annual Report. In your letter you let me know that you are aware of the fact that I am keenly interested in the welfare of my beloved Town. Because I do love Maynard it naturally follows that it pleases me immensely to know that your Company is operating here. You are indeed a progressive and humane Organization. It will undoubtedly interest you to know that a local Lady whom I have known and liked for many years has told me several times that she considers herself fortunate to be in the employe of your Company. She says

that the workers in your local Plant are treated fairly and politely. You surely have expanded tremendously since you became established in our Town. In your letter you said you now have a sizeable number of local people working for you. I feel sure that you will hire many more Maynard people in the future. Because my vocabulary is extremely limited you will undoubtedly find this letter to be extremely uninteresting but you can rest assured that I speak from my heart when I say that Maynard should be and undoubtedly is, proud of the fact that your Digital Company is operating here. Because I am an unimportant man perhaps there isn't much that I can do to help promote your general welfare but I will certainly do all I can

Sincerely,
R. Frank Punch

OFFICE OF THE

TOWN ACCOUNTANT

MUNICIPAL BUILDING

MAYNARD, MASSACHUSETTS 01754

October 13, 1965.

Kenneth H. Olsen, President
Digital Equipment Corporation,
Main Street,
Maynard, Massachusetts.

Dear Sir:

May I express to you my sincere thanks for forwarding me a copy of your Annual Report.

Being interested in the growth of Maynard I found this report informative.

Wishing you continued growth in the future, I am

Very truly yours,

James V. King

Town Accountant

THE CANADIAN CONSULATE GENERAL
AT BOSTON

TOGETHER WITH

THE SAINT JOHN PORT AND INDUSTRIAL
DEVELOPMENT COMMISSION

REQUESTS THE PLEASURE OF YOUR COMPANY

AT

SAINT JOHN BUSINESS DAY

TO BE OBSERVED BY A

RECEPTION AND COCKTAIL PARTY

ON MONDAY, OCTOBER 18th, 1965

BETWEEN 5:30 AND 7:30 P.M.

IN THE COMMONWEALTH ROOM

AT THE SHERATON-BOSTON HOTEL
PRUDENTIAL CENTRE

BOSTON, MASSACHUSETTS

R.S.V.P.
Use Enclosure Card *(See Inner Pages For Details)*

Could not 11/2/65 ech

Here is an opportunity to consider doing business in all of Canada — and particularly Atlantic Canada — the nation's *"new frontier"* for industrial growth and development.

Here is a potential market for your industry that is now being measured in the *many millions of dollars.*

It is with *you — and your industry* — in mind that we extend this invitation to you to join us on this occasion in Boston. Professionally researched information by one of the world's most reputable industrial location consultants* spell out the *advantages of manufacturing, marketing, product distribution, export opportunities* in Atlantic Canada — and specifically at Saint John, New Brunswick.

The Canadian Consulate General and the Saint John Port and Industrial Development Commission extend an invitation to *you — representing your industry* — to meet with us on this occasion.

* Fantus Area Research
Incorporated — New York.

Saint John, New Brunswick is *less than a day in your car from where you are* — only two hours from Boston by air. Traditionally, New Englanders and we in this region of Canada have had very much in common. We are now anxious to further develop these bonds of mutual interest.

We want to demonstrate clearly the *specific advantages and opportunities that await your business* in Atlantic Canada. We believe that the time given to this occasion will prove profitable to you.

We have on hand for your personal use and information researched data on the following subjects — as these *relate to your industry:*

Marketing Projections and Potential
Labour and Industrial Advantages
Transportation and Communication
Raw Product and Assembly Costs
Plant Site and Start-up Costs
Export details into U.S. Markets
. . . and other factors

For a personal appointment telephone the Sheraton-Boston Hotel. Ask for Seward MacDonald, Executive Director of the Commission (Tel.: 236-2000) *or make a notation on the reply card enclosed.*

CABLE ADDRESS / "FRIDEN SAN LEANDRO"

Friden, Inc.
SAN LEANDRO • CALIFORNIA
A SUBSIDIARY OF THE SINGER COMPANY

October 12, 1965

Mr. Kenneth H. Olsen, Pres.
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

It was certainly a pleasure to receive your fine 1965 Annual Report and to note that your company continues to make unusual progress.

As you might imagine, we have spent quite a bit of time and effort since your last visit here in applying integrated circuits to several of our planned new products. If you are planning a trip to the West Coast, I am sure you would find it interesting and we would be most pleased to have you visit us again to discuss some of these developments.

I hope that we can get together again before too long.

Sincerely,

FRIDEN, INC.

Martin H. Dubilier
Executive Vice President

MHD:sk

INTERNATIONAL STUDENTS FELLOWSHIP HOUSE
2131 MASSACHUSETTS AVENUE, N. W.
WASHINGTON, D. C. 20008

TELEPHONE: 667-1887

CABLE ADDRESS: FELLOWSHIP

LORETTA D. PRUETT, DIRECTOR

October 12, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Two years ago I was scheduled to visit your plant with a group of foreign students, but difficulties arose and we were unable to make the trip.

Your secretary suggested that I make this visit November 25th and introduce the foreign students to some real Americans Thanksgiving.

Please have your secretary advise me if this invitation still stands, so the schedule can be worked out.

We are now a non-profit corporation, and we are expanding in our efforts to keep abreast with the increasing number of foreign students in the Nations Capital.

Sincerely yours,

Mrs. Loretta D. Pruett

(Mrs.) Loretta D. Pruett

I called Mrs. Pruett on 10/19 since no one recalled making an appointment with her for this November 25th. She said she had talked with Elsa Newman last year and set this year's date as a tentative date. I told her that Elsa had left the Co. and that no one else would have the time to spend on making accommodations for the students but that if she did bring them up this way we would be glad to show them our facilities. Elsa Carlson

WU3 DL PD WUX WASHINGTON ED OCT 8
KENNETH H OLSEND PRESIDENT
DIGITUL EQUIPMENT CORP MAYNARD MASS

IT IS MY PLEASURE TO ADVISE YOU THAT YOUR FIRM HAS BEEN SELECTED TO RECEIVE THE "PRESIDENT'S E AWARD FOR EXCELLENCE IN EXPORTING" IN RECOGNITION OF OUTSTANDING CONTRIBUTIONS TO THE INCREASE OF U.S. TRADE ABROAD. MY SINCERE CONGRATULATIONS. IN TYEXXX THE NEAR FUTURE A MEMBER OF MY STAFF WILL CONTACT YOU TO ARRANGE AN OFFICIAL ANNOUNCEMENT AND A MUTUALLY AGREEABLE TIME AND PLACE FOR A PRESENTATION CEREMONY TO GIVE YOUR FIRM THE GREATEST POSSIBLE BENEFIT FROM THE HIGH HONOR YOU HAVE EARNED. TO PROVIDE FOR WIDE NEWS COVERAGE OF THE OFFICIAL ANNOUNCEMENT BY THIS DEPARTMENT, I WOULD APPRECIATE IT IF YOU WOULD NOT PUBLICIZE THIS INFORMATION PRIOR TO SUCH ANNOUNCEMENT

JOHN T CONNOR SECRETARY OF COMMERCE

911A

CLR

THE FOXBORO COMPANY

EXECUTIVE OFFICES
NEPONSET AVENUE
FOXBORO, MASS. 02035

October 8, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Thank you for your Annual Report. We too are looking forward to your visiting The Foxboro Company at your earliest convenience.

Sincerely,

W. W. Frymoyer

W. W. Frymoyer
Vice President

WWF:FH

GOLDMAN, SACHS & CO.
75 FEDERAL STREET
BOSTON, MASS. 02110

LIBERTY 2-5430

NEW YORK
CHICAGO
PHILADELPHIA
ST. LOUIS
LOS ANGELES
BALTIMORE
BUFFALO
DETROIT

October 8, 1965

Mr. Kenneth H. Olson, President
Digital Equipment Corporation
Maynard, Massachusetts 01754

Dear Mr. Olson:

Our New York office has just forwarded a copy of your Annual Report for the year ending July 3, 1965, which I am delighted to have. May I extend our congratulations to all of you on this fine report which presents so well the story of your company and its products. I also would like to congratulate you on the excellent increase in sales and hope that this year will prove to be an even better one.

From our past visits you realize I am sure that we would be delighted to work with your company at any time you feel you could make use of our investment banking facilities.

Some time in the near future I would like to stop by and visit with you in order to get up to date on your company.

With best personal regards,

Sincerely yours,

David R. Brooke

THE CARTER'S INK COMPANY

CAMBRIDGE 42, MASSACHUSETTS

OFFICE OF THE PRESIDENT

October 6, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Ken:

Thanks very much for sending me a copy of your Annual Report.

The return on stockholders' equity indicates a mighty fine job and I congratulate you for the good performance. When consideration is given to the backlog of orders, it appears that the future promises splendid profit growth. Indeed, I hope so.

I would enjoy having lunch with you some time, to tell you a bit of our developments, and, hopefully, some of your good management will rub off on me.

Again, my thanks for the report and best wishes to you.

Sincerely,

Nate

N. C. Hubley, Jr.

NCH,Jr./ms

WARD TECHNICAL INSTITUTE
A DIVISION OF THE UNIVERSITY OF HARTFORD

TELEPHONE 522-3034

44 NILES STREET
HARTFORD, CONNECTICUT 06105

Original sent to
Bob Lassen to Landle
10/8 lc

October 6, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Subsidiary of American Research
and Development Corporation
146 Main Street
Meynard, Massachusetts

Dear Mr. Olsen:

We have been advised by representatives of the business machines and computer industry that your projected need for qualified technicians will total 50,000-65,000 by 1970. A recent survey indicates a serious shortage is developing, with a prediction that past needs will double in the next five years as the development, production, and maintenance of computers and business machines expands. This looming shortage must be solved if expanding production is to continue.

In anticipation, six technical institutes, with incentive provided by IBM, have formed a Consortium to provide educational leadership and develop an Electro-Mechanical Curriculum designed to more specifically meet your manpower needs in this field. This new educational curriculum will blend two areas of technical knowledge--electronic and mechanical. It will eliminate the necessity of employing specialists in one field and training them in the other. These technicians will have educational exposure in both, with emphasis on applications covering the entire computer field.

The institutes, Oregon State Technical Institute; New York Community College (City University of New York); Southern Technical Institute (Georgia Institute of Technology); De Vry Technical Institute; Ward Technical Institute (University of Hartford); and the William Hood Dunwoody Industrial Institute, have already received substantial support from IBM. The U. S. Office of Education has indicated serious interest, and the Consortium is negotiating an agreement to obtain Federal assistance in curriculum development and teacher training.

We now seek your help. If we are to meet your expanding needs, the Consortium must be able to accept new institute members and provide them with teaching equipment, experience and administrative assistance.

We want the application of the technologies taught with equipment representative of each manufacturer; therefore, we want to use your equipment. We also want new institute members to represent the kind of schools which have proved their ability to meet your manpower requirements; therefore we want your advice. Lastly, we need funds to support the program development and publicize the opportunities resulting from such education. Only by stimulating outstanding youth to more purposeful efforts can we hope to meet the needs of a highly technical society.

May I hear from you regarding your reaction and who I might contact for further amplification and discussion. The interest already shown stimulates me to suggest meeting with you or your representative as soon as possible. Our combined efforts can, I believe, accomplish far more than we will separately. If education is to meet your needs, the task must be shared jointly by educators and industrial management.

As I am leaving for Europe on November 8, for thirty days, I hope some action can be taken prior to then.

Sincerely,

Douglas M. Fellows

Douglas M. Fellows, Chairman
Consortium to Develop a Curriculum in the Technology of Computers and Business Machines

DMF:mt

DEPARTMENT OF ELECTRICAL ENGINEERING

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

WASHINGTON UNIVERSITY
SAINT LOUIS, MISSOURI 63130

October 1, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

You are cordially invited to attend the dedication of the Engineering Computer Laboratory to be held at 10:00 A. M. on Monday, October 18, 1965, in Urbauer Hall, Room 313.

In addition to the brief dedication ceremonies, there will be an explanation and demonstration of the new computing facilities.

We are looking forward to seeing you on the 18th.

ENGINEERING COMPUTER LABORATORY COMMITTEE

Donald F. Wann, Chairman
William H. Papian
John Zaborszky

DFW:m

S. D. Warren Company

PAPER MANUFACTURERS

89 BROAD STREET, BOSTON, MASSACHUSETTS 02101

October 1, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts 01754

Dear Mr. Olsen:

A few weeks ago you received an invitation to attend a SOUTHWESTERN MAINE luncheon at the Sheraton-Plaza in Boston on Tuesday, October 26th. As general chairman for this affair, I sincerely hope you plan to join with us.

Our purpose is to tell you something about the industrial advantages of southern Maine - why it is a good place to operate, why it is a good place to live, and why it is attractive to technical people and skilled help. Informal southern Maine hospitality will predominate with our famous "lobster" highlighting the menu, and knowing that this is a busy time of the year for all of us, we plan to get you out by 2:30.

In order to facilitate our planning, would you please indicate on the enclosed return card whether or not you can be with us.

I hope you can - and I look forward to meeting you on October 26th.

answ'd no
10/6/65

Yours Cordially,

George Olmsted, Jr.

George Olmsted, Jr.
Chairman of the Board

GO/lg

September 28, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

I wish to thank you for the very fine literature you sent to me describing some of the products that you build. I have leafed through the information and I find it very impressive. I shall study it in detail and pass it on to my associates for their perusal. I also wish to thank you for the sample circuit board you sent with the material.

I am looking forward to visiting your facility sometime in the future, and learning a little bit more about what's happening in the digital equipment field. Any time that we can be of help to you in better understanding the mass production consumer business our door is wide open.

Best personal regards,

Sincerely,

W. B. Scott,
Vice President
of Manufacturing

WBS:em

Sept. 21, '65

Ken Olsen
~~Harlan Anderson~~

Just dropped in
to say "hello." I'm
seeing Dick McQuillan
at Informonics today.
Sorry I missed you.

Licklider

CONSULTANTS IN
RELIABILITY PROGRAMMING
QUALITY COST REDUCTION
QUALITY CONTROL SYSTEMS PLANNING
QUALITY & RELIABILITY ORGANIZATION PLANNING
DATA ANALYSIS, STATISTICAL ENGINEERING
VENDOR CONTROLS
SPECIFICATION & MANUAL WRITING
QUALITY & RELIABILITY MOTIVATION & TRAINING
EXECUTIVE DEVELOPMENT

4 6

rdi

RELIABILITY DYNAMICS INSTITUTE
15 Marian Road, West Acton, Massachusetts - COlonial 3-5519

September 20, 1965

Ken Olsen, President
Digital Equipment Corporation
Maynard, Mass.

Dear Ken:

Thank you for the time and courtesies extended me during my recent visit.

I am very pleased with the report of progress you are making. I'd like to think that in some small way I helped to contribute to your success.

As you know, a consultant's success depends upon his reputation for objectivity, integrity, thoroughness and tact. It's also quite evident that he must build upon his successes.

I was introduced to you by Vic Pomper of H. H. Scott through a letter of recommendation. I'm enclosing a copy of that letter for reference. If you would be willing to provide a similar letter of recommendation and introduction to some of your colleagues I would appreciate it very much.

Thank you in advance for your consideration. I trust that in the not too distant future I may have the pleasure of serving you again.

Sincerely,

Reliability Dynamics Institute
By:

C. Gadzinski
President

gp

H. H. SCOTT, INC.

November 24, 1964

To Whom It May Concern:

There's an old truism that a satisfied customer is the best salesman any product or service can have. I thought you might be interested in an experience we had in improving our quality and reducing our costs through work here by the Reliability Dynamics Institute, who are consultants in quality control and production efficiency.

Scott's name is virtually synonymous with quality, so you may ask why we brought consultants in. The answer is to reduce the price we pay for our quality, for one thing, and to improve this quality, if possible, for another. These people actually helped us do both. Their work is paying off for us many times over anything we paid them, which adds up to a bargain, particularly at this time when catching up with back orders is a real problem because of heavy consumer demand.

I think I'm doing a favor by recommending RDI and I suggested to Chet Gadzinski, their president, that he give you a call to see if you may have any problems in quality improvement and/or cost reduction.

If you have any questions, I'll be glad to give you more information.

Best regards,

V. H. Pomper

V. H. Pomper
Vice President

gp

FOLEY, HOAG & ELIOT
10 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

TELEPHONE 482-1390
AREA CODE 617
CABLE ADDRESS "FOLEYHOAG"

September 14, 1965

Mr. Kenneth Olsen
Digital Equipment Corp.
Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

I would appreciate it if I could have a copy of your most recent annual report and also advice as to whether there have been any new developments in connection with "going public".

Sent 9/17/65

Very truly yours,

Laurence S Fordham/mp

Laurence S. Fordham

LSF:mp

The Diebold Group, Inc.

Management Consultants

430 PARK AVENUE, NEW YORK 22, N. Y., PLAZA 5-0400

September 7, 1965

Dear Mr. Olsen:

Our work with sophisticated manufacturing systems have made us conscious of some important and apparently unnoticed opportunities that exist for the supply of equipment of advanced design. We feel that these end-user needs constitute an opportunity for apparatus and service suppliers that would interest a firm such as yours.

In the course of the last ten years Numerical Control has grown from an experimental phenomenon to the point where it is becoming an important business. It is estimated that sales of Numerically Controlled machine tools will exceed $150 million this year, with the control systems accounting for roughly one-third of this sum.

We have been involved in this business since its inception. During this period of painful growth we have seen many companies enter, and then leave the market. We have also seen the nature of the market change from one with predominantly technical emphasis to one where economic and business considerations are beginning to prevail. The marketing problem is changing from one of promoting an abstract concept to one of selling specific hardware for well defined applications.

We think that Numerical Control presents some unique opportunities today, both for companies entering the market, and for those in the market to improve their positions. We also believe, however, that to be successful each must solve unique marketing problems. success will depend upon finding correct answers to some hard questions, among these:

- What will be the future course of development of N.C.?
  Some manufacturers are again offering control systems utilizing analog tape. Is this practice in the long term?

- Are present marketing practices adequate for N.C. or are they actually hindering growth?

- Should a machine tool manufacturer also build N.C. systems?

- Should control builders go into the machine tool business?
- Did many of the earlier control manufacturers give up too soon?
- What should be the relationship between N. C. systems and computers?
- Are present computers satisfying the needs of N. C. users?
- Is there a market for retrofit systems, and can it be served profitably?
- Is N. C. too closely associated with the machine tool industry? Are major non-metalworking applications being neglected?

We are convinced that the market for Numerical Control has a potential approaching that for computers, which is now a $2 billion business. There are some clear indications that the growth patterns are similar.

If this industry is of interest to you, we are able to provide experienced and knowledgeable guidance. We would be happy to meet with you to acquaint you with our capabilities.

Very truly yours,

Ralph P. Risch

Ralph P. Risch

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
Main Street
Maynard, Massachusetts

BOLT BERANEK AND NEWMAN INC
CONSULTING DEVELOPMENT RESEARCH

50 MOULTON STREET
CAMBRIDGE, MASS. 02138
TELEPHONE (617) 491-1850

7 September 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

I am pleased to invite you to attend a meeting of the New England Regional Chapter of NSIA which covers the vast activities of the Air Force Research and Technology Division.

We would like to give our speakers, Colonel Banker and Lt. Colonel Reed, the opportunity to meet as many of the area's technical and industrial leaders as is possible. You may wish to have one or two top men of your staff attend in addition to yourself. I hope you can come.

Sincerely yours,

Ira Dyer (cl)

Ira Dyer
Vice President

ID:mcl

NATIONAL SECURITY INDUSTRIAL ASSOCIATION

NOTICE

LUNCHEON MEETING

On behalf of the New England Regional Chapter of the National Security Industrial Association, you are cordially invited to attend the following meeting:

Date:	Wednesday, 22 September 1965
Time:	12:00 M - 2:00 P.M.
Place:	Holiday Inn Totten Pond Road Waltham, Massachusetts Exit 48 and 48E on Route 128
Topic:	THE AIR FORCE RESEARCH AND TECHNOLOGY DIVISION, AND ITS LABORATORIES
Speakers:	COLONEL ROBERT D. BANKER Director of Laboratory Resources, Headquarters, Research and Technology Division, Air Force Systems Command LT. COLONEL EDWARD B. REED Chief, Research Procurement Division, Headquarters, Research and Technology Division, Air Force Systems Command
Agenda:	Lunch - 12:00 M - 1:00 P.M. Speakers and Discussion - 1:00 P.M. - 2:00 P.M.

The technical mission of AF RTD, its buying power, and its procurement practices, will be described by Colonel Banker and Lt. Colonel Reed at the September luncheon meeting of the New England Regional Chapter of NSIA. The Research and Technology Division includes the Avionics Laboratory, the Flight Dynamics Laboratory, the Aero Propulsion Laboratory, the Materials Laboratory, and the Systems Engineering Group, all at Wright-Patterson; the Rocket Propulsion Laboratory at Edwards; the Rome Air Development Center at Griffiss; the Weapons Laboratory at Kirtland; and the Directorate of Armament Development at Eglin.

The Nominating Committee will prepare a slate of at least one name for each office to be voted on. Additional nominations may be submitted to the Chairman of the Nominating Committee (Helge Holst, Corporate Counsel of Arthur D. Little, Inc.) by means of a petition signed by the representative of at least three local member companies, up to within 48 hours of the Chapter Meeting.

We would be pleased to have you attend.

Cordially,

William R. Reagan

WRR:jam

To assure an early reservation, please return the stub below with your check for $5.00, covering the luncheon and gratuity.

To: Mr. William Reagan
Marine Systems - Room 11147
Avco Corporation
900 Chelmsford Street
Lowell, Massachusetts

Enclosed check payable to National Security Industrial Association for $_____ which covers ____ reservation(s) for NSIA Luncheon Meeting on 22 September 1965.

Signed: _____

Company: _____

Address: _____

BLAIR AND BUCKLES

TAKE PLEASURE IN ANNOUNCING OUR NEW FIRM NAME

BLAIR BUCKLES & CESARI

RONALD J. ST. ONGE HAS BECOME A SENIOR PARTNER,
ROBERT A. CAHILL, W. HUGO LIEPMANN AND JOHN F. MCKENNA
CONTINUE THEIR ASSOCIATION WITH THE FIRM,
AND CHARLES I. SHERMAN HAS BECOME ASSOCIATED WITH
US IN THE PRACTICE OF PATENT AND TRADEMARK LAW.

500 SUMMER STREET
STAMFORD, CONN.

89 STATE STREET
BOSTON, MASS.

JOHN C. BLAIR
ROBERT A. BUCKLES
ROBERT A. CESARI
RONALD J. ST. ONGE

SEPTEMBER 1, 1965

THE FOXBORO COMPANY

NEPONSET AVENUE
FOXBORO, MASS. 02035

August 31, 1965

Mr. Kenneth Olsen
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

It was very kind of you to spend so much of your time with me on Thursday last week. I thoroughly enjoyed every minute of it. It was very apparent how much of your personal image is imprinted throughout your company.

Won't you pay us a visit at your convenience? If you have the time I would like to have you see the plant at East Bridgewater too. However, just call us up and we will certainly be able to plan a mutually convenient time.

Thanks again.

Sincerely,

W. W. Frymoyer,
Vice President

WWF:FH

P.S. I am enclosing our Annual Report for 1964.

W.W.F.

conductorlab, inc.
continuity in printed circuitry

August 26, 1965

Mr. Kenneth Olson, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olson:

Nearly two years ago we had the pleasure of having you visit Conductorlab. This had to do with an experimental project in which you were personally interested, and involved memory cores and printed wiring. I haven't heard how the experiment turned out from your point of view and am very much interested.

Conductorlab has doubled each year since your visit. We now have a real potential for experimental and development work, and many other abilities which I strongly feel will be of current interest to you personally and possibly as an important adjunct to Digital Equipment Corporation's current and future needs.

We all look forward to the pleasure of having you visit our new facilities. Mr. Warren Abbott, Vice-President Sales, has arranged a tour of our plant to include areas that I feel will be intriguing to you and will call to make arrangements to your convenience.

Sincerely yours,

Charles E. Thibeau
President

CET/js

GROTON, MASSACHUSETTS / Telephone: 617 448-5922
TWX: 617 448-5426

THE RUMRILL COMPANY INC.
ADVERTISING • MARKETING • PUBLIC RELATIONS
ROCHESTER • BUFFALO • UTICA • NEW YORK CITY

PLEASE REPLY TO
1895 MT. HOPE AVENUE
ROCHESTER, NEW YORK 14620
TELEPHONE 716 271-2150

August 19, 1965

Mr. Kenneth H. Olson, President
Digital Equipment Corp.
Maynard, Mass.

Dear Mr. Olson:

To expand still further the skills and services of our own agency, we have, from time to time, explored the possibility of merger with others having a fine client list, a sound and profitable operation, and the type of people who would bring added breadth to our account service.

As a result, our Board of Directors and the Board of Directors of the Charles W. Hoyt Company of New York City have agreed to a merger, subject to the approval of the stockholders of both companies.

Among Hoyt's clients are such fine names as Church & Dwight (Arm & Hammer Baking Soda); Merck & Company; Peugeot Automobiles; Schering Corporation; W. A. Taylor, Division of Hiram Walker; B & M Baked Beans; The Thermos Company; Thomas English Muffins; Wheatena Corporation; and WTS Pharmacraft (Desenex Preparations for Athlete's Foot).

The Hoyt Company bills approximately $8,000,000 and has some 70 people. It provides us added experience and facilities in the marketing of consumer products, particularly beverages and drugs; in broadcast media and production; in market research and advertising research; and will serve as well to augment our creative facilities.

We, in turn, provide the Hoyt Company with our own experience in consumer products, particularly foods, grocery non-food items, hard goods, soft goods, as well as experience in banking, insurance, photographic, agricultural, industrial and trade areas. Both the Hoyts and we believe that this is a natural merger that furthers our aim as a general agency to provide the best in experience and service to both industrial and consumer accounts.

The combined organization will be named The Rumrill-Hoyt Company. Everett Hoyt will be Chairman of the Board; Charles Rumrill, President and Chief Executive Officer. Don Miller will continue as Executive Vice President and General Manager of the New York City operation. Gene Novak will continue as Executive Vice President in charge of creative services. Billings

of Rumrill-Hoyt, including capitalized fees, will be close to $30,000,000, which will place the company among the top 40 advertising agencies in the country. Currently, the Rumrill Company is 65th in size.

Public announcement will be made over the weekend. As you can imagine, during the next few months a number of decisions will be made to integrate the two companies. We will try to keep you posted on developments of special interest. In the meantime, we'll be glad to answer any questions you may have.

Sincerely,

THE RUMRILL COMPANY, INC.

C. L. Rumrill, President

CLR:jev

The National
Shawmut Bank
of Boston

August 18, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Ken:

In your absence, I had a most pleasant visit with Harry Mann last Wednesday. We chatted about his pending move to the Boston area, and the financial aspects of same. I believe we will be able to make his transfer a smooth one, at least financially.

In the remainder of the conversation we directed ourselves to getting acquainted and hit it off quite well, I believe. I found Harry to be a most personable individual and am looking forward to many years of working with him. My initial impression was most favorable.

Obviously we skirted many corporate topics. A timely one was the opening of a Cologne bank account. Your brother Stan had received a letter from the German Manager, requesting that an account be opened at the Deutsche Bank rather than the one suggested by Arnaud de Vitry. Forms were enclosed.

As you will remember, this subject came up some several months ago and we were asked to recommend a banking institution to you. Checking for a European Enterprises Development Ltd. connection, we discovered that the Dresdner Bank was a stockholder. Therefore, forms were obtained from that bank for the opening of an account. We understand these were submitted directly to Dick Mills.

Although the Deutsche Bank is the largest in Germany, Dresdner is not too far behind it in size. With regard to branching activities, they are about comparable in the number of branches throughout Germany. Inasmuch as Dresdner has the A.R. & D. connection, I would like to suggest that the account be opened at Dresdner rather than Deutsche.

I intend to be away on vacation for two weeks starting August 23. In my absence, any one of my associates can assist you with the opening of this account. In the International Department the matter is known to Nigel Godwin, John LaCreta, Carl Smith and Charlie Pabst. In my immediate group, Wilbar Whittemore or Logan Clarke could take care of the details. Please feel free to call any of the gentlemen listed above for assistance, and the opening of the account at Dresdner can be accomplished quite expeditiously.

I trust that you have enjoyed your own vacation, and when I return let's compare notes.

Very truly yours,

Lincoln E. Barber, Jr.
Assistant Vice President

LEB:mjm

LYBRAND, ROSS BROS. & MONTGOMERY

COOPERS & LYBRAND
IN AREAS OF THE WORLD
OUTSIDE THE UNITED STATES

EXECUTIVE OFFICE
60 BROAD STREET
NEW YORK, N.Y. 10004

August 12, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Thank you very much for your letter of August 6.

I talked to Harry Mann earlier this week and know how enthusiastic he is about joining you. I must also write that I am very pleased that you are getting together with Harry because I think you are getting a fine man in many ways.

I have been very enthusiastic about your situation and wish you the very best of good fortune in the future.

Sincerely,

William A. McCulloch

WAMc:ntr

Aug. 11, 1965

Dear Mr. Olsen,

I was reading your interview in Internat'l Science & Technology, and am curious about your statement about engineers. You said what you were doing didn't seem to influence the outside world, and again, you spoke of creativity.

Isn't there a program in M.I.T or any Engineering School of experimentation by the students? If you had a program or contract with the government to build satellites, would you have felt you were helping students be creative?

Thank you

Mildred Bohn

MRS. FLOYD BOHN
4911 Wigton
Houston, Texas 77035

HOUSTON, TEX. 6
AUG 11 PM 1 1965

HELP GOODWILL INDUSTRI
HELP THE HANDICAPPE

Mr. Kenneth H. Olsen
Digital Equipment Corp.
Maynard
Mass. MASS

American Newspaper Publishers Association
ANPA
Research Institute, Inc.
750 Third Avenue, New York, New York 10017
212 YUkon 6-8200

August 10, 1965

Mr. Kenneth H. Olsen
President
Digital Equipment Corporation
Maynard, Mass.

Dear Mr. Olsen:

Thank you very much for your letter of August 5 regarding your exhibit at our trade conference. I am certain that you have only scratched the surface in our business, and you will receive many more benefits because of exhibiting at our meeting. On the other side of the fence, we who have the newspaper business at heart are very much enthused over the contribution that the computer offers to our business.

Thank you.

Sincerely,

Bill

W. D. Rinehart, Director
Production Department

WDR/ee

CIT
PARK SQUARE BUILDING • BOSTON, MASSACHUSETTS 02116
617 HUBBARD 2-6100

August 2, 1965

Mr. K. H. Olsen
Digital Equipment Corp.
12 Maynard Mill
Maynard, Mass.

Dear Mr. Olsen:

As you know, the big events for the metal working industry are the shows to be held in Chicago next month.

To help make your entrance into these two industry-wide shows a little speedier, I have enclosed a pre-registration blank which you will probably want to fill in in advance. Upon payment of the $3.00 registration, the completed form will admit you to the Machine Tool Show as well as the Production Engineering Show where we will have a booth (#502). At this booth, we will conduct a contest which should be of interest to you as an informed executive in the metal working industry and I invite you to stop by and enter it.

As interesting as that may be, however, we know your prime interest in visiting the shows will be to look at and perhaps acquire new machinery and equipment. To that end, we are now, and will be all during the shows, prepared to give you immediate financing facts and figures on any item you may want to buy or lease.

So, if you see what you want, or if you know now, give us the opportunity to quote an attractive financial arrangement suited to your individual business.

Yours truly,

D. E. Kidd

D. E. Kidd
Vice President

aa
enc.

Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

Company_____

RESEARCH PROGRAM ON NEW ENTERPRISE FORMATION AND GROWTH

We are trying to measure the spread of new ideas and technology from M.I.T. and its sponsored laboratories that has occurred by means of the formation of new enterprises. We should like your answers and opinions on this confidential questionnaire. All companies and individuals will be disguised in the final report in order to avoid any chance of recognition.

For statistical purposes we should appreciate your answering all the questions in the sequence in which they are presented.

Your cooperation is essential for the success of our research program.

Thank you.

Edward B. Roberts
Associate Director
M.I.T. Research Program on the Organizational Management of R & D

Research Staff:

Eugene F. Briskman
Dean A. Forseth
Herbert A. Wainer

Elsa - plse fill out for Wm

Section 6 - Growth History

Round off figures to the nearest $1000.

Express as multiples of $1000 if convenient.

Year	1964	1963	1962	1961	1960	1959	1958	1957	1956
Sales breakdown:									
Contracted research $									
Product $	10,5[illegible]	9,982,7[illegible]	6,466,762	3,148,1[illegible]	1,299,799	755,570			
Total $	10,5[illegible]	9,9[illegible]	[illegible]	3,148,[illegible]	[illegible]299,799	755,578			
Income (after tax)	917,430	1,155,[illegible]	867,180	342,893	125,303	112,356			
Total employment	552	443	287	146	70	31			
No. of equivalent full-time professional people in R & D	48	36	22	9	4	2			
Co. financed R & D $	1,311,477	1,190,241	613,549	374,758	186,433	72,476			

Section 7 - Business Operations

36. Did you have any prior experience or close contact with a business before founding this company (father, close friend, etc.)? Explain.

Do you think this has been helpful to you in your new enterprise? Explain.

Corplan ASSOCIATES
CONSULTANTS TO MANAGEMENT

An affiliate of IIT Research Institute

July 30, 1965

Copy of this [illegible]

Mr. Kenneth H. Olsen
Digital Equipment Corporation
Maynard, Massachusetts 01754

Dear Mr. Olsen:

The field of Oceanography has recently been the subject of widespread speculation and will hold unprecedented future potential for some companies. Being a young and emerging field, however, reliable and specific information, of the type required for corporate decisions, is not readily available and requires extensive field work to assemble.

Corplan Associates is proposing a jointly sponsored research program for a group of non-competing companies with related potential interests in the hydrospace field. Since the same basic sources must be consulted for information on a variety of subjects, a jointly sponsored program can serve the requirements of several sponsors at one time but divide the cost of an expensive research program. A group of from five to ten companies at $9700 each will provide for a meaningful research effort. At this writing Wagner Electric Corporation and General Time Corporation have agreed to be sponsors.

The enclosed proposal outlines the details of the study. If you could contact us at the address below, we would welcome the opportunity to sit down and discuss your possible participation.

Very truly yours,

D. W. McCurry

Donald W. McCurry

DWM/sls

KEVIN McLOUGHLIN
250 PARK AVENUE
NEW YORK, N. Y. 10017

July 22, 1965

Mr. Olsen:

I should appreciate your forwarding this to the proper person in your organization.

KEVIN McLOUGHLIN has specialized in developing factory paperwork systems since 1954, when he joined the Advanced Development Department of International Business Machines Corporation, with the specific assignment to investigate the needs of customers for assistance in this area.

A professional consultant since 1946, he returned to that field in 1959, to put into practice the principles and methods that he had developed. He established his own firm in 1961.

From 1941 to 1946 Mr. McLoughlin served as an officer in the United States Navy's Pacific Ocean Fleet. Earlier, he had wide experience in industrial and design engineering, production control and manufacturing. He holds a master's degree in engineering.

His approach provides a new vantage point from which to plan, schedule and control factory operations, and promotes greater skill and coordination in the use of paperwork systems.

The use of this approach reduces in-process inventory and excessive factory cost, improves the record of on-time shipments, and thereby increases operating profits.

* * *

Mr. McLoughlin will be available upon request during the month of August to review your paperwork system, and to outline a plan for improving the results of that system.

There will be no fee charged for this review.

MU 2 - 8347

200 BERKELEY STREET

BOSTON 16, MASSACHUSETTS

July 21, 1965

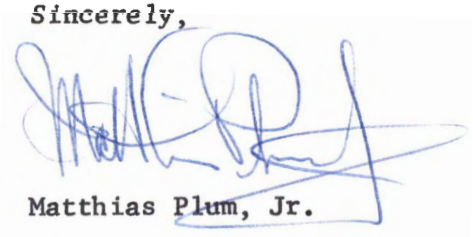
Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Olsen:

Dave and I very much appreciate your taking time out of your busy schedule to fill us in on the operations of Digital Equipment Corporation and to give us some insight into the outlook for the forthcoming year. We were most pleased to learn that things are going well and that the outlook for sales and earnings continues to be encouraging.

Once again, many thanks for your kindness.
Best regards.

Sincerely,



Matthias Plum, Jr.

THE RANK ORGANISATION

RANK DATA SYSTEMS DIVISION

WOODGER ROAD • LONDON W.12 • ENGLAND

TELEGRAMS : RANKPRESTU, LONDON

TELEX : 24408

TELEPHONE : SHEPHERDS BUSH 2050
(S.T.D: 01 SHE 2050)

AIRMAIL

YOUR REF.

DATE 20th July, 1965.

OUR REF. IDB/PKK/1.33.

Mr. K. H. Olsen,
President,
Digital Equipment Corporation,
Main St.,
Maynard,
Mass.
U.S.A.

Dear Mr. Olsen,

May I thank you on behalf of Rudi Biebl and myself for your courtesy to us during our visit to your Organisation on Thursday last.

I need not tell you that we were both most impressed with your Organisation and with the equipment you are manufacturing. My Engineering and Marketing staff will closely study, during the next few days, the literature which I brought back with me from America, and as soon as we have carried out the difficult task of choosing equipment from the wide choice of excellent machines that we have seen, I will get in touch with you again.

We will in any case contact Mr. John Leng here in England.

With best wishes.

Yours sincerely,

I. D. Brotherton.

FRANK C. BROWN & COMPANY
INCORPORATED
Business Surveys · Management Counsel
30 ROCKEFELLER PLAZA · NEW YORK 20, N.Y.
PLAZA 7-5860

NEW YORK
MIAMI
BOSTON

REPLY TO
620 STATLER OFFICE BUILDING
BOSTON 16, MASSACHUSETTS
HANCOCK 6-6677

July 9, 1965

Mr. Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts

Dear Mr. Olsen:

We are pleased to announce that Leonard B. Landall has joined the firm of Frank C. Brown & Company, Inc., as a Staff Consultant.

Mr. Landall brings to our clients a background in the fields of Engineering Management, Project Control, Staffing and Manpower Utilization. He was Assistant to the President, Electronics Corporation of America, a prominent manufacturer of commercial and military infrared sensing and control equipment. He has also served as Manager of Professional Personnel and as Engineering Administrator for Raytheon Company.

He holds a degree in Electrical Engineering from Worcester Polytechnic Institute, has done graduate work in business administration and for several years coordinated Co-operative Education Programs at Northeastern University. He is currently Chairman of the Boston Chapter of the IEEE Engineering Management Group.

With his experience in these fields, Mr. Landall will advise our clients in Engineering Management, organization and control and in the staffing of executive and technical positions.

Sincerely yours,

FRANK C. BROWN & COMPANY, INC.

R P MacPhie

Rodney P. MacPhie
Vice President

RPM/lmt

The National
Shawmut Bank
of Boston

July 6, 1965

Kenneth H. Olsen, President
Digital Equipment Corporation
146 Main St.
Maynard, Mass.

Dear Ken:

This will acknowledge receipt of your progress report for the month of May. Thank you very much for sending along for our confidential files.

Sincerely,

Lincoln E. Barber, Jr.
Assistant Vice President

LEB:btr

DIVISION OF LITTON INDUSTRIES

DATA/LOG DIVISION OF LITTON INDUSTRIES, 343 SANSOME • SAN FRANCISCO 4, CALIFORNIA

AREA 415 • 397-2813 TWX (415) 393-8421

M. L. BRIGHT, GENERAL MANAGER

July 2, 1965

Mr. Kenneth H. Olsen, Pres.
Digital Equipment Corp.
Maynard, Massachusetts

Dear Mr. Olsen:

There is attached a new specification sheet on the Monroe DATA/LOG MC 10-40 and MC 13-80 high speed printers.

New low prices apply to these reliable printers.

And these new low prices are in the specification sheet.

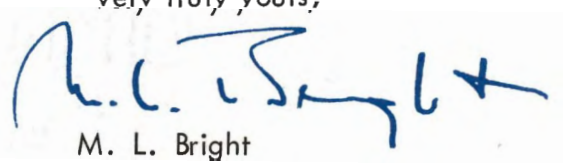
These reductions were made possible by manufacturing economies resulting from increased production requirements.

These are the only printers with a year's warranty and on site maintenance.

We have recently introduced an ultra high speed printer, the MC 4000. It prints full alphanumeric, 32 columns wide, synchronously or asynchronously, at 6000 lines per minute.

If this interests you, let me know. It is quite a printer.

Very truly yours,



MLB:jl

M. L. Bright

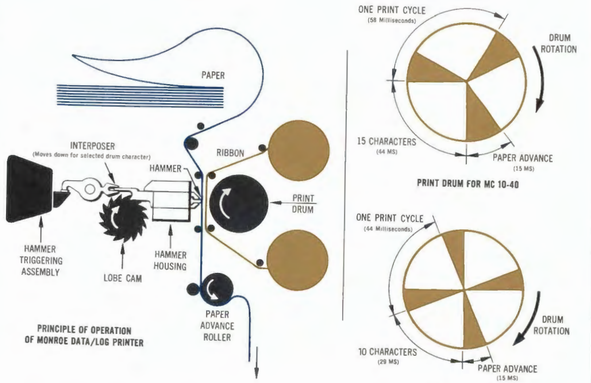
The mechanical principle of the Monroe DATA/LOG MC 10-40 and MC 13-80 is illustrated below.

On the MC 10-40 3 sets of characters are engraved on the surface of a beryllium copper drum, separated by blank areas for paper advance. The Monroe DATA/LOG MC 13-80 has 4 sets of characters around a similar drum. There are 15 characters in each drum column on the MC 10-40 and 10 characters in each column on the MC 13-80.

The print drum rotates continuously past the hammer assembly. To print one line, a printout, one complete set of characters must move past the hammer assembly. Hammers are released as required by an electro magnetic assembly, in response to the bcd information received and the binary counter which senses when each row of print drum characters moves into its printing position.

As each row of characters moves past the hammer heads a 15 lobe constantly rotating cam strikes the hammers which have been selected, driving them against the paper.

The paper is held motionless during the printout and is moved forward 1/6 of an inch after the last row of characters has passed the hammer assembly and is ready for the next printout.



PRINCIPLE OF OPERATION OF MONROE DATA/LOG PRINTER

PRINT DRUM FOR MC 10-40

PRINT DRUM FOR MC 13-80

IMPORTANT: No other printer has this warranty.

WARRANTY: All Monroe DATA/LOG digital printers carry a year's warranty. This warranty is for 12 months or 2,200 hours, whichever occurs first, and could mean 130,000,000 or more print cycles.

Monroe DATA/LOG printers are designed and manufactured to give the utmost reliability under excessively hard usage and extremes of environment. Because of such ruggedness:

Each Monroe DATA/LOG printer carries a full year's warranty and on site maintenance by factory trained personnel.

Following the first year, Monroe DATA/LOG printers can be placed on yearly maintenance contracts.

This service and on site maintenance can be made available from over 400 Monroe offices throughout the world.

It is important to note that this warranty covers on site maintenance.

The warranty on DATA/LOG printers is by Monroe International, Inc.

MONROE DATA/LOG
DIVISION OF LITTON INDUSTRIES

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MONROE
DATA/LOG
PRODUCTS

MC 10-40
MC 13-80

HIGH SPEED DIGITAL PRINTERS

MC 10-40 MC 13-80

MONROE DATA/LOG* HIGH SPEED DIGITAL PRINTERS

THE MONROE DATA/LOG DIGITAL PRINTERS are high speed, sturdy, modular, solid state digital recorders, capable of printing 1040 or 1380 lines per minute. Impressions are made by permanently timed hammers striking through a ribbon and against a constantly revolving character drum. A fixed speed, constantly rotating drive cam impacts all selected hammers, imparting the same velocity to each, thus assuring equal color weight throughout the recording.

MECHANICAL SPECIFICATIONS:

Printing rate:

MC 10-40, 1040 printed lines per minute, 17.3 per second.

MC 13-80, 1380 printed lines per minute, 23 per second.

Printable characters per column:

MC 10-40, 15 printing characters and blank per column. 0 through 9 plus 5 special characters (decimal, +, −, A and B are standard, special symbols available).

MC 13-80, 10 printing characters per column, 0 through 9 (special symbols available).

Column capacity: 4, 8, 12, or 16 columns.

Character pitch: 10 characters per inch.

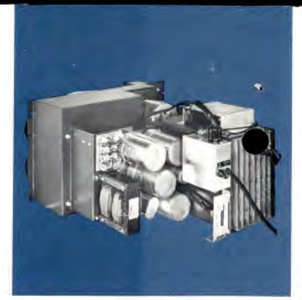
Line spacing: Available with 6 printed lines to the inch. Automatic-programmed line to line spacing.

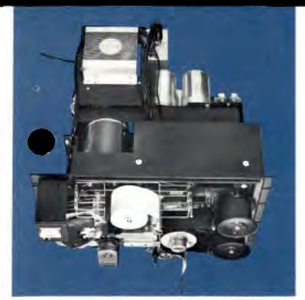
Paper: Roll, 2 1/4 inches wide, 3 1/2 inches in diameter; folded, flat packed, 2 1/4 inches wide, 8 1/2 inches long, 1 1/4 inches high.

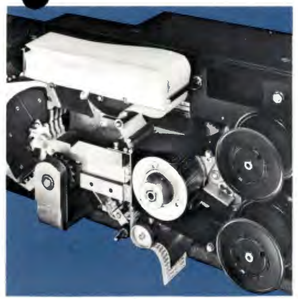
Ribbon: 2 inches wide, 24 yards long, black nylon.

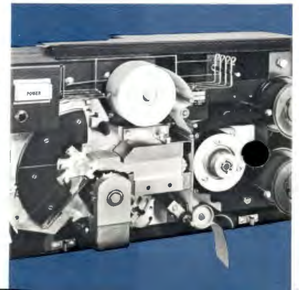
Mounting: Rack. Cabinet for table mount extra. Both models are completely encased, shock mounted and silenced.

*THE WORD DATA/LOG IS REGISTERED IN THE U.S. PATENT OFFICE









Dimensions:

10 1/2 inches high. 19 inches wide.

18 3/4 inches behind panel, 4 1/4 inches in front of panel.

Construction: Modular.

Weight: 77 pounds.

ELECTRICAL SPECIFICATIONS:

Character code: Any four line coded input.

Interface signals:

Character code, received from data source. Options, at no additional cost: Either voltage level can be designated as logical 1. Either 0000 or 1111 can print zero.

OPTIONS		Voltage (Volts)	Current (Milliamperes)	Voltage (Volts)	Current (Milliamperes)
Standard input with or without zero suppression	M1	0 to +20	0.08	−3 to −20	.3 to 2.0
	M2	+1.5 to −20	.08	+6 to +20	.6 to 2.0
	M3	− 4 to −20	zero	+4 to +20	.8 to 4.0
With register, see Option S1:	M2R	0 to ±0.3	0.1	−5 to −10	4.0
	M4R	0 to +18	0.1	−6 to −35	0.25
With register and with zero suppression, Options S1 & S3:	M2RZ	0 to ±0.3	0.1	−5 to −10	4.0

For the MC 10-40 the above character codes must be held, for synchronous operation, for 44 to 58 milliseconds (dependent upon timing of input); and held, for asynchronous operation, for 44 to 101 milliseconds.

For the MC 13-80 the above character codes must be held, for synchronous operation, for 29 to 44 milliseconds (dependent upon timing of input); and held, for asynchronous operation, for 29 to 73 milliseconds.

With either the MC 10-40 or the MC 13-80 using the register, Option S1, data transfer from the source into the register is accomplished in 250 microseconds.

Print command, received from data source. Options, at no additional cost:

O Print (true): negative-going pulse, 5 to 20 volts amplitude, 5 microseconds minimum duration between 90% points, 5 volts per microsecond minimum rate of change of leading edge, data source must accept at least 2 milliamperes.

P Print (true): positive-going pulse, 5 to 20 volts amplitude, 5 microseconds minimum duration between 90% points, 5 volts per microsecond minimum rate of change of leading edge, data source must provide at least 2 milliamperes.

No print (false): for either of the above print commands, any steady level between −50 and +50 volts.

Ready signal, feedback from printer to data source. Options, at no additional cost:

K	Ready: 0 volt Not Ready: +16 volts	20k ohms to ground Through 28k ohms
L	Ready: +16 volts Not Ready: 0 volt	Through 28k ohms 20k ohms to ground
M	Ready: −16 volts Not Ready: 0 volt	Through 28k ohms 20k ohms to ground
N	Ready: 0 volt Not Ready: −16 volts	20k ohms to ground Through 28k ohms

Ambient temperature limit at printed circuit boards: 50° C.

Power input: 95 to 130 volts, 60 cps. Self-contained regulated power supply.

Operation: Characters, accompanied by a print command, are presented bit parallel, column parallel to the printer. Upon receipt of print command the printer will indicate that the characters have been received and are to be held. Upon completion of printing, printer will indicate that characters may be dropped, and that it is ready for the next input. If the next input is obtained within 14 milliseconds, printing will be synchronous and speed will be maximum. If more than 14 milliseconds elapses before the next input, printing will be asynchronous, and speed will be less than maximum.

PRICING SCHEDULE:

DATA/LOG Digital Printers, for either the MC 10-40 or the MC 13-80:

4 column capacity	$1790
8 column capacity	1890
12 column capacity	1980
16 column capacity	2480

Options and Accessories at additional cost:

S1 Register for column parallel, bit parallel, pulse input. Transfer time, 250 microseconds: $150 for each 4 columns of printing positions.

S3 High order zero suppression: $50 for each 4 columns of printing positions.

S4 Full alphanumeric, 55 characters, 347 lines per minute, 6 line coded input, 16 columns of printing positions: $1600 plus 16 columns capacity base printer.

S5 Cabinet for table mount: $90.

S6 Drum with special symbols: one time charge, $220 for first column and $40 for each subsequent column.

S7 Flat pack forms, one part, sufficient for 450,000 printouts, $30 per carton. Two part NCR paper sufficient for 250,000 printouts, $84.

S8 For 220 volt or 110 volt, 50 cycle operation, $120.

S9 The use of 3M Action paper eliminates the need for ribbon and ribbon control mechanism, and $100 is deducted from the above prices.

5% discount on 10 units.

Delivery: 30 to 60 days dependent on options required, f.o.b. Warren, Michigan.

Prices and specifications subject to change without notice.

MONROE DATA/LOG
DIVISION OF LITTON INDUSTRIES

MONROE DATA/LOG DIVISION OF LITTON INDUSTRIES
343 SANSOME STREET • SAN FRANCISCO 94104 • AREA (415) 397-2813 • TWX (415) 393-8421

EASTERN U.S.: DUANE F. NEWTON, SALES MANAGER, DATA/LOG PRINTER PRODUCTS
550 CENTRAL AVENUE, ORANGE, N. J. • AREA (201) ORange 3-6600

SPECIFICATION UC84A