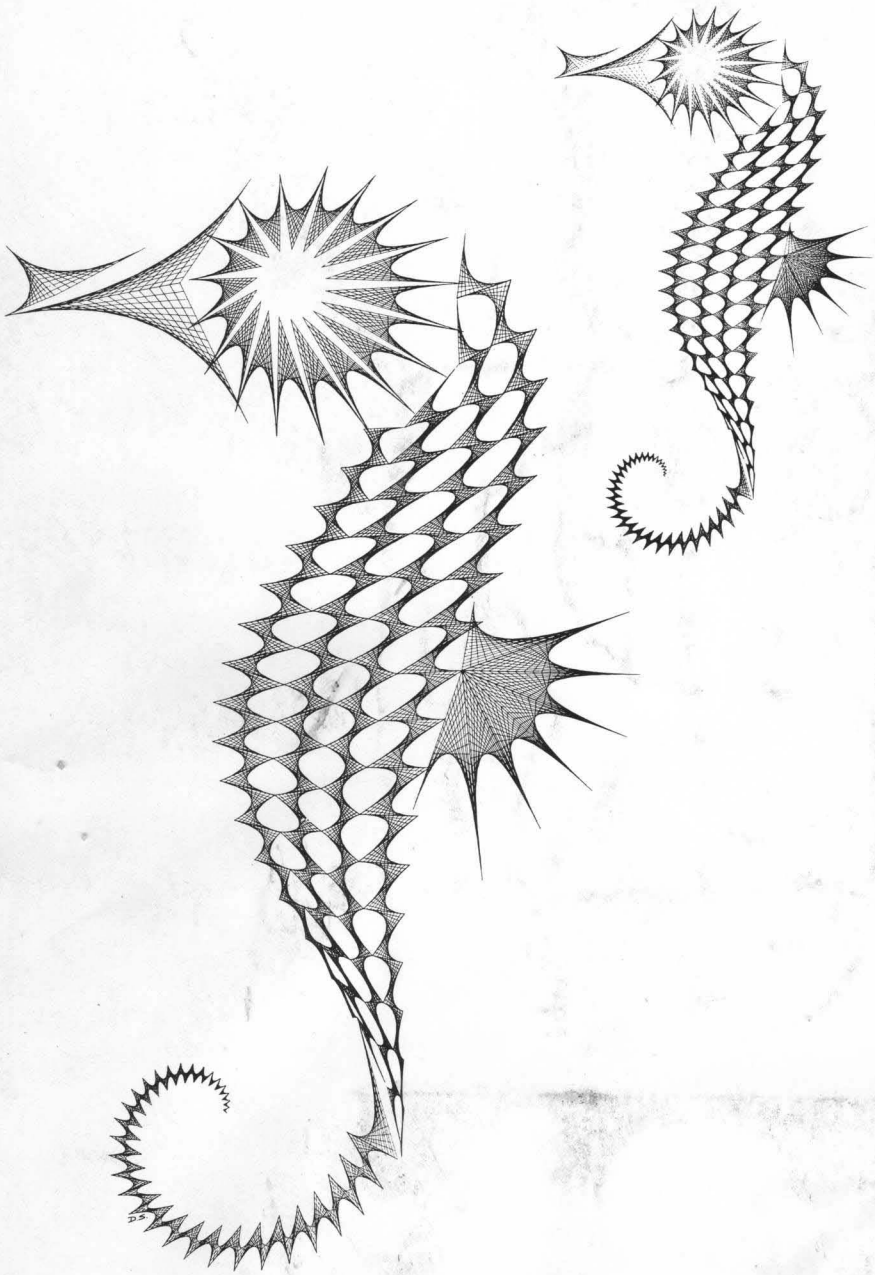
August, 1971

Vol. 20, No. 8

computers and automation



"Seahorses"

9th Annual Computer Art Contest — First Prize

IN THIS ISSUE:

The New York Times and
Computers and Automation
have published a practical guide to the most elusive components in computers and data processing...

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> CHAPIN, Ned / consultant / born: 1927 / educ: PhD, IIT; MBA, Univ of Chicago / entered computer field: 1954 / main interests: applications, business, logic, management, programming, systems, data structures / title: data processing consultant / organization: InfoSci Inc, Box 464, Menlo Park, CA 94025 / publications, honors: 3 books, over 50 papers; member, over 12 associations; CDP; lecturer for ACM / home address: 1190 Bellair Way, Menlo Park, CA 94025

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Vol. 20, No. 8
August, 1971

computers and automation

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Computer Art

Computers and Politics

Computer Professionals

Computers Abroad

Computers and Education

Computers, Science, and Assassinations

Forum and Golden Trumpet

Computers and Puzzles

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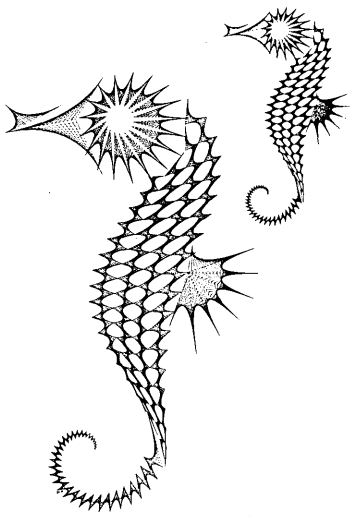

Front Cover Picture

"Sea Horses", winner of the first prize in C&A's Ninth Annual Computer Art Contest, was produced by a FORTRAN program run on a GE 425 computer and plotted on a Calcomp 30" drum plotter. The artist is Derby Scanlon, Phoenix, Arizona. For more information, see page 8.

Departments

Key

[A] – Article
[C] – Monthly Column
[E] – Editorial
[F] – Forum
[G] – Golden Trumpet
[NT] – Not Technical
[R] – Reference Information
[T] – Technical Computer Information

Learner-Controlled Computer-Assisted Instruction

From the point of view of teaching, there seem to be nowadays three basically different kinds of computer-assisted instruction:

1. *Single-path programmed instruction.* In this mode (Mode 1) a teacher or educational psychologist (current jargon, "instructional expert") decides just what the student should learn at each step or unit. These decisions may (or may not) be confirmed with a professor or scholar (current jargon, "subject-matter expert"). The sequence of steps then becomes a computer program; and all that the student can do with this program (in this mode) is to go through the programmed instruction faster or slower than the average student.
2. *Several-path programmed instruction.* In this mode (Mode 2) the teacher allows the student to choose from time to time (or actually shunts the student) between several tracks: usually a fast track, a slow track, and an average track. In Mode 1 every unit in the fast track is present in the average track, and every unit in the average track is present in the slow track. But in Mode 2 each of the tracks may contain some units not present in either of the other two tracks.
3. *Infinitely many paths of learning within an interactive computer program.* In this mode (Mode 3) for each topic, the student explores and learns interactively, until he knows what is to be learned under that topic. The computer program responds interactively – gives him answers, questions, hints, responses of many kinds, etc., which a student may want or may need. The computer-assisted instructional program may fill one or more roles such as: teacher, author, personal tutor, drill sergeant, calculating prodigy, experimenting prodigy, memory prodigy, scorekeeper, guide, philosopher, and friend. We can call this mode (Mode 3) *learner-controlled computer assisted instruction.*

How shall we decide which one of these modes is best (current jargon: "optimal")?

In order to decide which one is best, we need to consider a number of scales along which we might measure from one extreme of very poor to the other extreme of very good. These might include:

- Amount of time required to learn
- Cost
- Satisfaction and enjoyment for the student
- Ease of teaching for the teacher
- Motivation of the student, from very weak or absent to very strong or overwhelming
- Quality of the knowledge or training learned

Then the best method of instruction would be that which:

- Takes almost no time
- Takes almost no effort
- Costs almost nothing
- Is very enjoyable and satisfying
- Is extremely easy for the teacher to teach
- Provides great motivation
- Produces complete knowledge or skill

In fact, there actually exist some learning processes that are extremely good in all these respects, such as:

- Learning to eat free ice cream
- Learning to take deep breaths of fresh mountain air

With the arrival of cheap computing power, the third mode – infinitely many paths of learning – is, it seems to me, very likely to produce an enormous jump in the use and profitability of computer-assisted instruction in all subjects.

1. *Time.* The time required to learn can be adapted to the particular student – his nature and his needs.
2. *Effort.* As a result of the interaction between the student and the learner-controlled computer-assisted instruction in a computer program, the effort by the student can be lessened and lessened.
3. *Cost.* In days to come, the use of an entire minicomputer to teach, will cost less than 15 cents an hour.
4. *Enjoyment.* The satisfaction and the enjoyment for the student can become greater and greater. Driving a computer will become as much fun as driving a car.
5. *Ease of Teaching.* Almost all the teacher will have to do is to arrange a computer program which can deal with all the natural questions and natural troubles of a student. The program should respond sensibly to each of the student's needs or wants as it is expressed. For a few years, the computer will usually need letters or digits typed on a keyboard – but later on the computer will respond to letters or digits spoken.
6. *Motivation.* As H. G. Wells said in "Men Like Gods", his novel of a fine Utopia, "curiosity, the play impulse" will become the great motivator.
7. *Quality of Learning.* The student finishes his learning – not when the course period comes to an end – but when he has attained the goals of an adequate or a complete knowledge.

In years to come, in fact, the results of learner-controlled computer-assisted instruction may be placed among the most important of all benefits derived from computers.

Edmund C. Berkeley

Edmund C. Berkeley
EDITOR

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14. Project Management System IV (PMS IV) (OS) A powerful program in modular form for resource allocation, cost analysis and precedence input analysis.

15. Requirements Planning (OS) A materials management system designed to determine what, when and how much to order in a manner that will help minimize component inventories.

16. Shop Floor Control (OS, DOS) Establishes and maintains a shop order data base and provides for shop order release, status and inquiry for timely management decisions.

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18. General Purpose Simulation System V (GPSS V) (OS, DOS) Powerful, easy-to-use tool for simulating the behavior of systems in engineering and management sciences.

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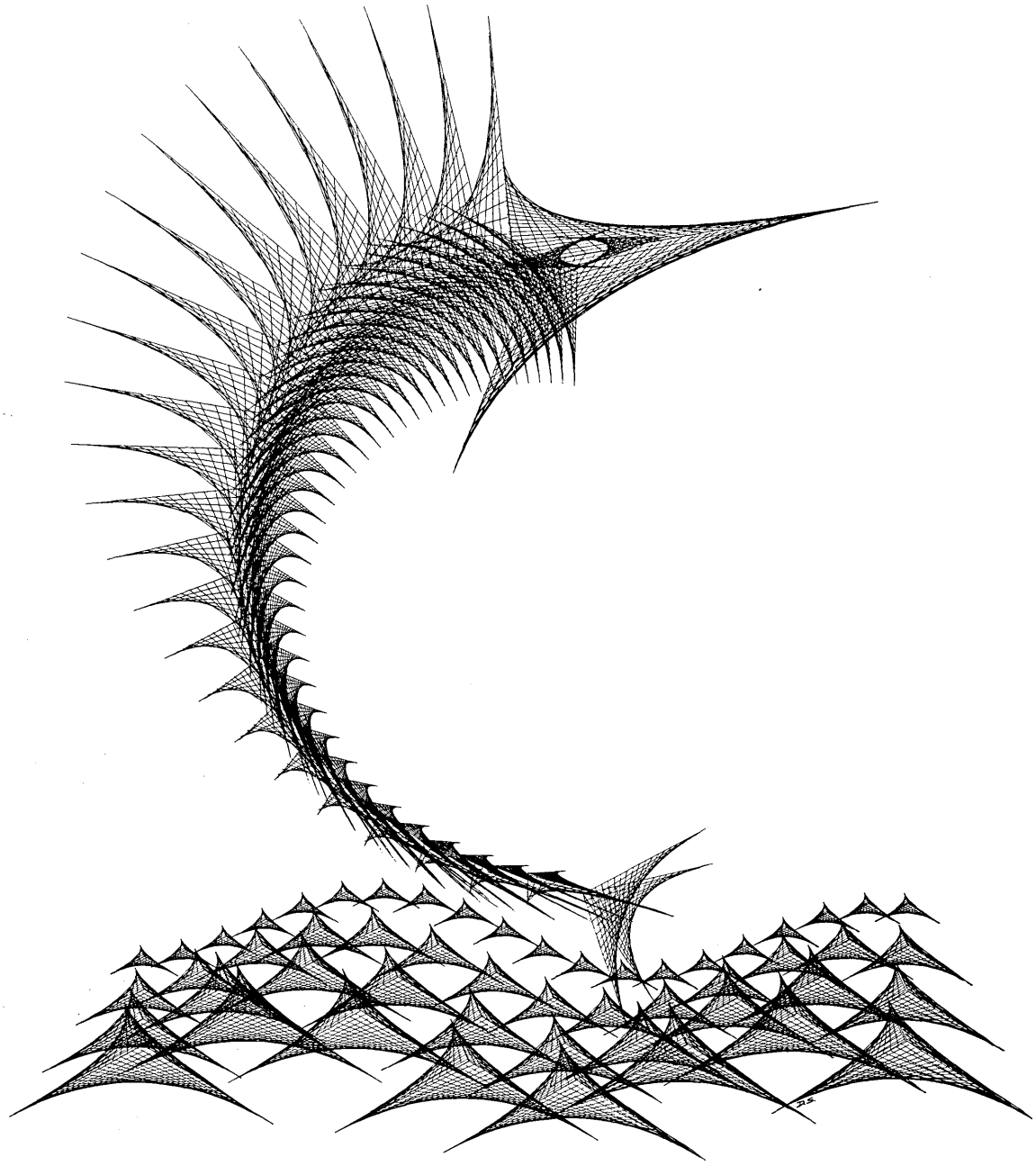
NINTH ANNUAL COMPUTER ART CONTEST



SAILFISH
— Derby Scanlon (U. S. A.)

The first prize in our 1971 Computer Art Contest has been awarded to Derby Scanlon, 1308 W. Whitton Ave., Phoenix, Arizona 85013. The winning entry, "Sea Horses", has been published on the front cover of this issue. Two other entries, "Sailfish" and "Phoenix", are shown above and on the page opposite.

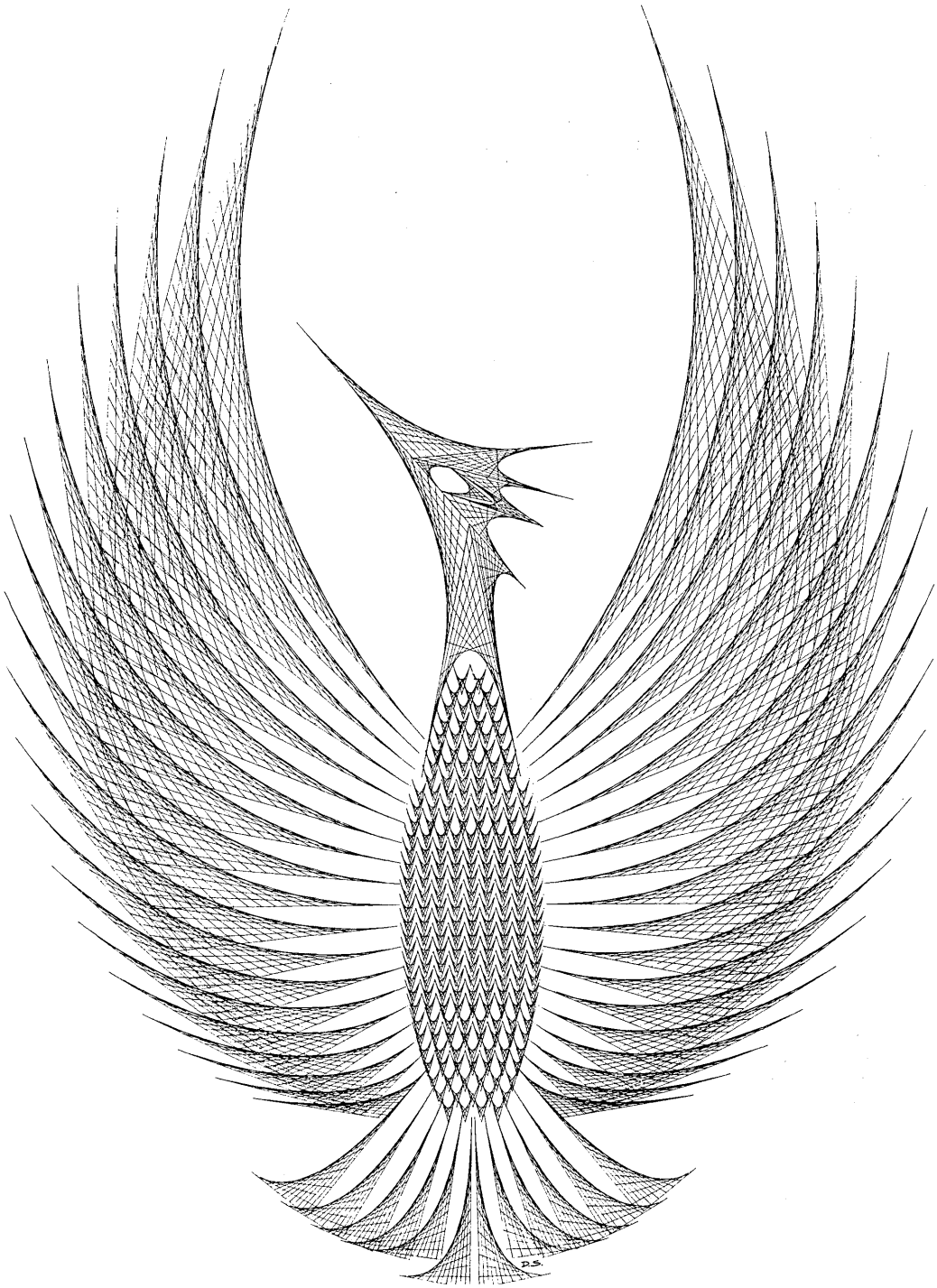
"Sea Horses", "Sailfish" and "Phoenix" were created using a common building block, which was computed and plotted by one subroutine. The main programs for the three designs control the sizes and positions of the building blocks. Almost all of each figure is described mathematically, with only a few portions positioned manually (via data cards). The plots were produced by FORTRAN programs run on a GE 425 computer, and plotted on a Calcomp 30" drum plotter.

The computer art on the pages which follow receives honorable mention. For some of the drawings, the explanation is obvious or can be inferred easily; for others,

explanations are given. In a number of cases, the computer and the peripheral equipment which produced the drawings have not been specified as much as we would like, because that information did not reach us by the close of the contest. We would, of course, like to identify the equipment that produced the art. Supplementary information of this kind should be sent to us for publication in a future issue.

The response to our Ninth Annual Computer Art Contest was very good. We received over 140 computer drawings from all over the world — Czechoslovakia, France, Holland, Japan, Sweden, and the United States. We are grateful to all those persons who sent us entries. A complete alphabetical listing of the names and addresses of all persons who submitted entries in this year's contest appears on the last page of the art section of this issue. In forthcoming issues of Computers and Automation, we hope to publish some of the drawings we were not able to include in this issue.

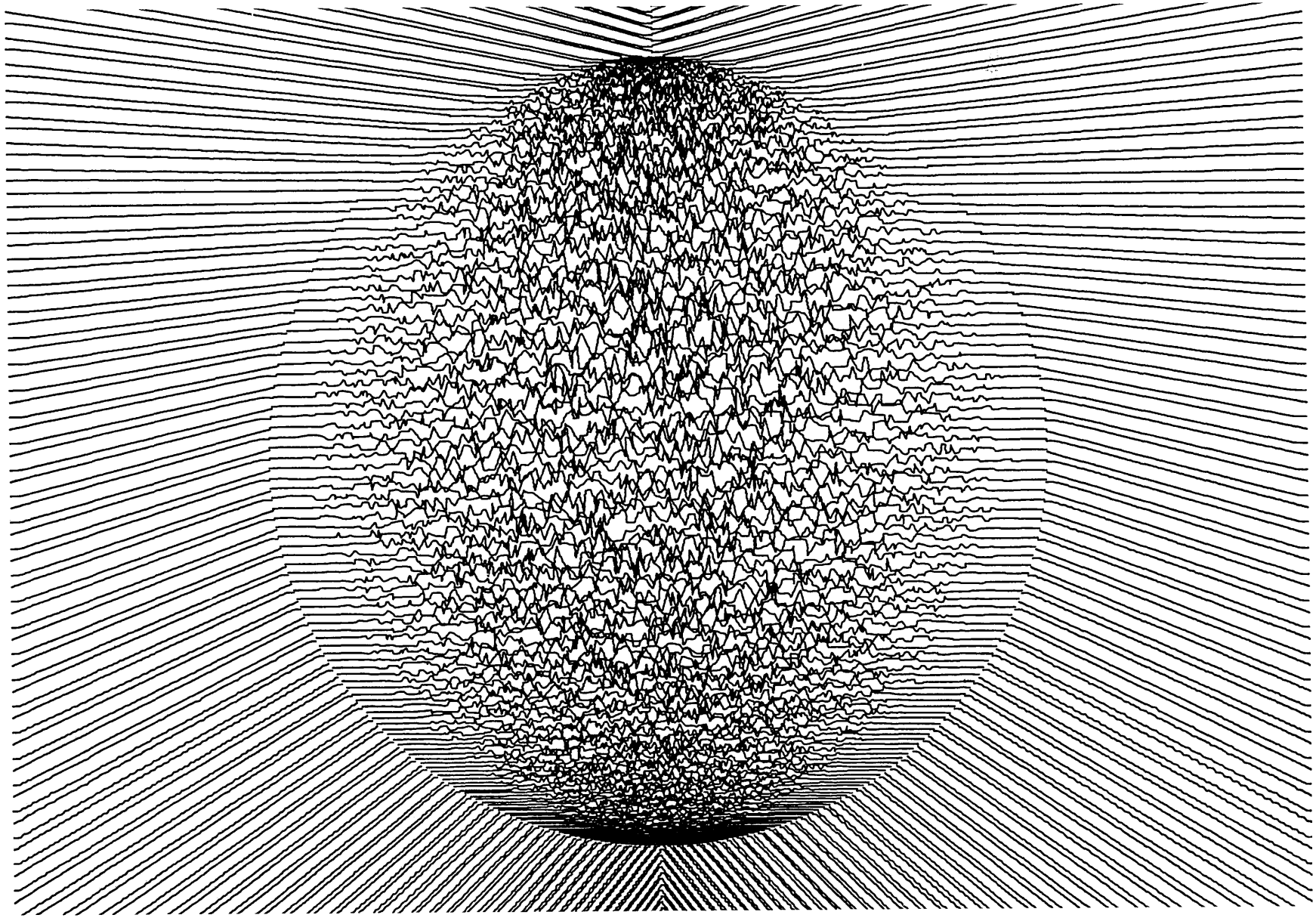
For August, 1972, we plan our Tenth Annual Computer Art Contest, and we cordially invite contributions of computer art from all our readers and others who are interested in computer art.



PHOENIX
— Derby Scanlon
(U. S. A.)

DEER AND FIR TREES
— Grace C. Hertlein (U. S. A.)

This drawing is a by-product from a course entitled "Computer-Graphics as an Art Form", taught by Miss Grace C. Hertlein, Assistant Professor, Computer Science Dept., Chico State College, Chico, California.

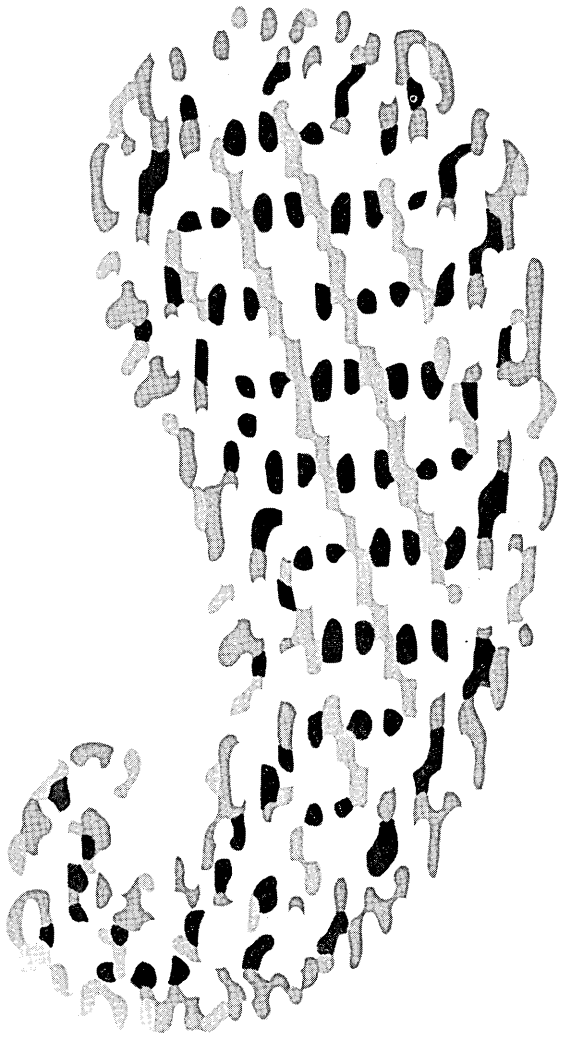


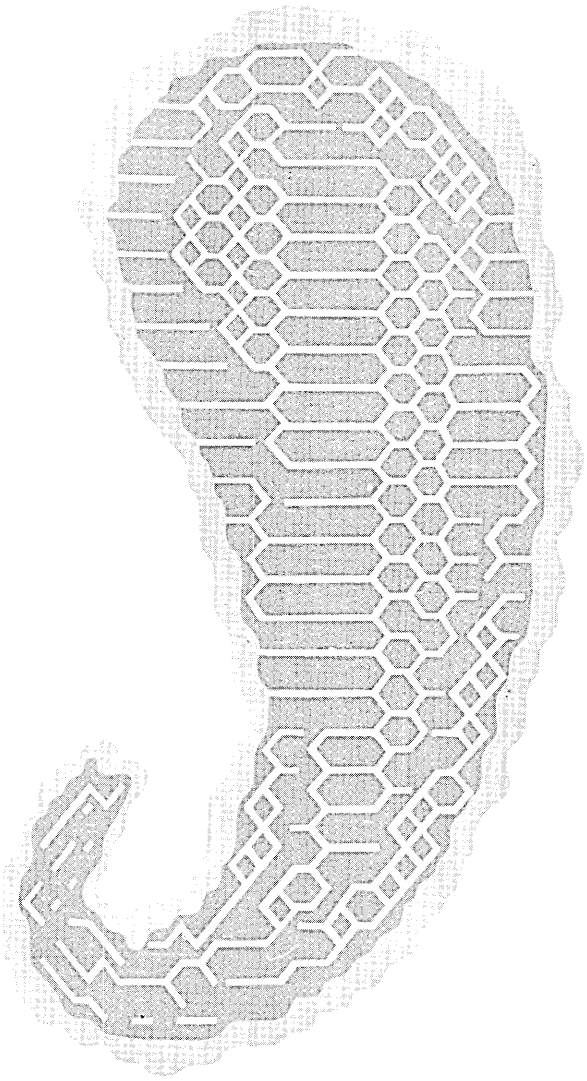
BLACK STAR
— Leonard Kilian and Campion Kulczynski (U. S. A.)

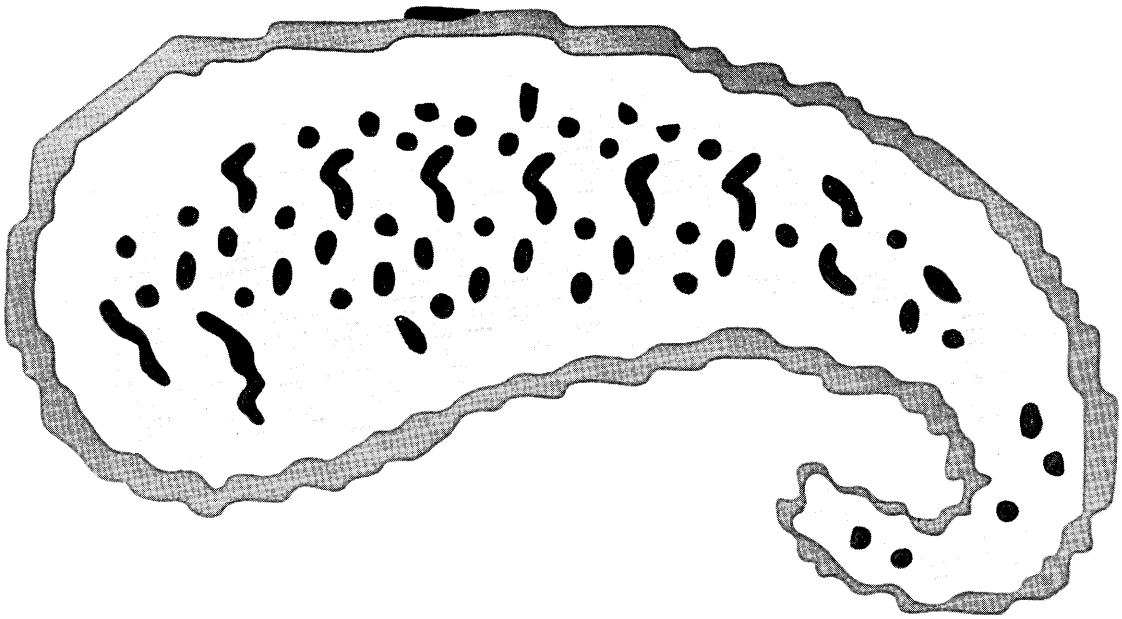
Lines emanate from a point in the interior of a sphere formed by randomly perturbed sine waves. FORTRAN language was employed on a Univac 1107 with a Calcomp 563 plotter.

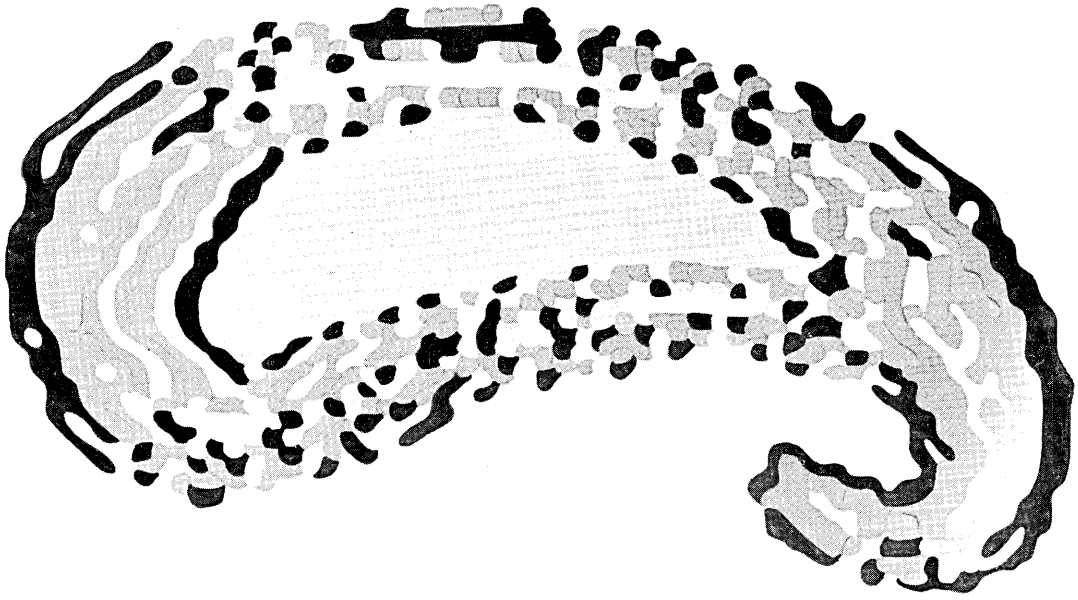
PAISLEY PATTERNS
— Sozo Hashimoto (Japan)

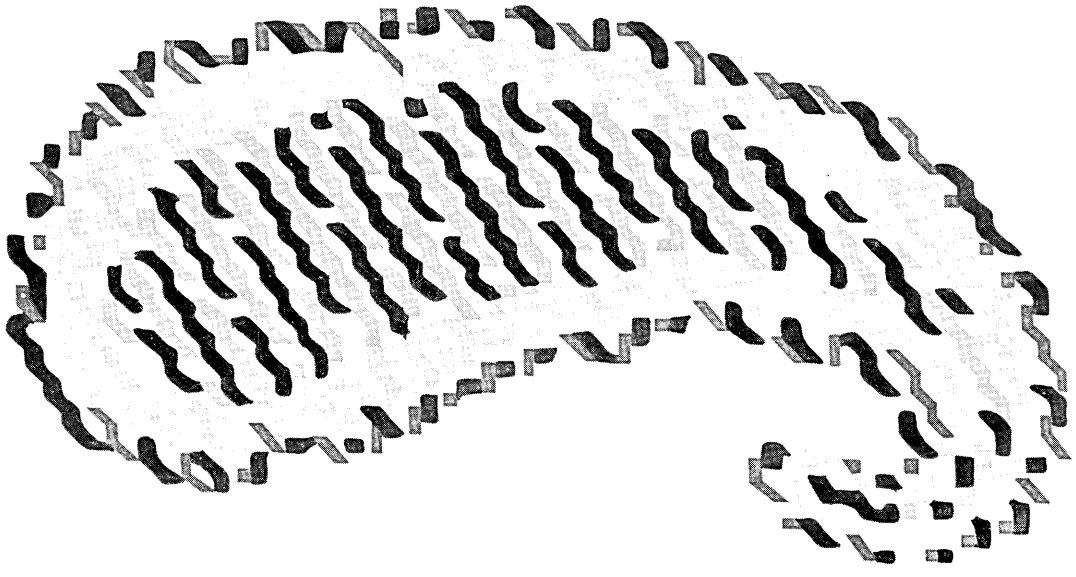
These five paisley shawl patterns evolved from an experiment to develop a new design method. In this experiment, an IBM 7040 computer programmed in FORTRAN IV was used.

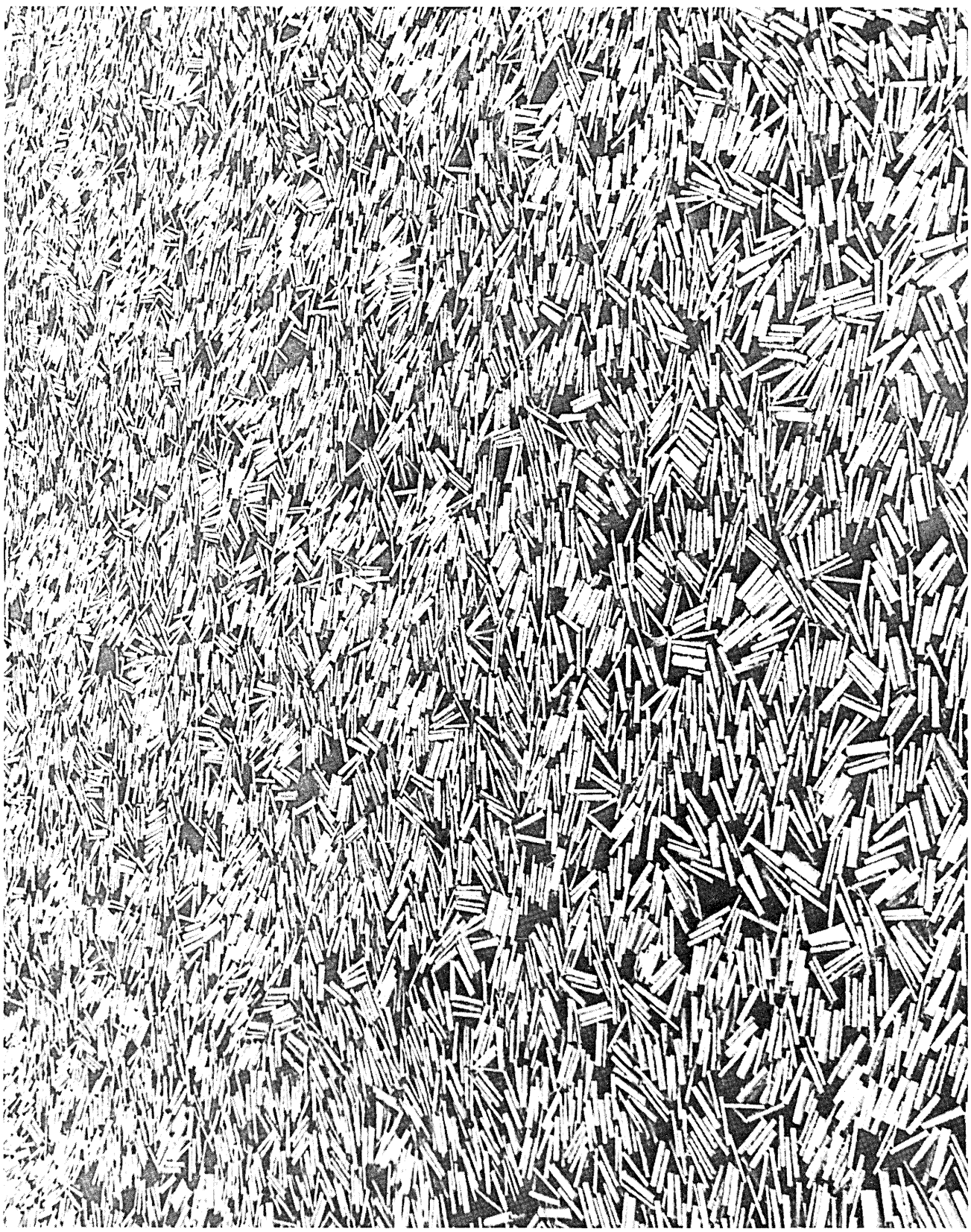








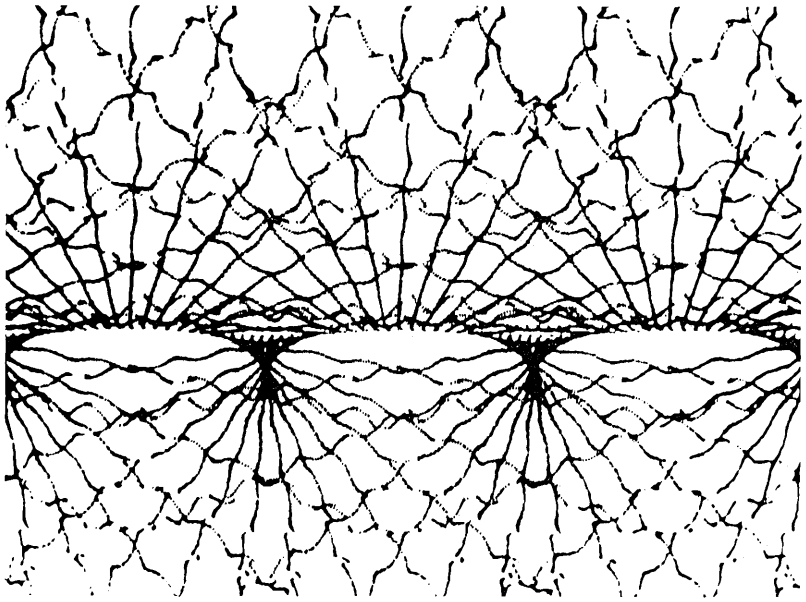




NATURA MAINENSIS

NATURA MAINENSIS
— Ed Jenner (U. S. A.)

The drawing at the left is a random design produced by an analog computer.
For more information, see the last page of the art section in this issue.

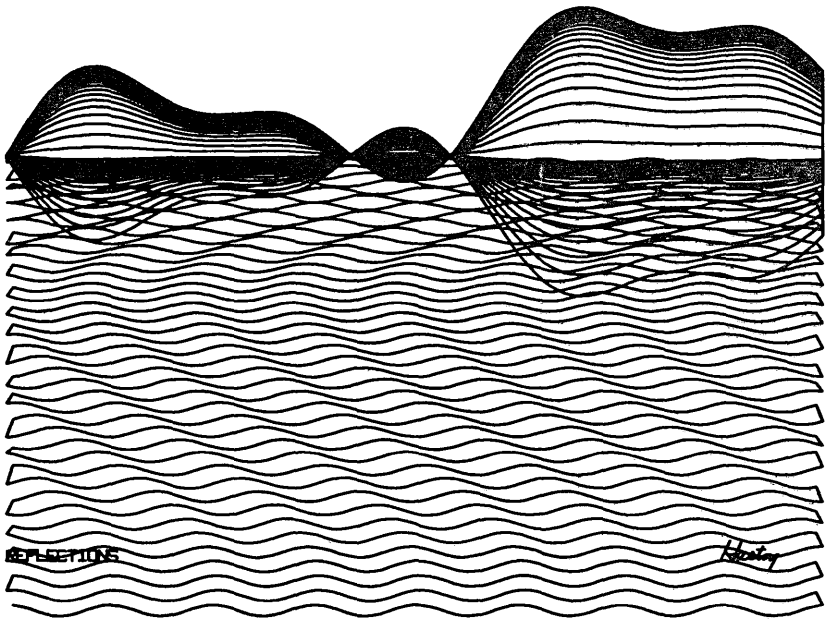


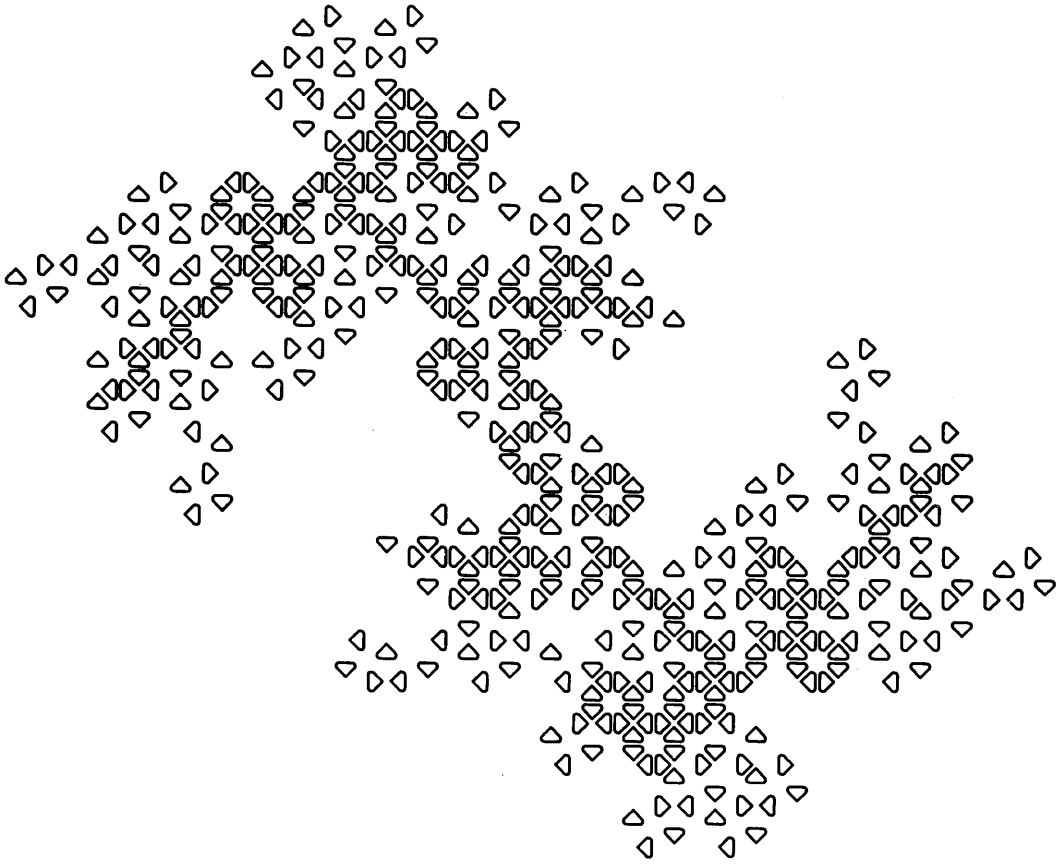
BRIDGE OVER TROUBLED WATER
— Göran Sundquist (Sweden)

This is one of several pictures computed by the same program, "Dart computer art algorithm", with different parameters. The computer is the Swedish Datasaab D22 in connection with the Tektronix 611-display. The display is photographed on microfilm for high contrast.

REFLECTIONS
— Thomas J. Huston
(U. S. A.)

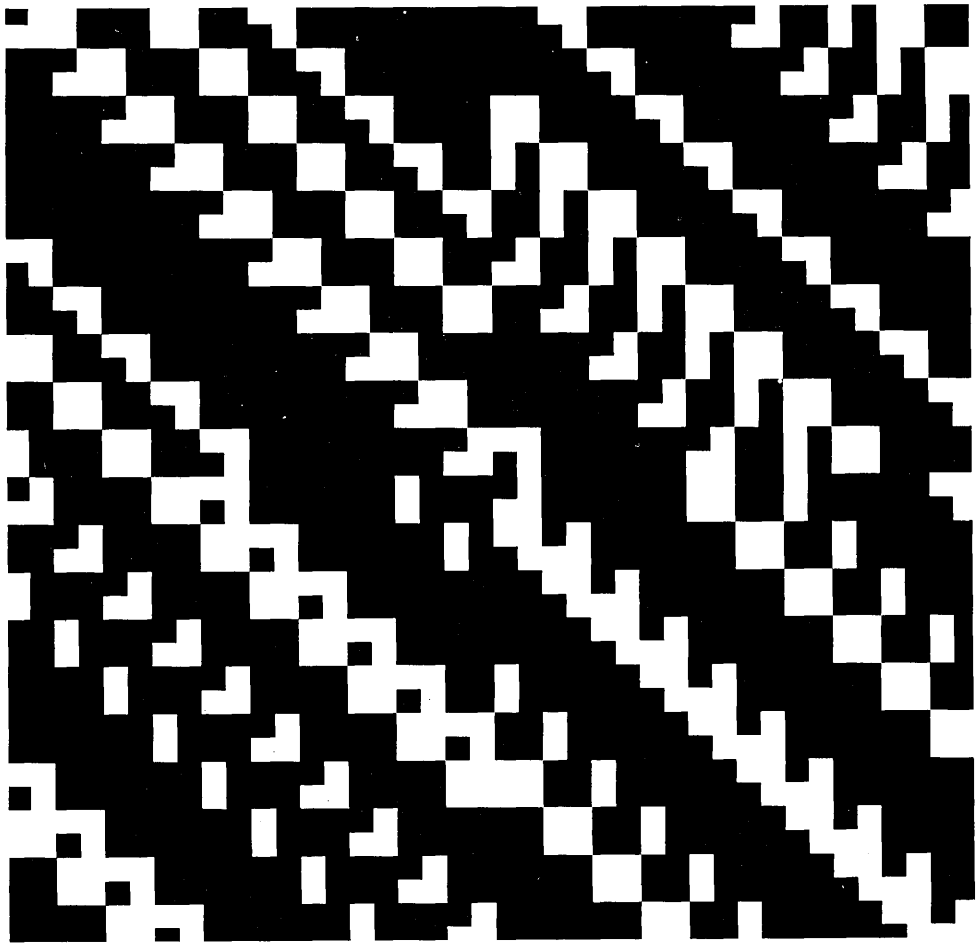
Two sine curves of varying amplitude and period are generated from random values and then added together. The resultant curve is then plotted representing the land. The water is obtained by repeatedly plotting a smaller sine wave while constantly changing its period, amplitude, and spacing. An IBM 1130 and Calcomp Plotter were used.





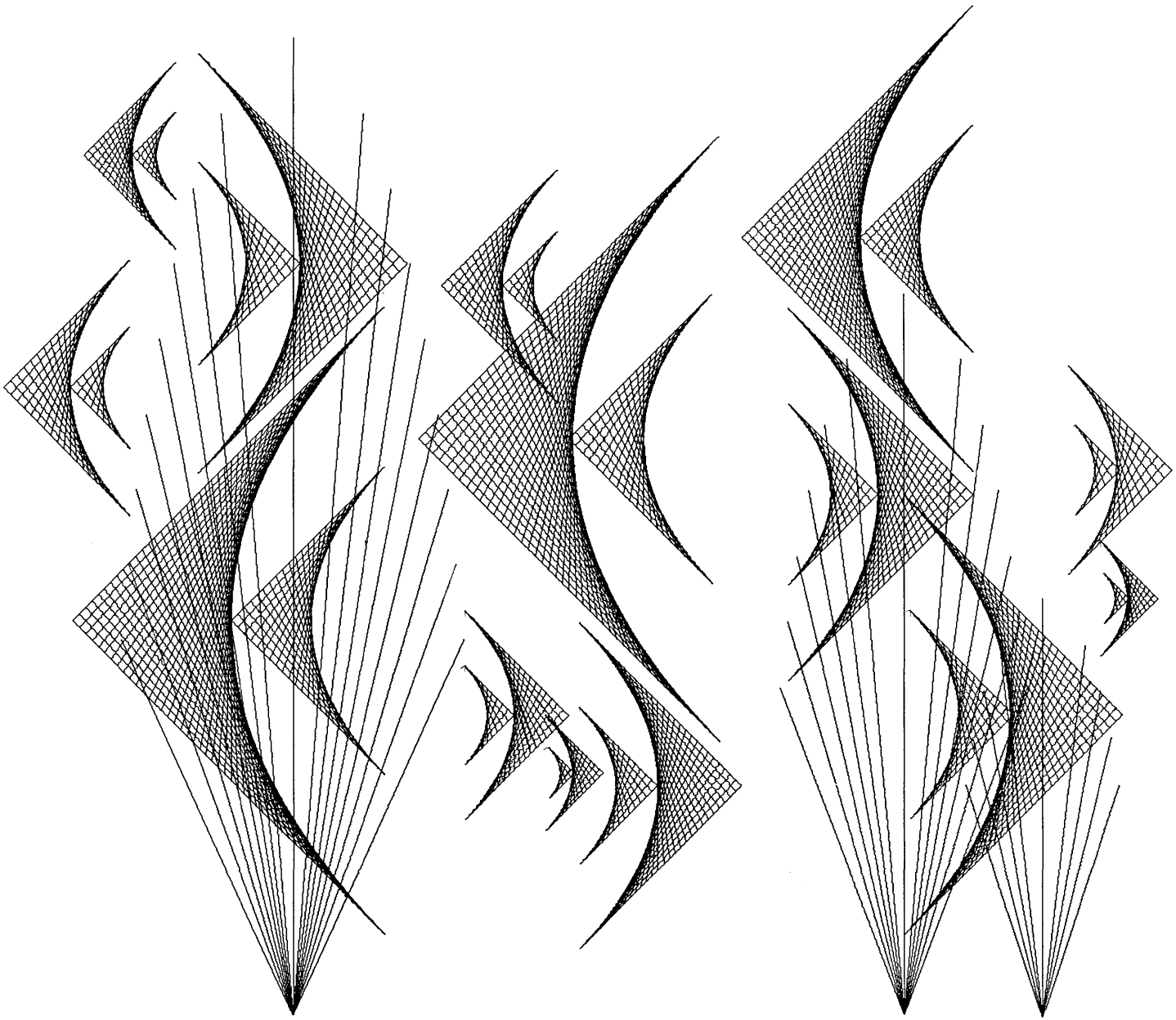
DRAKULA
— Dr. Herbert W. Franke
(West Germany)

This digital computer graphic is derived from "dragon curves" superimposed. It was programmed by Josef Vordermaier. It was executed with the Siemens System 4004 and a Calcomp drum plotter. Based on a seventh order "dragon curve" built up from 127 instructions for left and right twist, the elements are taken from a repertoire of geometrical elements chosen for their superposing and connection characteristics. A multiplicity of configurations is achieved by choosing different elements, triangles, or curve sections, and combining and superposing them.



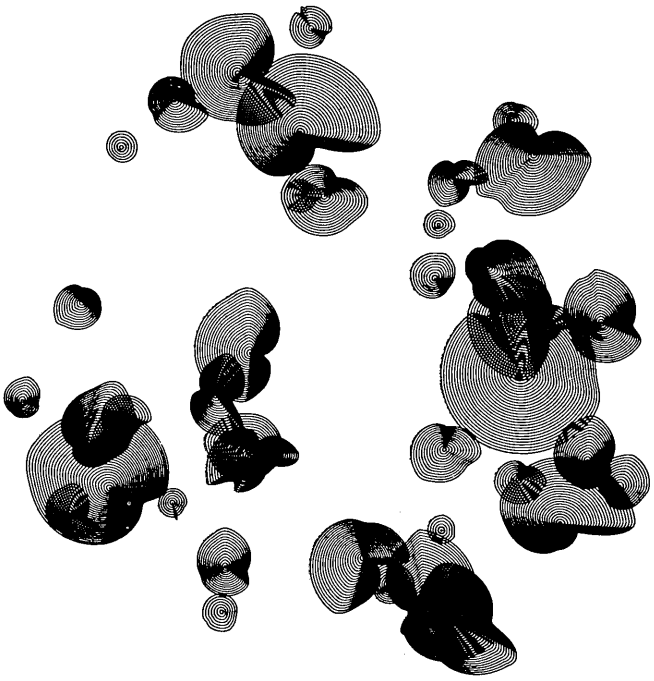
COMPUTER STRUCTURE
— P. Struycken (Holland)

The output from the computer was via the line printer; the computer is an X8. The program has elements of random opposite restrictions.



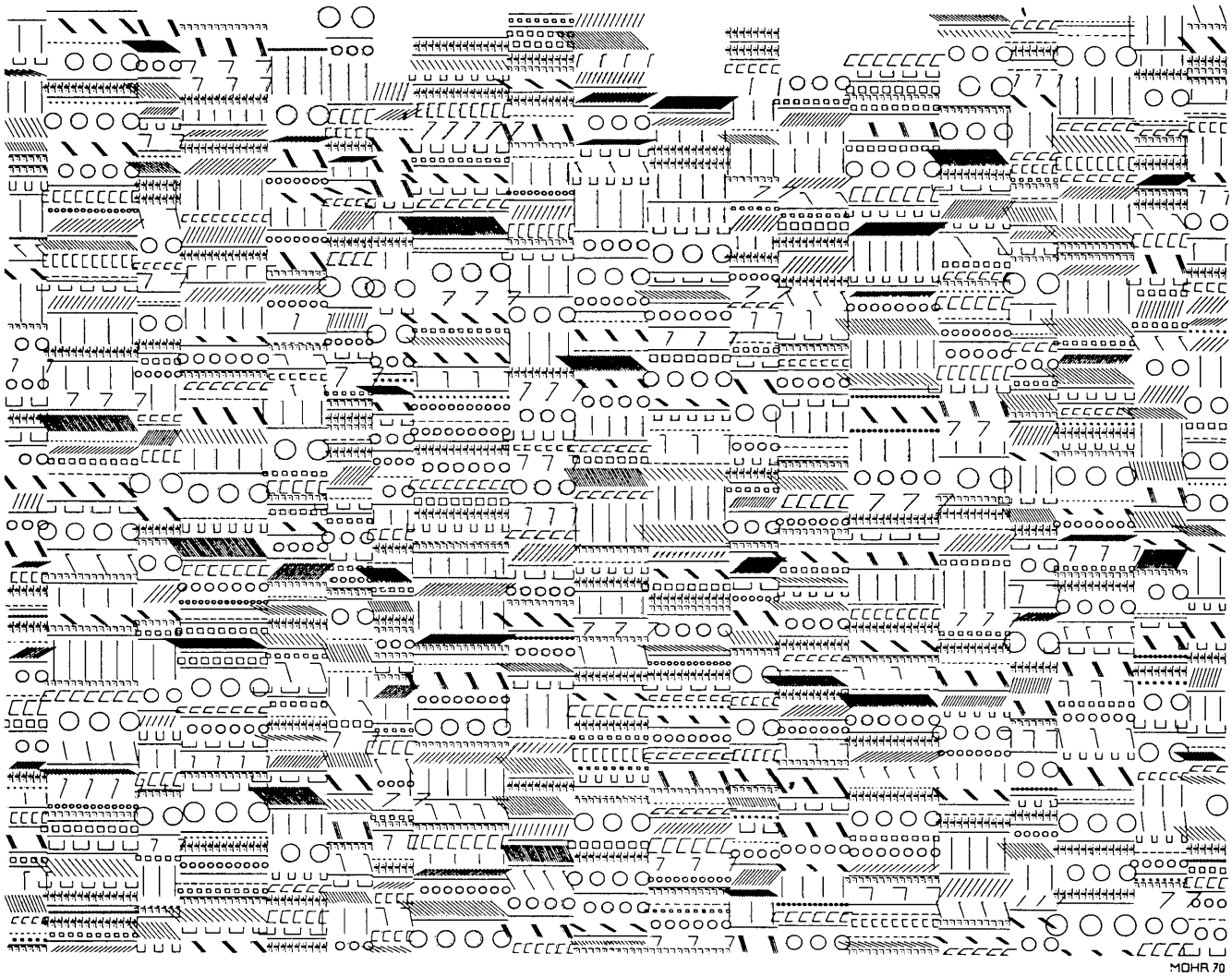
20,000 LINES
UNDER THE SEA
— Ruth E. Dayhoff
and
Elaine A. Roberts
(U. S. A.)

The program for this drawing was written in FORTRAN and run on an IBM 360/44 computer. The program computed the points for the line-grid drawing and produced a plotter tape. The drawing was made on a Calcomp 565 off-line plotter.



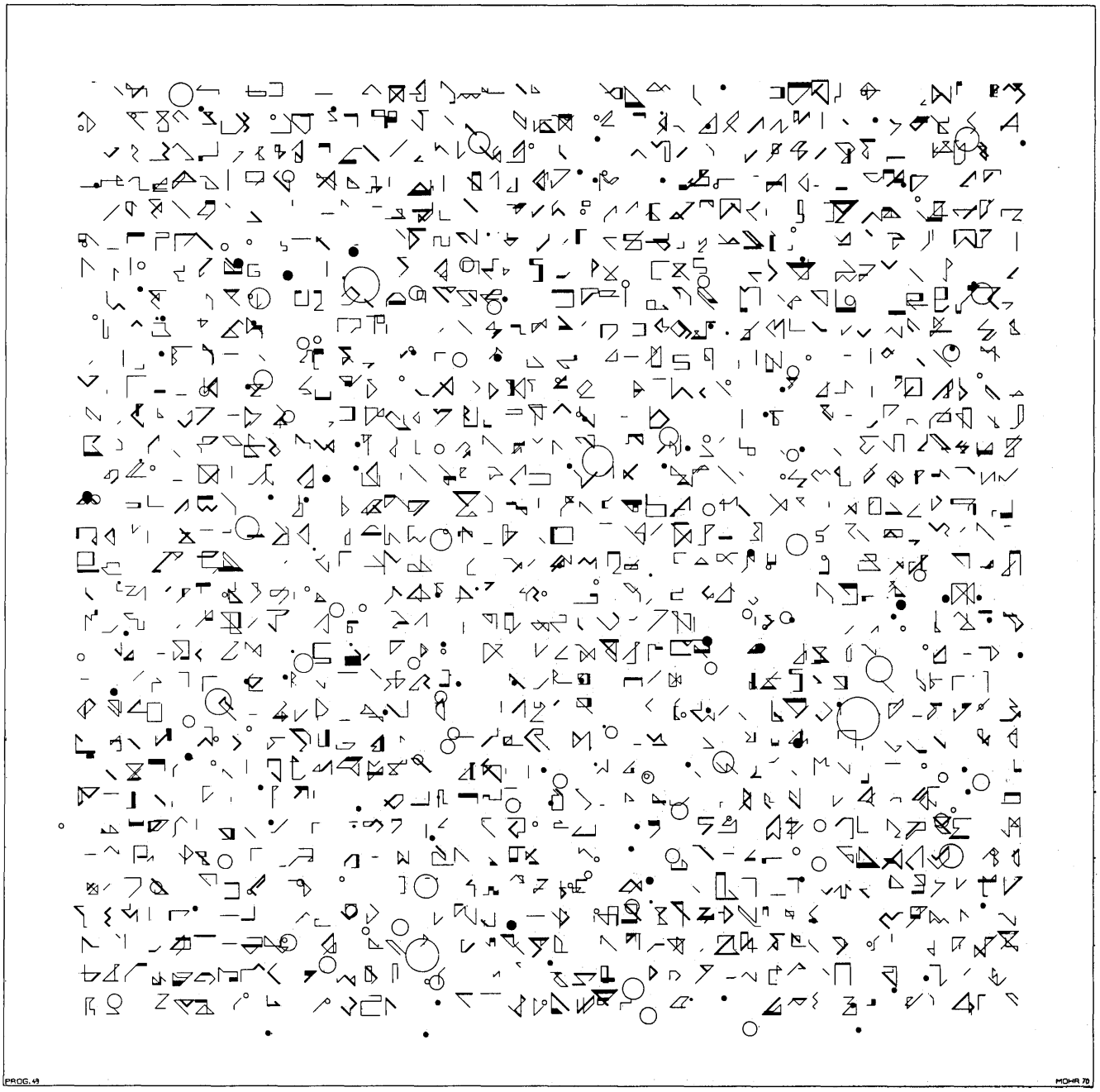
FLOATING POINTS
— Manfred Mohr (France)

A family of closed and parallel curves are calculated by a combination of moving circles, and a third degree spline function is used for interpolation. This program (no. 62) was written in FORTRAN IV and run on a CDC 6400 computer. The graphics are drawn on a Benson plotter.



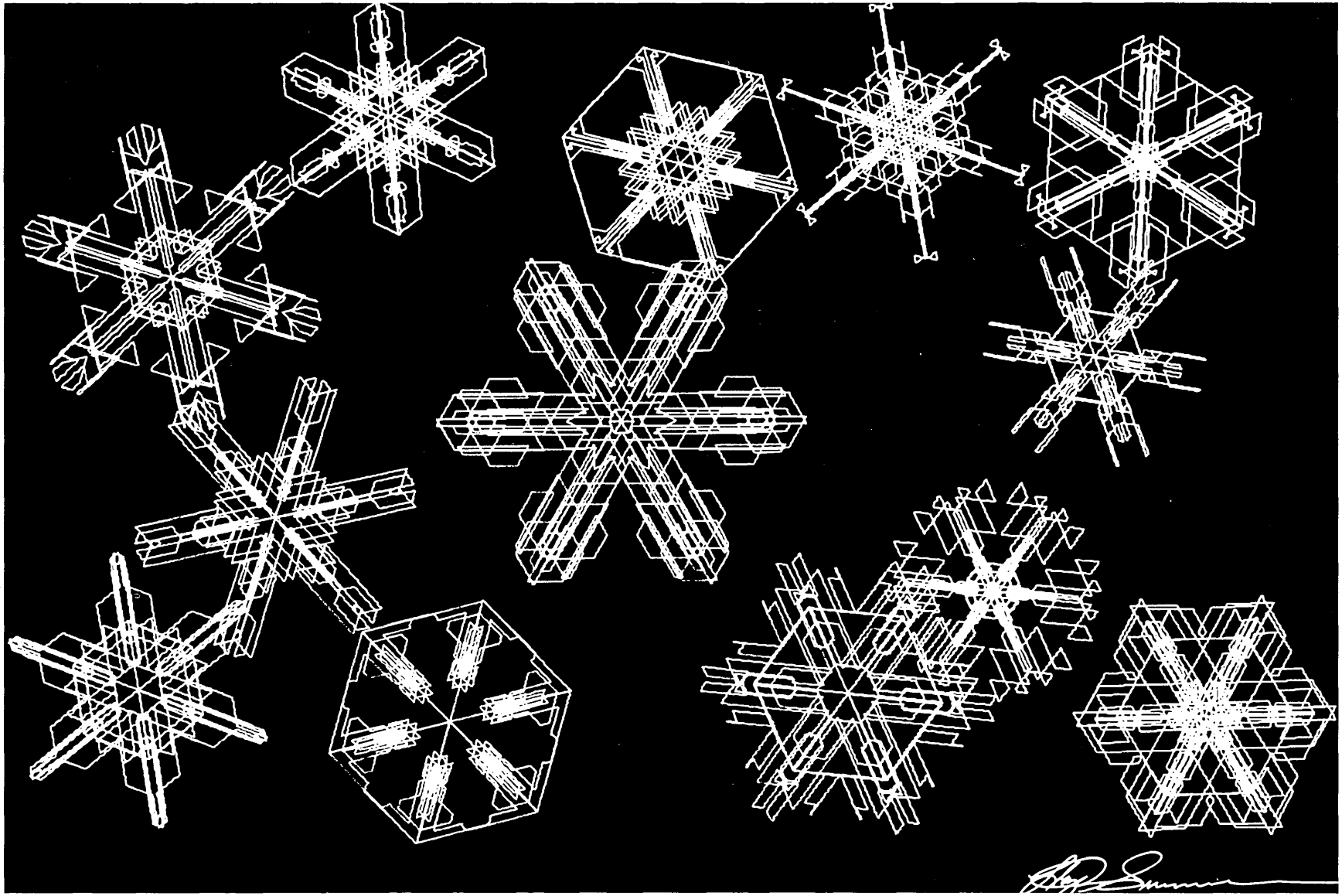
SERIELLE ZEICHENREIHUNG
— Manfred Mohr (France)

This drawing is built from vertical columns, where the horizontal length is randomly chosen. The total horizontal length sums to a given number. In the form of a logical tree, symbols can be generated and will be repeated until the already chosen horizontal length is reached. The height of the columns depends on the size of the chosen symbols. In each column a symbol can appear twice. (This was Program no. 71.)



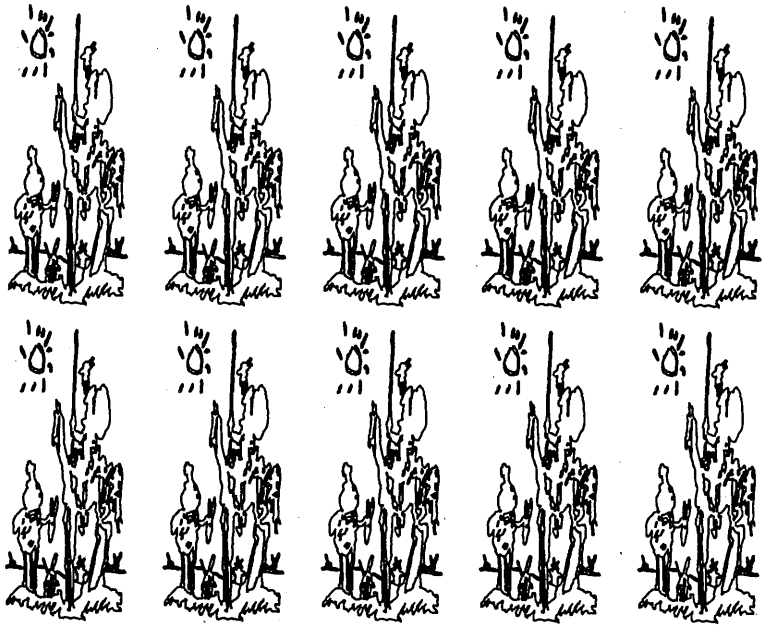
A FORMAL LANGUAGE
— Manfred Mohr (France)

A set built out of circles (the radius is randomly chosen) and symbols of zero to 7 straight lines was generated by Program 28 (horizontals, verticals, and 45° lines). Then these are arranged by Program 49 in equal distances on an imaginary grid of 1280 boxes (1 cm x 1 cm). The circles have a high probability of placement outside the boxes. This drawing gives the effect of hieroglyphic writing.



SNOW CRYSTALS
— Lloyd Sumner (U. S. A.)

Produced with the aid of a Burroughs B5500 and a Calcomp 565, using controlled randomness in a fairly accurate model of snowflake development. Each call on the procedure produces a different snowflake; each one has six symmetrical sides and 60 degree angles. (Brochures describing Mr. Sumner's work in computer art are available on request from Computer Creations, P. O. Box 1842, Charlottesville, Va. 22903.)



DON QUIXOTE
— James Daly (U.S.A.)

A lithograph of the original "Don Quixote" by Picasso was digitized, producing these images. The original was distorted slightly, and multiple images were plotted using standard Calcomp software on a Control Data 3300.

COMPUTER ARTISTS

The following is an alphabetical listing of all persons who submitted entries in the Ninth Annual Computer Art Contest of Computers and Automation. The names of persons whose drawings are published in this issue are marked with an asterisk (*). We are planning to publish in the future some of the drawings we were not able to include in this issue.

Bromley, Charles, Computra, Box 608, Upland, IN 46989
Chlouba, Jan, Sudánská 597, Prague 6, Czechoslovakia
Corley, Henry P. T., Analog Computing, P. O. Box 3043, Richmond, VA 23235
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Natura Mainensis: The analog computer is the Penobscot River in Maine. The graphic display is Seboomook Lake. The elements are logs. Photograph from a helicopter by Ed Jenner. Reprinted with permission from The Boston Globe, June 5, 1971, with much appreciation.

THE USES OF COMPUTERS IN A POLITICAL CAMPAIGN

"There is reason to believe that the use of computers will increase significantly during the next few election campaigns. The level of familiarity with computers among professional politicians and political scientists has increased tremendously."

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It has been more than ten years since John F. Kennedy first made significant use of a digital computer in his 1960 Presidential campaign. Since that time, the public's interest in the political uses of computers has been aroused only on infrequent occasions: occasional blunders on the part of election prediction programs put together by the major networks; occasional revelations that some political candidates are using computers to improve the efficiency of their mailing campaigns; occasional books that dramatize the use of computers in a campaign, such as Eugene Burdick's, *The 480.*

However, there is reason to believe that the use of computers will increase significantly during the next few election campaigns; the level of familiarity with computers among the professional politicians and the political scientists has increased tremendously. Since interest in the 1972 campaign has already begun to grow at this early date, it might be appropriate to review some of the techniques that will be used to locate, attract and recruit constituents during the next couple of years.

For the most part, political organizations have only made use of the computer's ability to print information and manipulate numbers; there has been very little, if any, use of the computer's ability to select, retrieve and analyze *information.* The purpose of this paper is to point out that computers could be used to help the political organization store and retrieve information easily; for completeness, some of the more straightforward uses of computers are also described.

There are three major areas in which a computer would be helpful: organizational and record-keeping activities; statistical analyses and simulations; and information retrieval and political "intelligence". Each of these categories is discussed below.

Organizational Activities

Any political organization must perform a number of rather mundane functions, many of which are traditionally carried out by volunteer workers. The advantage of the volunteer worker is, of course, that he is unpaid. The computer, though sometimes expensive, has the advantage that it is fast, thorough, and less error-prone in the area of simple, tedious clerical activities.

Some of the clerical activities that could be carried out by a computer are the following:

Mailing Lists

Mailing lists represent one of the simplest applications of computers. Voter registration lists, or any other list of people, can be maintained on magnetic tape, and the computer can easily be programmed to generate mailing labels whenever the organization wants to mail some political literature.

Since this use of computers has attracted a good deal of attention within the advertising and business community lately, we might discuss some developments which might be of interest in a political campaign. The paper industry, for example, now supplies a number of different types of pre-fabricated "packages" in a form ready to be used on a high-speed printer. These packages can include a letter already inserted into an envelope, and the computer can be programmed to simultaneously print the address on the envelope, and, with the use of carbon paper or other "impact" techniques, a greeting or short message on the letter inside. This eliminates human handling of the letter altogether; unfortunately, it is often done so sloppily that the recipient *knows* that the letter has never been touched by human hands.

It should also be remembered that a large number of organizations, including magazines, government agencies and advertising firms have mailing lists available for sale. If, for example, one wanted to send some political literature to members of the scientific community, it would be a relatively simple matter to obtain the mailing lists of various scientific journals and trade magazines, already on magnetic tape. Similar techniques could be used to reach the business community, the academic community, the "playboy" community, etc.

The computer can also be used to generate "personalized" letters from a candidate. Given a form letter and

various pieces of information about the recipient of the letter (such as his name, address, party affiliation, vocation, birthday, etc.), the computer could be programmed to "write" a letter on the high-speed printer. The type font on some of the better printers, such as IBM's 1403 printer, is of sufficiently good quality that the letter would almost appear to be typewritten. Once again, a certain amount of care is important, if the letter is to have any impact at all: if the letter is going to be sent to Mr. John Smith, Jr., and a sloppily-written program causes the letter to be addressed to "Dear Mr. Jr.:", the candidate may well have lost a vote. The same thing happens in the advertising world, of course, but the stakes are not quite as high.

When the mailing list is encoded on magnetic tape (or disk, or cards, or any other reasonable storage medium), as much information as possible should be maintained for each voter. That is, in addition to the voter's name and address, the mailing list record should indicate his age, party affiliation, number of children, type of job, salary range, and anything else that might be politically significant. This will permit a computer program to *select* voters with specified attributes; such a program might be used, for example, to select all unemployed minority Army veterans for distribution of a particular leaflet.

Fund-Raising Apparatus

Another use of a computer might be to keep track of the fund-raising apparatus of the political organization. Thus, the computer could maintain a list of all contributors to local, state and national campaigns, as well as revenue from other sources, such as fund-raising dinners, charities, etc.

In addition to simply maintaining a list of contributors, the computer could also be used to help prod them into more donations. For example, the computer could regularly print a list of all contributors who had not made any donations for six months or more; similarly, it could identify "regular" contributors, so that they could be personally cajoled into additional contributions.

It is worth noting that this type of computerized fund-raising apparatus might eventually be desirable, or even necessary, from a legal point of view. If tighter laws regarding campaign expenditures are ever passed, it might be preferable to have a computer keep the records, rather than an error-prone human being.

Scheduling of Activities

A national campaign becomes progressively more hectic as Election Day draws near, and the candidate's time must be scheduled carefully. In addition, it is important to schedule the time of other key operatives in the campaign, many of whom may function somewhat independently of the candidate.

Traditionally, schedules have been maintained by one of the candidate's campaign aides. In the long run, this might prove to be less expensive than a computer; nevertheless, there are a number of intriguing things that could be carried out with the aid of a computer. For example, the computer could map out the most "efficient" campaign trail (in a fashion similar to the type of optimization that has been done for trucking firms, salesmen, etc.), given information about the relative importance of campaigning in certain states or cities at certain times. This might eliminate some unnecessary travelling, and ensure that the candidate is in the key states at the right time.

The computer could also be used to introduce a little more flexibility into the candidate's schedule. For example, if it was discovered that the candidate had more time available in a certain city or state than had originally been anticipated, the computer could indicate the alternate campaign activities for that area. In the opposite vein, if the candidate discovered that he was falling behind schedule, or that he did not have enough time to visit a particular state or city, the computer could indicate which campaign stops could be rescheduled, and which ones would have to be cancelled.

Statistical Analyses and Simulation

There has been a great deal of interest in this area, especially since the television networks have begun to use computers to predict the outcome of elections. It cannot be overemphasized that *the success of predictions, polls and simulations depends almost entirely on the proper interpretation of the statistics,* something which no computer can do without some help from an intelligent political analyst. However, given the proper direction, there is no doubt that a computer can be extremely helpful in the gathering and analysis of complex political data. Some of the areas that might be of interest are the following:

Polls and Opinion Trends

Clearly, polls could easily be taken without the use of computers: the only thing that is really required is a few people to interview random samples of the voting public. The advantage of a computer is that it would allow polling to be done on a continual basis. Campaign workers in widely separated areas of the country could sample random elements of the public on a daily basis; the results could be fed into the computer from remote terminals, or they could be telephoned to workers at the central computer site. The computer could then issue frequent reports on the candidate's popularity (or lack of it), and other voter opinion trends.

It is not at all clear that frequent computerized polls would be worth the expense of the computer; as we mentioned above, volunteer workers are much less expensive. However, there might be some value associated with the fact that the computer can tabulate its results very quickly – in the extreme case, we could have a real-time polling system, for the politicians whose egos need to be assuaged continually; manual analysis, on the other hand, might take several days. This might be important if the candidate or his political advisors want to measure the reaction to an opponent's speech, so that he could make an immediate reply. Also, it should be pointed out that if a computer is available for other purposes, it would require very little extra work to write the poll-analyzing program; in fact, the same volunteer labor that was used to manually gather and analyze the polls might perhaps be put to work to write the programs!

Voting Trends

Another use of computers would be to analyze the results of past elections on a state-by-state or precinct-by-precinct basis. This analysis could begin now, since the 1970 election returns are readily available. An analysis of the vote over the past four to ten years could indicate important shifts in party strengths, ticket-splitting habits,

ethnic preferences, voter disenchantment, popularity of certain issues (e.g., the ubiquitous war, the economy, law-and-order, etc.), and so forth, *assuming, of course, that one knows how to properly interpret the statistics.*

The analysis of past elections might thus provide useful information at the beginning of the 1972 campaign; it would indicate, for example, where more intensive campaigning was necessary and where the key precincts were located, as of 1968 or 1970. More important, the same analysis program might be used to digest the results of the 1972 primary campaign, so that an even more up-to-date picture of voting trends could be given.

Simulation of the Convention and the Election

Statistics on opinion trends and voting trends can be even more useful if they are combined into a *simulation,* or a computerized *model,* of the election. In much the same way that computers can be used to conduct military war games, they could be used to conduct political campaign "games". One is reminded, of course, of the criticisms that have been levelled at systems like the proposed ABM system: the only way of testing it is in a "live" situation. The same may possibly be true of a political "game", but there are no lives at stake; furthermore, what better way is there for Nelson Rockefeller to spend his money – nothing else has worked, so why *not* try a computer?

It is important to realize that the computer would not be simply predicting the outcome of the election based on available statistics. Instead, it would be presented with "scenarios", and *then* it would be asked to predict the outcome of the election. Thus, the computer might be told that the following conditions exist as of November, 1972:

1. Unemployment has fallen to 4.3%.
2. Inflation, or the rise in prices, has levelled off at 5% per year.
3. Troop levels in Vietnam are down to 100,000, but there is no progress at the Paris peace talks, and the Vietcong are creating havoc in Cambodia, Laos and South Vietnam.
4. There have been relatively few riots or campus disturbances during the summer of 1972.
5. Nixon takes a hard stand on the law-and-order issue, a conciliatory stand on issue X, a non-committal stand on issue Y (e.g., "I have a plan, but it would be inappropriate for me to reveal it at this time"), etc.

Having been presented with this scenario, the computer would then attempt to predict the outcome of the election, and more important, would show a breakdown of the vote. The same "game" could then be played with a different scenario, e.g., assuming that unemployment is at 6%, inflation has fallen off to 2%, etc.

A simulation of this kind depends on one critical element: an accurate model of the voter. To construct a model, a political analyst would have to describe the "likes" and "dislikes" of voters in key precincts of each state. He would have to tell the computer, for example, that voters in Manhattan's Upper East Side are more concerned with inflation and law-and-order than they are with unemployment; more important, he would have to tell the computer how *much* more concerned the voters were with one issue over another.

Much of this information could be gathered in the type of polls that were discussed above; of course, this kind of simulation would be an important argument for the use of computerized polls and opinion sampling. As the campaign progressed, new polls could be used to update the model; new data about the state of the economy, the level of the war, and various other news events could also be inserted into the model. Even more important, the results of primaries could be used to *verify* the model; if the model did not accurately predict the outcome of the primary, it could be "tuned" so that it would eventually become reasonably accurate.

A computerized simulation of a political campaign has three major uses: it can identify the issues of greatest interest to the electorate; it can demonstrate the issues and scenarios most damaging to the opponent(s); and it can demonstrate the issues and scenarios most helpful to the candidate. There is, of course, a potential moral problem, since the computer might indicate that an issue in which the candidate believes very strongly is very unpopular with the voters; it should be remembered, though, that the same problem existed long before the introduction of computers, and political candidates will continue to be faced with the same difficult decisions when faced with a controversial or unpopular stand on an issue. There is certainly nothing immoral, however, about using a computer to more accurately determine the opponent's strengths or weaknesses; it would be very helpful, for example, to know whether Nixon is more vulnerable in the area of law-and-order, the economy, Vietnam, or lack of moral leadership. Similarly, the computer can indicate the issues and scenarios for which the candidate himself should strive, in order to maximize his chances of election.

Finally, we should point out that the same techniques could be used to simulate the national conventions. In this case, of course, the voters consist of the convention delegates. The simulation program would obviously have to recognize that many of the votes are committed in one way or another long before the delegate arrives at the convention; nevertheless, the computer could still be used to examine and analyze various scenarios, and might be useful in the determination of various pre-convention strategies.

Information Retrieval and Political "Intelligence"

Many of the ideas that have been discussed above are commonplace in well-funded and well-organized political campaigns (of which there are very few!). During the next few years, though, we should expect to see a number of new applications of computers, applications which fall into the broad category of information retrieval and political "intelligence". Once again, it should be pointed out that many of these new applications will be expensive – perhaps too expensive for the campaign of a single candidate. However, if a national political organization, such as the Democratic National Committee, were to maintain such a computer system, the cost might be bearable when spread among many Senatorial and Congressional candidates, and when amortized over several years of campaigning.

Some of the more interesting things that could be done with an information retrieval network include the following.

Identification Dossiers

A computer system could be used to keep track of all people who are "interesting" from a political point of view.

Thus, when asked, "Who is X?" (e.g., in 1967, Lyndon Johnson might have asked, "Who on earth *is* Allard Lowenstein?"), the computer would indicate his personal associations, his personal associations and background, and the organizations to which he belonged.

Input to the computer could be both extensive and intensive in nature. For example, it might be desirable to provide the computer with lists of all precinct captains, county chairmen, convention delegates and other minor functionaries. Such lists would be extensive in scope, but would not contain very much information about each individual. On the other hand, it might be desirable to keep very intensive information about the Murray Chotiner types on a continual basis, on the assumption that these key operatives will remain important from one election to the next; their loyalties may change, as has been the case with Henry Kissinger, but they will remain a strong force within the political milieu.

Location of Key Operatives

Another use of a "dossier" system would be to find out *where* a politically important figure is at the moment. We might, for example, ask the computer to periodically print a report on the 100 most important political figures, indicating where they are and what they are doing. In addition to keeping abreast of the movement of these people, the computer would be able to indicate those who had suddenly disappeared and gone "underground" (a phenomenon which has already taken place in the *1972* campaign!).

Identification of Networks

In addition to keeping information about individuals, the computer could maintain information about personal *networks.* For example, such a computer system might have been used to gather information about the Cliff White network, the Allard Lowenstein "Dump Johnson" movement, the Campaign Consultants, Inc. group, etc.

Such an information retrieval system would be most useful over a period of time. Since, for example, Murray Chotiner has just recently begun to form a structure for Nixon's 1972 campaign, information about his network could begin to be gathered now. By the summer of 1972, the nature, extent and scope of the network will obviously have solidified, and should be refelcted in the computer's reports.

Analysis of Formal and Informal Power Structures

The computer might also be used to maintain information about the history, factions and cliques within national party organs and state party organs. This might include a listing of all the party professionals, local leaders, delegates, major contributors, and so forth – and an indication of their loyalties, preferences, rivalries, etc.

Again, this type of information would be most useful when gathered over a period of time. It would be most valuable during the year or two preceding a national convention, during which time most of the maneuvering and manipulating for delegates is taking place. However, it could also be very useful during the campaign, for it would indicate how the state and national party organizations could be used most effectively ... or thwarted most effectively, as the case might be.

Recruiting and Talent Search

A number of personnel agencies have already discovered that a computer can be used to locate people with specific talents and backgrounds. In the case of a political campaign, it might be desirable to keep lists of recruits, volunteers and workers for the lower echelons of party work, as well as lists of people in advertising, communications, business, entertainment, etc. This latter group might prove useful for endorsements of the candidate, as well as for their own talents and skills.

Conclusions

In almost all of the areas described above, the most difficult part is that of describing and defining the problem. For example, the programming of a computerized simulation of an election is a relatively straightforward one; it is the determination of the model that is difficult. Nevertheless, there are some potentially troublesome aspects of computers and computer programming that should be borne in mind if these or any other politically-oriented computer projects are implemented.

First, the programs should be written in a high-level language, such as FORTRAN, COBOL, or PL/I. While assembly language programs are likely to be more efficient (and thereby *cheaper,* in terms of machine time), they are more difficult to write, more difficult to debug, and much more difficult to modify. Also, if any of the programs are to be written by local party volunteers, there is much more likely to be an abundance of available COBOL programmers than of assembly language programmers.

Second, the computer programs should be developed for a reasonably "popular" machine, so that they can be moved easily from one installation to another. Because of IBM's overwhelming dominance in the field, an IBM System/360 or System/370 would probably be the best choice, in terms of mobility and flexibility. If the candidate or the party is sure of staying with one computer installation, then Honeywell, Burroughs, GE, Univac and CDC should also be considered. For many of the simpler applications described above, a relatively inexpensive minicomputer, such as the PDP-8, PDP-11, Honeywell-516 or Varian 620-i should be considered; these machines can be *purchased* for approximately $10,000, though the price would increase somewhat if high-speed printers and other peripheral devices are added. The purchase of off-shift computer time and third-party leasing should also be examined.

Finally, the feasibility of a time-sharing system should be studied very carefully. That is, it may be desirable to obtain a computer with remote terminals in various strategic locations. Terminals could be maintained in the campaign headquarters, in important state headquarters, on the candidate's campaign plane, and so forth. A time-sharing approach, as opposed to the traditional batch approach, would facilitate the immediate entry of information relating to polls, opinion trends, and political "intelligence"; it would also facilitate the immediate *retrieval* of information at the terminal. If this approach is followed, though, the cost (including the high telecommunications cost) and the problem of security should be examined. There is no doubt that a time-sharing system is much more expensive than a simple batch system; security is a problem because *anyone* with a terminal can attempt to gain access to the system from a remote location. □

THE JAPANESE COMPUTER MARKET— CHARACTERISTICS ADVERSELY AFFECTING U.S. TRADE INTERESTS

Part One

"In 1934 Japan announced an intention of computerizing herself with her own computers. Since then, Japan has developed, marketed, and installed enough electronic computers to rank third behind the United States and West Germany in total installations. . . Such preeminence has not come by accident."

Stephen T. McClellan
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"Japanese Maker Selling Computers to U.S. Firm."[1] This bell wether newspaper headline is the culmination of almost a decade of concerted efforts by the Japanese to develop a competitive computer industry. It is only a milepost however. Research, technology, and production have advanced to the point where Japanese computers are internationally competitive. Now the marketing effort is underway.

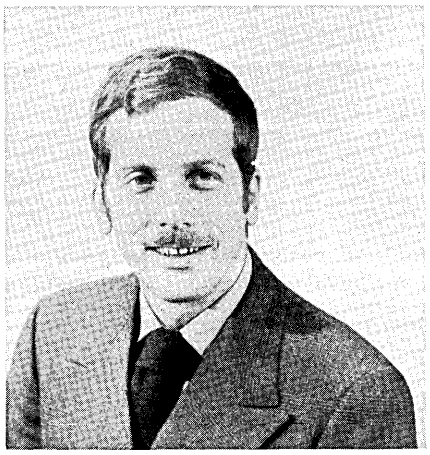
How far have the Japanese advanced? Since 1964, when Japan announced an intention of computerizing herself with her own computers, Japan has developed, marketed, and installed enough electronic computers to rank third behind the United States and West Germany in total installations. Of the 5,601 computers in Japan September 30, 52% (by value) were produced by Japanese manufacturers.[2] This is in sharp contrast to the European experience where, except for one country, the domestic computer markets are dominated by U.S. computer manufacturers.

Such preeminence has not come by accident. The Japanese government directs and controls the domestic industry through organizations such as the Ministry of International Trade and Industry (MITI) and the federal Japan Electronic Computer Company (JECC). Computer industry promotion and control takes many forms. Among them are standardization, loans, technological stimulus, import restrictions, tariff barriers, license controls, "buy Japanese policies," and other computer industry stimuli.

This study considers only the financial characteristics of the Japanese computer market which serve to make the industry competitive to that of the U.S. Other market aspects are no less significant than the financial ones and often are directly related. They are not emphasized however because the objective of this article is to analyze only the competitive financial factors.

Government encouragement and protection, a large part of which are financial, account for most of the rapid growth of Japan's computer industry over the past decade. Elsewhere during this time U.S. computer firms were eclipsing fledgling national computer industries, especially in Europe. As early as 1957, Japan's Electronics Industry Promotion Act singled out development of an electronic computer industry as a national goal. Financial incentives have included tariff and quota protection, tax benefits, strict control over foreign investment, and preference in the large public computer market for Japanese-made systems. A major factor in this build-up is the Japan Development Bank's loans of over $145 million to the Japan Electronic Computer Corporation (JECC), a rental corporation that finances some 90% of all domestic-built computer rentals.[3]

Meanwhile, barriers and limitations have effectively reduced foreign competition in Japan. U.S. subsidiaries cannot lease through JECC. Japanese federal and educational institutions cannot buy foreign EDP equipment. All Japanese imports of computer equipment and software are tightly controlled and rigidly restricted by MITI. U.S. officials for the past year have made repeated attempts to get Japan to reduce import restrictions on U.S. computers, thus far without success. Despite these restrictions, American firms did export $91 million of computers to Japan in 1969.



In his capacity as a computer industry analyst with the U.S. Department of Commerce, Mr. Stephen T. McClellan has authored several government publications on the international and domestic computer markets. He has an M.B.A. degree in finance from George Washington University; his thesis was entitled "The Financial Aspects of Computer Utilization."

Government Production and Control: Ministry of International Trade and Industry

The Ministry of International Trade and Industry (MITI) is the foremost governmental body promoting and controlling the domestic computer industry. It is mainly a policy making unit whose objectives in its "administrative guidance" of the computer industry are as follows:[4]

1. Rationalize computer production through business tie-ups and joint operations of cooperating manufacturers.
2. Provide JECC with adequate financial backing, including low-cost loans from the Japan Development Bank, Ltd.
3. Raise the quality of computer software and components to the level of international standards by the end of Japan fiscal year 1970 (March 31, 1971).
4. Provide tax benefits to domestic manufacturers (e.g., a 10% tax rebate to manufacturers who repurchase used computers from JECC.

The previously mentioned 1957 Electronics Industry Promotion Act gives MITI the significant role of insuring adequate financing of manufacturers. This is done mainly by direct subsidization. Some $28 million has been budgeted to assist the domestic industry in developing a large-scale, high-performance computer by 1971.[5] Additional money for research and development is channeled through the Japan Electronic Industries Development Association (JEIDA). In 1968 MITI spent $1.1 million on an Electro-Technical Laboratory and gave $4.6 million to seven domestic computer manufacturers to develop memory units. In 1969 MITI considered alloting the manufacture of seven peripheral equipment devices to specified JECC members to promote product specialization.[4]

Financial aid is also directed to the computer user. MITI annually directs the Japan Development Bank to loan JECC five-year term loans at the subsidized interest rate of 7.5% per annum. The money is then used to finance computer leases to the end-user. Further assistance to individual computer user enterprises by MITI is through 1) establishing mortgage loans for computers, 2) instituting Japan Development Bank loans for the purchase of computers.[6]

MITI fulfills a parallel function of protecting the domestic industry through restrictive import licensing. Computers cannot be imported into Japan unless the import is approved by MITI. The rather arbitrary licensing system which identifies end-users and requires user justification results in a high degree of protection for the domestic computer industry. To further promote and control the domestic industry, MITI established in 1961 a private rental company under close Governmental support and supervision; JECC.

Japan Electronic Computer Company

The Japan Electronic Computer Company (JECC) was formed in 1961 as a result of pressure from MITI. Originally the leasing firm was capitalized for $3 million by seven stockholders, all domestic computer manufacturers. Its purpose is to utilize loans from the Japan Development Bank to finance the leasing, outright sales, and installment sales of computers produced by domestic (over 51% Japanese controlled) firms.

JECC purchases computers manufactured by its stockholders and leases or sells them to end-users. The computers must be developed by the manufacturer's own techniques and marketed under his own brand-name containing over 90% Japanese parts. The computer company pays manufacturers for software as well as for hardware in its purchase prices although maintenance and programming services are performed by manufacturers. Used equipment is resold to original manufacturers.[7]

Free to lease or sell to any potential buyer, assisted by MITI in its efforts to persuade customers to use domestic equipment, and assured of low-cost, long-term domestic financing, JECC enjoys significant advantages over its foreign competitors. In selling to the Government sector (government agencies, universities, research labs, hospitals, and other institutions) JECC has almost a captive market. This Government sector grew faster than the private sector in 1968.

U.S. competitors in this market, including IBM, UNIVAC, NCR, Burroughs, Control Data, and others, are at a distinct disadvantage in that they cannot finance computer sales or leases through JECC. The domestic parts requirements effectively eliminate their computers. U.S. peripheral equipment is also precluded from being sold with a Japanese computer system for the same reason. Thus, all U.S. computer equipment, whether imported into or manufactured in Japan, must be financed by the vendor which usually cannot or chooses not to meet the liberal terms offered by JECC.

JECC rents or leases computers and peripheral equipment in the following manner:[7]

1. Any firm wishing to rent a computer consults with any of the six manufacturers to determine which model is most suitable. The firm then signs a preliminary contract with the appropriate manufacturer specifying the rental cost, delivery date, and the firm's intention to conclude a final rental contract with JECC.
2. JECC concludes a rental agreement with the firm, according to the foregoing agreement.
3. JECC purchases the computer from the manufacturer, usually at a price equal to 45 times the monthly rental fee.
4. The lessee returns the computer when the lease term is over.

Finance funds of JECC consist of paid-in capital by the stockholders, revolving lease or rental funds, loans from the Japan Development Bank as well as city, local, trust and mutual banks, and loans from insurance companies and foreign banks (see Table 1). The first foreign loan obtained by JECC was for $3 million from the First National City

Table 1

Stockholders in JECC as of 1968[8]

Stockholders	Percent Owned
Fujitsu Limited	17.8
Hitachi, Limited	19.6
Mitsubishi Electric Corporation	12.8
Nippon Electric Co., Limited	20.8
Oki Electric Industry Co., Limited	14.0
Tokyo Shibaura Electric Co., Limited	15.0

Table 2

Purchases of Computers and Loans from the Japan Development Bank (JDB[7]

Japan Fiscal Year (Apr. 1-Mar. 31)	Total value of computers purchased by JECC ($ millions)	Loans to JECC from JDB ($ millions)
1961	3.0	1.1
1962	9.0	2.2
1963	16.3	4.2
1964	32.5	6.9
1965	57.7	15.3
1966	74.6	19.4
1967	102.2	22.2
1968	125-138 Est.	22.2 Est.

Bank, New York in 1967 (see Table 2).

Under JECC's leasing system, 1/45 of the direct sales price of the computer is charged as the monthly rental fee in accordance with a contract which runs for a minimum of 15 months. If at the end of this term the user does not renew the contract the manufacturer is under obligation to buy the computer back, paying JECC an amount equivalent to the value remaining on the books. A 10% tax rebate is awarded to a manufacturer who repurchases a computer from JECC. Now that third generation computers are in full use, however, many second generation computers are being replaced and traded-in. Herein stems one of JECC's most difficult financial problems.

Increased funds are now necessary to finance those trade-ins. In 1968 a reserve fund was established to cover any losses incurred through repurchase of used computers. The funds were obtained by holding 10% of the manufacturer's profit on computers sold to JECC for lease, and when a repurchase loss was incurred it was compensated for from this reserve.[9] However, recently JECC, due to the severe shortage of funds, stopped repurchasing used computers altogether and thus the manufacturer now must do the repurchasing directly.

JECC's large increase in demand for funds is due also to the increased volume of business it conducts. Being pressed to procure new funds for present and long range increases in computer leasing, the organization has agreed with the French Government to supply know-how and technology for large-scale computer production in exchange for French loans to buoy up the sagging JECC finances.[10] Up to this time MITI allowed JECC to borrow funds abroad only once even though JECC desired to do some borrowing in the Eurodollar market.

A further step to alleviate JECC's shortage of funds is a legislative act to come up before the National Diet in the next session. This bill calls for an easier credit system for computer users and should stimulate increased domestic usage of Japanese computers.[11] Japanese corporations are very heavily debt financed. Sometimes up to 80-90% of capital is derived through debt financing. Domestic banks aid this practice by granting loans on a liberal basis, a spirit of comradeship between executives being a major factor. Such balance sheets suffer when interest rates rise. Loans become more expensive and perhaps prohibitive for manufacturers and users. The Government and the Japan Development Bank aid the manufacturers, now a new act will serve to aid users.

(Part 2 and Footnotes: in the next issue)

C.a NUMBLES

NUMBER PUZZLES FOR NIMBLE MINDS —AND COMPUTERS

Neil Macdonald
Assistant Editor
Computers and Automation

A "numble" is an arithmetical problem in which: digits have been replaced by capital letters; and there are two messages, one which can be read right away and a second one in the digit cipher. The problem is to solve for the digits.

Each capital letter in the arithmetical problem stands for just one digit 0 to 9. A digit may be represented by more than one letter. The second message, which is expressed in numerical digits, is to be translated (using the same key) into letters so that it may be read; but the spelling uses puns or is otherwise irregular, to discourage cryptanalytic methods of deciphering.

We invite our readers to send us solutions, together with human programs or computer programs, which will produce the solutions. This month's Numble was contributed by:

Stuart Freudberg
Newton High School
Newton, Mass.

NUMBLE 718

```
          E Y E S
      + A R E T H E
      = A F H L A A        BFHM = VLDT

  + A T V A S M Y B L E M
  = A M B A S S A D O R S      944908
```

Solution to Numble 717

In Numble 717 in the June issue, the digits 0 through 9 are represented by letters as follows:

L = 0	W = 5
S = 1	B,D,R = 6
H = 2	E = 7
A,I = 3	T = 8
O = 4	N = 9

The message is: Those who will not see are also blind.

Our thanks to the following individuals for submitting their solutions – **to Numble 716**: Marijoe Bestgen, Shawnee Mission, Kans.; Mary E. Brindamour, West Lynn, Mass.; A. Sanford Brown, Dallas, Texas; Gordon and Debra Bruno, Cliffside Park, N.J.; Warren H. Buell, Los Angeles, Calif.; Twite S. Emerick, Harrisburg, Pa.; T. P. Finn, Indianapolis, Ind.; D. F. Martin, Los Angeles, Calif.; Abraham Schwartz, Jamaica, N.Y.; Harold L. Smith, Thomson, Ga.; C. P. T. Wong, West Vancouver, Canada; and David P. Zerbe, Reading, Pa. – **to Numble 715**: Harold L. Smith, Thomson, Ga.

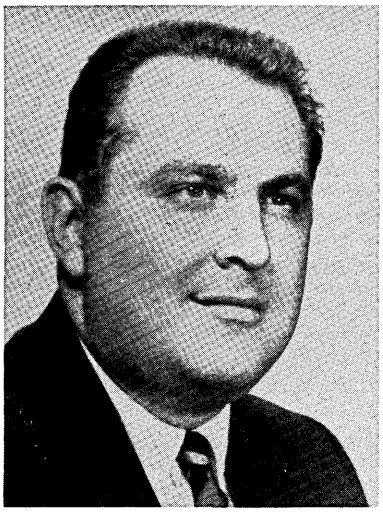
A SYSTEMS APPROACH TO JOB HUNTING

"The model proposed here provides those who are now seeking or will seek a new position, with a potential basis for their own planning."

Thomas V. Sobczak
Waldes Kohinoor, Inc.
47-16 Austel Pl.
Long Island City, N.Y. 11101

What determines a good job? Challenge, salary, security, satisfaction, nearness to home or any one of a hundred other factors! How does an individual know a job is suited to him and he to it? The "goodness" of a job is up to the individual doing it. If he likes his work and is reasonably treated, any job can be good. But, if an individual wants "the job" – the one job he dreams of – he will seek it scientifically, logically, and with a dedicated self interest in obtaining and being part of it.

Locating and securing the perfect job involves detailed self-evaluation and planning. Unfortunately, the majority of professional job-hunters are like their less educated counterparts in the labor community. They make the jump out-of-the-frying-pan into a self-imposed fire with little, if any, reflection on the magnitude of the step.



Thomas V. Sobczak is Manager, Systems and Electronic Data Processing, Waldes Kohinoor, Inc., Long Island City, New York, N.Y. 11101. He graduated from St. John's University with a B.A. and completed M.B.A. studies at Hofstra University. He teaches in the Systems and Programming Institute at Hofstra University. He is a member of the National Defense Executive Reserve of the U.S. Department of Commerce.

Few, if any, can honestly say they have individually been able to establish a policy by which to work and a goal to work for. Fewer still are working by the policy, toward the goal they have established. All seek the good life or some impossible dream without any realistic intention of working toward it. Our inertia encourages us to let intermediate opportunities – steps toward our goal – pass us by. Trapped by our sloth we become finger pointers, sour grapes; or, worse, we become enamoured with the fancy that "my day will come", malcontent in the world we made for ourselves.

The model proposed here provides those who are now seeking or will seek a new position, with a potential basis for their own planning. At first glance, the operations and decisions seem insultingly simple. In fact, they are time-consuming, soul-searching periods of self evaluation and analyses. Many subroutines have been omitted: they are personal and private to each of us. Whether we admit to them or not, we know them. Whether we consider them or not, they will rise up to haunt us, a spectre of the reality we try to hide.

If you follow the steps honestly, with sincerity of purpose, the results will be rewarding. You will have narrowed your field to (1) those jobs where you have the greatest chance to succeed, and to (2) those jobs which hold the greatest personal satisfaction for your "self." Can there be a better combination? You and your potential employer will complement each other. At your interview you will know that you fit. You will not have to tell half truths or inflate past experiences. You should not have to accept a job that sounds only partially challenging. Materially, you will not be wasting your time taking interviews only to discover you are not interested in the type of work offered.

Prologue

I. To the Editor from Thomas V. Sobczak

Your comments on page 6 of the May 1971 issue ["How an unemployed computer professional might start his own business, and earn a reasonable income as his own employer"] interested and intrigued me. I should like to offer an article for the data processing professional who does not want to work for himself – there are some!

This article was offered and accepted twice in 1967. It has never been published. In the first case, Magazine E after it had accepted the article, returned it because it slighted their employment agency advertisers by suggesting a professional could locate a position on his own rather than as a piece of merchandise on the selling block.

The second acceptance was by Magazine T. They rewrote the article from the viewpoint of employment counselor, and added names of their advertisers as choices to do the required planning and résumé generations. I did not want my name associated with the article; so it was not published. They later did a piece on employment agencies.

If you think those professionals who do not want to work for themselves whatever the reason would benefit from the article, use it. If you don't think it worthwhile, return it please.

II. To TVS from the Editor

Thank you for your interesting letter and the copy of your article "A Systems Approach to Job Hunting". I like it, and I think it may well fit into "Computers and Automation" – and of course we shall publish it (if we accept it) without changing the tone or the sense of what is being said. What an interesting light you throw on the two magazines that you mention!

One question: do you want to change anything in it in view of the fact that now in 1971 there is an employer's market and not an employee's market? It is not easy to get jobs.

III. To the Editor from TVS

In response to your question concerning a change in the article I submitted, based on the fact that in 1971 there is an employer's market not an employee's market and it is not easy to get jobs: No. I do not feel a change is necessary for several reasons. First, proper planning in seeking a position as outlined in the article will nullify the effect of the employer's market.

Contrary to popular opinion, there are many jobs available. The jobs that are available to people, are available to those people who are qualified. What we have been seeing lately, because of the rapid reorganization in various sectors of the economy is people coming out of one job and not determining what they were suited to do. In place of planning you have mob response.

You have many unqualified people applying for the same job and giving the impression that the employer has the upper hand. When in actual reality the people applying, for the most part, are not qualified for the position they apply for. As an example, my organization recently wanted to hire a programmer. We went to several agencies and put ads in the newspaper. The resultant influx of people was horrifying. Nine out of ten were not qualified for the job that we offered. They were applying because they didn't have jobs. The personnel department thought we had a tremendous response but to the Data Processing Manager the response was quite poor because in actuality my choice was between two and three people not thirty as the personnel department would have supposed.

As to the ease of obtaining a position, this depends quite seriously on the diligence and dedication that the individual who is seeking the position, puts into his search. As an example, just in the New York City area, the Federal, State and City Government; the Port of New York Authority; the New York Transportation System; the Metropolitan Transit Authority; the Federal Aviation Agency and several others in the Civil Service field – are hiring. There are books which indicate which corporations exist in the City by borough and what they do. An individual who took the time to scan this type of information should be able to pick out one or two companies.

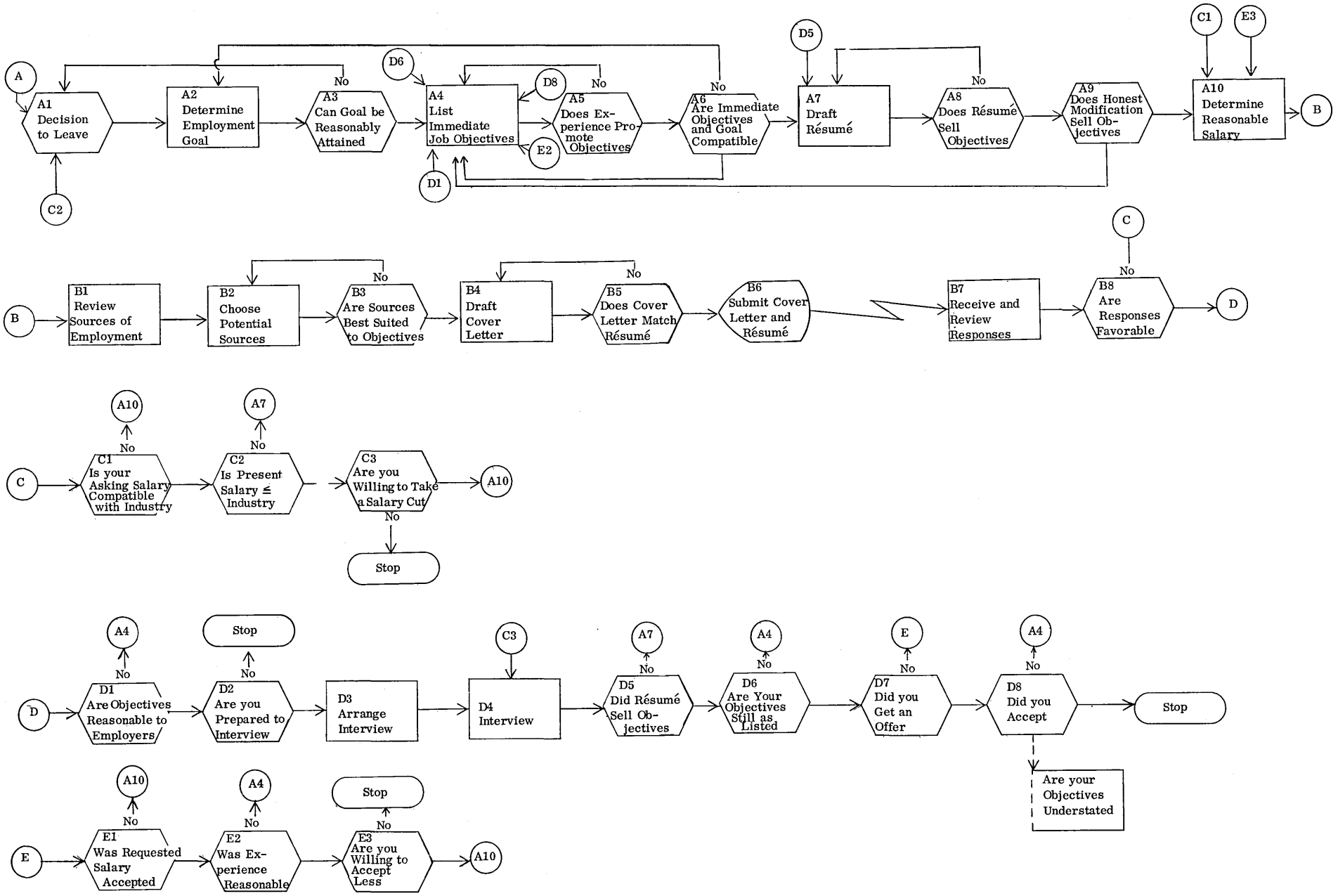
Using myself as an example, in 1969 the company that I worked for in East Rockaway, Long Island, had determined that they were moving to Attleboro, Mass. Having family ties and responsibilities in the area, I elected not to move. After carefully thinking what I was willing to do in the way of employment and what salary I wanted in order to do it, I went to the Long Island Association and purchased for seventeen dollars, a book that listed all the companies on Long Island. Going through the book I picked out the companies where I thought I could be useful. Of 34 letters sent out, 22 replied, asking me to come in for an interview. I received seven job offers from the twenty-two replies.

The job I presently hold did not occur this way. It occurred through personal contact. A peer operating a data center told me of a company that was thinking of a new installation. I joined the company and brought about the installation. I am now developing the data processing capabilities of the company.

In other words, the system described in the article works. It is totally divorced from how many jobs there are. There are always jobs for people who go about looking for jobs in the right way. This is the only point that I'm trying to get across.

The Model

Event	Title	Comments
A-1	*Decision to leave*	Perhaps the best possible advice is to stop at this point and reflect. A decision to leave should be based on a concrete foundation (examples: no advancement or raise over a long period; supervisory management is top heavy and you cannot advance). Many people choose to move because the boss is moody and the mutual collision of moods hurts their pride, or Jack moved and got more money, or any one of many other trivial things.
A-2	*Determine employment goal*	After you decide to leave, don't fall into the trap of moving to the situation with only the names being new. Examine your past experiences; you should be able to determine the type of task which most interested you. As a result of your self-examination, choose a goal; it provides a target to shoot for.
A-3	*Can the goal be reasonably attained?*	Be careful not to become enamoured with a one-shot success (for example, publishing one paper successfully doesn't make you a writer). Review your goal against reality. Talk it out with your wife or girl friend, parent, or some friend or associate who can be more objective than you in relation to the goal you have chosen.


A
A1 Decision to Leave
C2
A2 Determine Employment Goal
A3 Can Goal be Reasonably Attained
No
D6
A4 List Immediate Job Objectives
D1
D8
No
A5 Does Experience Promote Objectives
E2
No
A6 Are Immediate Objectives and Goal Compatible
No
D5
A7 Draft Résumé
No
A8 Does Résumé Sell Objectives
A9 Does Honest Modification Sell Objectives
C1
E3
A10 Determine Reasonable Salary
B
B
B1 Review Sources of Employment
B2 Choose Potential Sources
No
B3 Are Sources Best Suited to Objectives
No
B4 Draft Cover Letter
No
B5 Does Cover Letter Match Résumé
B6 Submit Cover Letter and Résumé
B7 Receive and Review Responses
C
No
B8 Are Responses Favorable
D
C
A10
No
C1 Is your Asking Salary Compatible with Industry
A7
No
C2 Is Present Salary ≤ Industry
C3 Are you Willing to Take a Salary Cut
A10
No
Stop
D
A4
No
D1 Are Objectives Reasonable to Employers
Stop
No
D2 Are you Prepared to Interview
D3 Arrange Interview
C3
D4 Interview
A7
No
D5 Did Résumé Sell Objectives
A4
No
D6 Are Your Objectives Still as Listed
E
No
D7 Did you Get an Offer
A4
No
D8 Did you Accept
Stop
Are your Objectives Understated
E
A10
No
E1 Was Requested Salary Accepted
A4
No
E2 Was Experience Reasonable
Stop
No
E3 Are you Willing to Accept Less
A10

A-4 *List immediate job objectives* — This is the first plateau in your quest. You must now decide how to go from where you are now to the realization of your goals. Take the trouble to list all your thoughts, then do as Juran suggests in "Managerial Breakthrough", pick out the select few objectives from the trivial many.

A-5 *Does experience promote your objectives?* — Examine your list of objectives against your experience. Make sure you can honestly fulfill the responsibilities you are determined to accept. It is far better to take an educational detour to gain skills than to be branded a fraud and "incompetent." If your experience can't support your objectives, go back to your list of immediate job objectives and review them. Reflect on how much you cheat yourself if you don't really determine what your objectives should be.

A-6 *Are your immediate objectives and your goal compatible?* — Be careful that you are not making your objectives too wide. Poorly defined objectives tend to blur the target goal. Are you sure the objectives are suited to the goal? Maybe one or the other should be modified.

To add some time data, we are now at about decision plus five days.

A-7 *Draft résumé* — This is the second plateau. Lay out your experience in a tabular form. Prune the data to a reasonable size. I recommend the Encyclopedia Brittanica Research Service publication on Résumés as an excellent guide.

A-8 *Does your résumé sell your objective?* and A-9 *Does honest modification sell your objectives?* — A resume should be a tool helping you to attain part of the distance to your goal. If it doesn't serve this purpose, it has no utility. Discard it and try again. If you still can't succeed review your objectives.

We are now at about decision plus nine days.

A-10 *Determine a reasonable salary* — Don't get carried away by the thought of more money. Depending on the industry, 5-10% is average. In some fields the need allows for higher increases; yet I tend to feel disturbed about the offer of a higher salary than I think I'm worth. Eventually the need will cease; will my job security and potential advancement cease with it? There are several guides to executive compensation which one can use to develop a feel for what he is worth to a given industry. Use them.

B-1 *Review sources of employment* — This could be accomplished in parallel to the "A" series but in a more general way. By waiting until you have your "self" aligned, you stand a much better chance of making sharper choices concerning your sources of employment.

B-2 *Choose potential sources* — After you've listed a group of potential sources, research them. If you know about potential workplaces in advance, you can better determine where you want to work in them.

B-3 *Are sources best suited to your objectives?* — Do not be impressed by a company's facade or the stability of its work levels or any of the unimportant things that can attract you. Match the company's ability to help you attain your objectives to the objectives you have listed. Choose only those companies, as prime sources, which further the attainment of your objectives.

B-4 *Draft covering letter* — Each company is different. The selling points which will verbally portray your image are different. So do not use a form type covering letter. Address your letter to someone. Gear it to sell the benefits you have to offer. Companies receive tens to hundreds of applications weekly. Think of the welcome change from "I did xxx" to "you can benefit from my employment by xxx". The draft of the covering letter should be a microcosm of your résumé, always positive, always selling, but never vain, pretentious, or pushy.

B-5 *Does the covering letter match your résumé* — Make sure your letter doesn't contradict your résumé. Do not oversell in the letter what you cannot prove in the résumé.

B-6 *Submit your covering letters and résumés* — This is your third plateau. Now you can relax for a while. Most companies take two to four weeks to reply. This gives them time to pass your résumé to interested parties.

We are now at about decision plus 15 days.

B-7 *Receive and review responses* — Read each response carefully but don't be scrupulous.

B-8 *Are responses favorable?* — If responses are favorable, go to line "D." If responses are unfavorable, go to line "C."

C-1 *Is your asking salary compatible with industry?* — Back at A-10 I suggested you not get carried away with the thought of more money. The negative responses are a test. Typically if you have the experience to meet a need a potential employer has, his main objection will be your asking price.

C-2 *Is your present salary equal to or greater than industry level?* If you are compatible with industry salary-wise, go back and review your resume. Maybe you undersold yourself. If you are above the industry level for your skills, move on to C-3.

C-3 *Are you willing to take a salary cut?* If you are determined to either maintain your present salary or to get an increase, then stop. It is useless to try to get a better paying job while bucking industry trends. If you will take a salary cut, return to A-10.

D-1 *Are your objectives reasonable to potential employers?* You may be called in to an interview for a position only to find that the company has something other than what you requested in mind. If the response inviting you to the interview doesn't say specifically what position you will be interviewed for, define the position when you call to make the appointment. If the position is outside your objectives, you must decide how important your objectives and goal really are.

D-2 *Are you prepared to interview?* At this point the many unlisted subroutines come into place. Don't waste your time and the potential employer's time if you have really decided but won't admit that you:

1. Can't relocate.
2. Do not like travel from suburbs to the city.
3. Wife doesn't like you out late but the job requires it.
4. etc.

If you can't interview honestly, do not interview at all. In fact, determine if you should be interviewing and looking at all.

D-3 *Arrange the interview* Make the time convenient to both parties. Try not to rush the interview so you have time to prepare. Determine what specifics the interviewer wants to see.

D-4 *Interview* Be normal. Act as you always act. Remember if you start playing a role at the interview, you will be forced to live it during your employment. Be honest. Tell what you did and why. Bring samples of your work. Don't be afraid to say "I don't know." Don't try to second-guess so as to please. Remember, half truths or exaggerations can and will hurt later on.

D-5 *Did your résumé sell your objectives?* After the first interview, you have objective data for insight into your campaign. If the interviewer had objectives for you other than those you suggested, review your résumé; possibly it does not say what you wanted it to.

D-6 *Are your objectives still as listed in A 4?* Based on your interview you can determine if your objectives are reasonable to someone on the other side of the fence. You may wish to modify them.

D-7 *Did you obtain an offer?* If you received an offer and accepted, go on to D-8. If you did not receive an offer, go to line "E."

D-8 *Did you accept?* If you accepted an offer, "Congratulations"; if not, why not? Review your objectives and résumé; see if you can zero in much closer on what you want.

E-1 *Was the requested salary acceptable?* If you asked for more than they were willing to pay, return to A-10 and determine if you were right. If in good conscience you think you are right, stick to it. You wouldn't have been happy with less money.

E-2 *Was the experience you offered reasonable?* You can't really judge this fact but you will know if you were really far off base. If you could feel uncomfortable, go back to your objectives and state them in perspective to reality and start again. You have wasted your time learning a lesson about over-selling.

E-3 *Are you willing to accept less?* If you are not willing to accept less and don't have the qualifications, stop wasting your time. If you are willing to accept a lesser job or salary, return to the "A" line at the appropriate spot and start over.

The cycle described herein may have to be repeated four to six times before you lock on to your target. It requires a great deal of fortitude and courage to stick to your guns even if it means losing some of the status you have grown accustomed to attributing to yourself. In all, this process should take six to eight weeks. If you succeed in less time, you can consider yourself more honest than most. If it takes more than eight weeks of concentrated effort, you have a problem somewhere – one you are not admitting to.

Summary

We spend more than thirty percent of our day on the job. It can be challenging or dull, interesting or boring; that is entirely up to the individual. Remember:

1. Do not go job hunting until you know your target.
2. Know your goals, establish your objectives, and most of all, be confident of your decisions.
3. Be honest with yourself. Brass and bravado are fine, but they have no place in deciding an important part of your future.
4. If you are not up to the level you feel you should be or which employers expect, work at it, Liars and cheats eventually are trapped by the webs they weave.
5. Decide what you want to do and do not accept less, but be absolutely sure your talents are not overstated.
6. Let the work, not the salary, guide your choice. No amount of money is worth the frustration that mediocre jobs can cause.
7. Use logic, not emotion. Pomp and circumstance often hide a multitude of sins.

In summary, remember, only you can be hurt by a poor choice. So, count to ten before you speak; take a day to decide. Be sure! Be careful! Be sincere! In the end you, most assuredly, will be satisfied. □

SKEPTICISM OF OFFICIAL GOVERNMENT EXPLANATIONS

From: James D. White
35 Castle Rock Drive
Mill Valley, Calif. 94941

In forwarding the enclosed order for back issues of "Computers and Automation," I am unable to resist indicating in some way my very great appreciation for the series of articles your magazine has been publishing on the assassinations. In my opinion it is tragic that less specialized publications, most of which have a clear duty in this area, exhibit little of your interest in getting at the truth.

The January issue, with its reprint of your 1959 article "Opposition to New Ideas," raises a question which has long bothered me and which I should like to discuss briefly. This is the uncanny parallelism in the treatment both of Unidentified Flying Objects (UFOs), and the assassinations.

Let me explain briefly. During World War II, I concluded tentatively that the so-called Foo Fighters probably were some sort of manifestation along the line of what later was generally called UFOs. This impression was strengthened during the exhibitions over the Baltic immediately after the war, so that when the Arnold sightings in 1947 saturated the public with the UFO concept and the subsequent waves of sightings kept it in the public consciousness, I was less skeptical than most simply because the UFO was not a new idea and I therefore was not as apprehensive about it as most people were. The more I studied the question, the more apparent it became that this very serious matter was being met largely by official denials, lies, obfuscations and, at times, outright fakery. And by nothing else.

Then came the assassination of President John F. Kennedy in Dallas, Texas, on November 22, 1963. Again, a matter of the utmost importance. And what was the response? Exactly the same. More apparent lies, the introduction of masses of confusing and often conflicting details, the barrage of ridicule directed against those trying to get at the facts, and the insistence — backed up almost universally by the media, that any departure from the official story represents the imaginings of kooks or the self-serving of charlatans. Almost immediately after the JFK assassination, I had the strong impression not only that the methods were the same, the tactics and strategy identical, but that many of the same people were carrying them out. This has persisted, and I raise seriously the question of whether this parallelism is more than coincidental, as it must be to a great extent. I suggest it as a possible area of inquiry and analysis.

I assume you also have noticed an incidental parallelism — the high incidence of UFO buffs who exhibit the same skepticism toward official explanations of the assassinations.

In this connection, I have taken the liberty of copying and enclosing a couple of pages from the Bulletin of the Aerial Phenomena Research Organization of Tucson, Arizona. You will note on the second page that they are planning a computer treatment of their accumulation of data. It occurred to me that if you did not know about this it might have some interest for you. APRO is the oldest and most solid of the UFO inquiry groups.

I thank you again for your admirable enterprise, and send every good wish.

2. From the Editor

It seems to me that there are two common human attitudes towards new or upsetting or revolutionary information.

The more common human attitude is to deny the new information. This seems to be the more normal human behavior. After all, if the information is upsetting, it might not be true — and if it is not true, one does not have to do anything about it. To do nothing is always the easiest course, especially for persons in subordinate positions — because any decision that they might make about something new, will clearly have to be reviewed by a superior. After all, "don't stick your neck out."

The less common human attitude is to accept the new information either (1) tentatively (like a scientist), waiting to hear more or learn more, or (2) completely and sometimes gullibly.

For example, Dr. Linus Pauling, Professor of chemistry at Stanford University, twice a Nobel prize winner, has recently put forward the proposition that taking large quantities of vitamin C will greatly reduce the prevalence of the common cold. A great many persons are trying out this idea. I have tried it; so far it clearly increases my health and well being. As for the American Medical Association, I have noticed no statement from them about Dr. Pauling's proposition; I would expect them to say nothing and do nothing about the idea — and if possible dissuade anybody else from doing anything about the idea — because the idea did not originate with a medical doctor who is a member of the AMA.

If it is true that normal human behavior about a new idea is to deny it, then it is not usually necessary to assume a conspiracy to prevent the spreading of that new idea. As a matter of fact the scientific attitude (that a surprising new idea should be carefully investigated and tested) is rather a recent attitude for human beings, when we look back on human history over the centuries.

We have been doing a lot of thinking about the extension of the computer field, which is necessary as a result of the proposition that:

> Computer professionals are, in reality, information engineers, and therefore they are responsible for the truth of the information and data going into the computer as well as the truth of the deductions that come out.

"Computers and Automation" does not need to agitate much in the areas of information where society, business, government, industry, the universities, etc., all agree about the kind of data that should go into a computer system — the noncontroversial information like payroll data, inventory data, wind tunnel measurements, etc. The interests of all parties agree: they all want correct data to go into the system.

But "Computers and Automation" does have to agitate about the areas where there is controversy. Here we have to help orient computer professionals to the facts of life, society, and the world, including those facts which establishments are busily suppressing, or trying to suppress. Censorship is wrong. Suppression of information is wrong. Lying is wrong. And C&A has a job to do — find out the correct information and publish it.

Jim Garrison, District Attorney, Orleans Parish vs. The Federal Government

"Why did Jim Garrison involve himself in the Clay Shaw prosecution — which has brought him nothing but grief, frustration, and heartache?"

Bernard Fensterwald, Attorney
Executive Director
National Committee to Investigate Assassinations
927 15th St., N. W.
Washington, D. C. 20005

In 1961, 1965, and again in 1969 the citizens of Orleans Parish, Louisiana, elected as their District Attorney a local lawyer whom, it seems fair to assume in view of the election returns, they considered capable, honest, and well qualified for the office. In fact, he was the first District Attorney in modern times in New Orleans to be elected to a third term. In his capacity as chief prosecutor he had the duty and obligation to assist in the indictment of those persons he suspected of having committed crimes in the jurisdiction and, in the case of those indicted, to prosecute them to the full extent of the law.

The man selected to serve three successive four year terms for the Parish was Jim Garrison. During his second term as District Attorney he was subjected to one of the most vicious character assassinations the Federal government in Washington has ever effected on any local official to date. Garrison's "folly" consisted primarily in his refusal to accept the conclusions of a non-judicial federal body chosen, not by the citizens of the nation, but by one man, ex-President Lyndon B. Johnson of the United States. That body was the Warren Commission which investigated the assassination of President John F. Kennedy.

Artillery Spotter Plane Pilot

Before examining the background and nature of this character assassination, it might be well to relate some of the background and nature of the victim.

Ealing Carrouthers Garrison (he changed his name to Jim after World War II) was born in Denison, Iowa, on November 20, 1921. He grew up and received his early education in Chicago, where his mother had moved after she divorced his father in 1924.

During World War II, Garrison had a long, dangerous, and distinguished career as an artillery spotter plane pilot in the European Theatre, where he flew many missions in an unarmed plane over the German lines. After the war he remained in the Army Reserve, and he was called up briefly for active duty during the Korean War. He was returned to inactive duty in the Reserve when he was found both physically and psychologically unsuited for combat duty. He received psychiatric care both during and after his Korean War service, and with apparent favorable results, for as late as 1969 he still held an Army Reserve Commission as a Lieutenant Colonel.

1961: Elected District Attorney

His association with New Orleans and the law began when he attended Tulane Law School. After a short period of service with the Federal Bureau of Investigation, he became city attorney and then assistant district attorney for Orleans Parish, which encompasses most of urban New Orleans. In 1961, to the surprise of most of the local politicians, he was elected District Attorney.

The years since his first election have been stormy ones. He drove the gamblers and the B-girls from Bourbon Street; he bitterly attacked the police for their complacency toward crime; and in 1962 he became locked in a battle with all eight of the city's Criminal Court Judges because of their refusal to approve funds which he had requested for an in-depth investigation of crime in New Orleans.

The judges charged him with defamation of character and criminal libel and fined him $1,000, but on appeal the U.S. Supreme Court overturned the conviction in a milestone decision outlining the citizen's right to criticize public officials.

Popularity

Although Garrison has not endeared himself to the local "powers that be," through the years he has gained considerable popularity with the citizens of Orleans Parish, who are, after all, the people who pay his salary and the ones whose interests he protects and represents.

He cleaned up the French Quarter, but not to the point of ruining it from a fun standpoint, and destroying its attractiveness to conventioneers. He chased the gamblers across the river into Jefferson Parish. He championed civil liberties in a city with deep rooted Southern prejudices, and he appointed a Negro assistant District Attorney. In late 1964, he won reelection over the strong opposition of the local political establishment.

In the next few years, his career became less controversial, and, everything being equal, he could have looked forward to more years as D.A., perhaps to a judgeship, or returning to the private practice of law. For a reasonably young attorney, Jim Garrison seemed to have "had it made."

The Clay Shaw Case

Why, then, did he involve himself in the Clay Shaw prosecution which has brought him nothing but grief, frustration, and heartache?

It has been suggested by some people that the Shaw case has been a figment of Garrison's imagination, purposely conceived in late 1966 and promoted because of his political ambitions. In the light of how the case developed, this theory seems to have perhaps some surface plausibility; but Garrison, as an experienced prosecutor with a remarkably successful record of convictions behind him, must have known the risks involved in putting his whole career on the line in a single case, a case with very little merit. As he himself put it in an October, 1966, interview by Playboy Magazine:

> I was perfectly aware that I might have signed my political death warrant the moment I launched this case — but I couldn't care less as long as I can shed some light on John Kennedy's assassination.

New Orleans: Where Lee Harvey Oswald Resided

There were other factors which led to Garrison's fateful decision. Popular belief to the contrary, his interest in the assassination as a prosecutor began, not in 1966, but in 1963. In fact it began on the day John Kennedy was killed. Garrison had been a great admirer of JFK and was terribly distraught by his murder. He also happened to be the District Attorney in the city in which Lee Harvey Oswald had grown up and in which he had resided until shortly before the assassination. It occurred to Garrison, that, if the assassination were the result of a conspiracy, as was the first reaction of many people, it would not be beyond the realm of possibility — indeed probability — that the roots of the conspiracy might lie in New Orleans. Moreover, immediately after the assassination, Herman Kohlman, one of his assistant District Attorneys, received a tip from Jack Martin, a local investigator with intelligence connections, suggesting that they should pick up and question a certain David Ferrie in connection with the murder.

David Ferrie

David Ferrie was well known to both Kohlman and Garrison; he was even better known to the New Orleans police as a brilliant ex-Eastern Airlines pilot, a notorious homo-sexual, a career researcher, a Civil Air Patrol organizer, a mystic, and interestingly enough, a man who had very active contacts with both the Central Intelligence Agency and the Mafia. In fact, at the exact time of the assassination he was sitting in a New Orleans courtroom with Carlos Marcello, the alleged New Orleans underworld chieftain. Ferrie was acting as an investigator for Marcello's defense attorney. Marcello, who was being tried for violation of the federal deportation laws, won a smashing legal victory on the very day, November 22, 1963, when Kennedy was shot.

Right after court adjourned, Ferrie rushed out and picked up two young "roommates," Alvin Beauboeuf and Melvin Coffey, and headed for Texas via auto. Later, when questioned about the trip, Ferrie at first said that they were going duck hunting; then, subsequently, he said they were going ice-skating; in fact, he had done neither. The threesome had driven to Houston and then to Galveston where Ferrie had spent several hours waiting next to a pay telephone for reasons at this time unknown. On the afternoon and evening of November 24th, the threesome drove back to New Orleans, after which Ferrie proceeded alone to Hammond, Louisiana (the hometown of Clay Shaw), and back to New Orleans on Monday, November 25. At this point he was arrested and questioned by the D.A. and his staff, and then turned over to FBI agents who questioned him briefly and released him. After pursuing several other seemingly fruitless leads, Garrison closed his books on the case, satisfied that he had done his part in attempting to unravel the mysteries of the Kennedy murder.

Visit With Senator Russell Long

For the next three years, as far as Garrison was concerned, the case remained closed. Many others, however, had doubts, and the case would not stay buried. Here in his own words is a description of Garrison's re-entry into the case in November, 1966:

> Until (then) I had complete faith in the Warren Report ... But then ... I visited New York City with Senator Russell Long; and when the subject of the assassination came up, (Long) expressed grave doubts about the Warren Commission's conclusion that Lee Harvey Oswald was the lone assassin. Now, this disturbed me, because here was the Majority Whip of the U.S. Senate speaking, not some publicity hound with an ideological axe to grind; and if at this late juncture he still entertained serious reservations about the Commission's determinations, maybe there was more to the assassination than met the eye.
>
> So I began reading every book and magazine article on the assassination I could get my hands on — my tombstone may be inscribed "Curiosity Killed the D.A." — and I found my own doubts growing. Finally, I put aside all other business and started to wade through the Warren Commission's own 26 volumes of supportive evidence and testimony. That was the clincher. It's impossible for anyone possessed of reasonable objectivity and a fair degree of intelligence to read those 26 volumes and not reach the conclusion that the Warren Commission was wrong in every one of its major conclusions pertaining to the assassination. For me, that was the end of innocence ... Weisberg and Mark Lane sparked my general doubts about the assassination; but more importantly, they led me into specific areas of inquiry. After I realized that something was seriously wrong, I had no alternative but to face the fact that Oswald had arrived in Dallas only a short time before the assassination and that prior to that time he had lived in New Orleans for over six months. I became curious about what this alleged assassin was doing while under my jurisdiction, and my staff began an investigation of Oswald's activities and contacts in the New Orleans area. We interviewed people the Warren Commission had never questioned; and a whole new world began opening up. As I studied Oswald's movements in Dallas, my mind turned back to the aftermath of the assassination in 1963, when my office questioned three men — David Ferrie, Alvin Beauboeuf, and Melvin Coffey — on suspicion of being involved in the assassination. I began to wonder if we hadn't dismissed these three men too lightly, and we reopened our investigation into their activities.

Following leads furnished by critics of the Warren Report, Garrison and his staff began to hit pay dirt immediately. In addition to Ferrie, Beauboeuf, and Coffey, they began to look into the activities of Oswald's Marine buddy, Kerry Thornley, and his New Orleans lawyer, Dean Andrews. They

looked, too, for the mysterious Clay Bertrand. They sought and found solid leads to link Ferrie, Oswald, and Ruby. They found footprints leading toward the two Cuban factions, anti-Castro and pro-Castro.

Secrecy

Again contrary to current popular belief, Garrison proceeded with his investigation in absolute secrecy. He realized full well its importance and its sensitivity. His realization was strengthened when it became clear that he was crossing the paths of the CIA, the FBI, the Warren Commission and possibly others. He began quietly to line up support for his investigation in the community. A group, known as Truth or Consequences, was formed among local business and professional men, and they lent much moral and some financial support to the probe.

Failure of Secrecy

As the investigation widened and began to produce results, it became too big a story to keep under cover, and it was finally broken by Rosemary James, a local reporter, in mid February of 1967. Then things really began to happen. Garrison had overnight become the subject of worldwide attention ... including the attention of the federal government.

Unwisely, Garrison gave a series of press interviews, and answered questions with speculation when he did not have the hard facts. Much of this speculation dealt with the ultimate force or forces he suspected might have been behind the assassination. Mention was made of various federal agencies, the "military-industrial complex," Cubans, "right wing extremists," and others. These sensational charges coming from a responsible official whetted the American public's well known appetite for a conspiracy angle.

Meanwhile, Garrison's investigation was progressing rapidly. It was his intention to arrest David Ferrie and to charge him with conspiring with Lee Harvey Oswald, "Clay Bertrand" (an alias), and others to kill John F. Kennedy. Several days before the planned arrest, Ferrie actually came to Garrison, sought and received physical protection from unspecified persons. He seemed terrified, but after several days of protective custody, and before Garrison was ready to formally charge him, Ferrie returned to his apartment. Within 72 hours he was dead. The coroner's verdict was that Ferrie died of natural causes, i.e., a heart attack. Whether it was a natural death or not may never be known, but it is clear that the timing of Ferrie's demise did little to decrease Garrison's suspicions of conspiracy.

Warning

In retrospect, this turn of events should have been a warning to Garrison to take a long hard look before proceeding further. As matters stood at that time, the principal suspects (Oswald, Ferrie, and Ruby) were all dead; the identity of the other suspect, "Clay Bertrand", had not yet been established. But, Garrison had a number of witnesses at that time who claimed that they could and would identify Clay Shaw as the mysterious "Clay Bertrand." The prosecutor was particularly counting on Perry Russo and Dean Andrews.

If discretion had been the better part of valor, Garrison would have gone no further with the prosecution of the case, at least at that time. After all he was openly challenging the integrity of the whole Federal Establishment, including Chief Justice Warren, J. Edgar Hoover, members of the Warren Commission, the White House, and the Kennedy Clan. He was a lone, local prosecutor, with local jurisdiction, little money, and a tiny staff.

Delay

Why he proceeded, no one except Garrison really knows, but proceed he did.

He ordered Shaw arrested, and his Rubicon had been crossed with no turning back. He would either win, or he would be destroyed by the federal government. The tactic chosen to frustrate Garrison's prosecution was delay. Delay was needed to blacken Garrison's reputation, undermine his effectiveness as a prosecutor, and erode the underpinnings of his case. Part of the delay that ensued was, of course, inherent in normal criminal procedures. Shaw's lawyers filed several motions even before the pre-trial hearing. Garrison, of course, was pushing for a speedy trial at every turn.

Beginning in September 1967, Shaw's lawyers filed motions for delays of the trial. These were granted. Finally, when it became evident that no further delay could be secured through the local courts, the defense forces turned to their friendly ally and advisor, the federal government. They filed a petition in the Federal District Court in New Orleans, asking it to rule (1) that the Warren Commission Report is binding upon all courts in the United States, and (2) that all further prosecution of Clay Shaw be enjoined. These requests were preposterous from a legal standpoint; local law enforcement would collapse if federal courts could enjoin local prosecutors from bringing malefactors to trial. However, this did not prevent Federal District Judge Frederick J. R. Heebe from issuing a restraining order. A further hearing by a three-judge Federal panel resulted in the denial of both Shaw's requested rulings, but the court permitted the injunction against Garrison to stand pending an appeal to the U.S. Supreme Court, thus delaying the trial into 1969. Eventually the highest court agreed unanimously that Garrison had every legal right to bring Shaw to trial. The trial finally got under way almost two years after Shaw's arrest.

Help to Clay Shaw

The federal government made good use of the two year delay in its effort to blacken Garrison's name and wreck his case. Federal officials openly and blatantly went out of their way to help Shaw and his lawyers, despite the fact that the United States officially had no role in the Shaw Case.

Foremost among these members of the federal government to aid Clay Shaw were then Attorney General Ramsey Clark, highest legal officer, and Chief Justice Earl Warren, highest ranking judicial officer.

Ramsey Clark

Ramsey Clark's nomination as Attorney General came up before the Senate Judiciary Committee on March 22, 1967, the same day that Shaw was officially charged with conspiracy in New Orleans. Immediately upon hearing of Shaw's arrest, and before his confirmation by the full Senate, Mr. Clark announced that in November and December of 1963, the FBI had made an investigation of Clay Shaw and had found him innocent of any complicity in the assassination. He did not explain why the FBI had investigated Clay Shaw.

When asked what he thought of the new Attorney General's statement, Clay Shaw said, not unexpectedly, "I'm gratified." As Garrison later commented, "Not many defendants have the Attorney General of the United States testifying as character witness, even before the trial is set."

Ramsey Clark's rather pointed effort to help Shaw backfired when reporters began asking "why". Why had the FBI checked Shaw? And why had the Attorney General made a point of helping a defendant charged in a state court for a state crime? Later, on the day of Clark's comment, a spokesman for the U.S. Dept. of Justice explained that the earlier investigation of Shaw had been because of the supposed identity of Clay Bertrand and Clay Shaw. The latter explanation only made matters worse and, eventually (on June 2) at the request of Shaw's lawyers, the Justice Department stated that the Attorney General's original statement had been untrue and that no investigation of Shaw had ever been made, because none had been necessary. A more logical explanation is that there had been no FBI investigation of Clay Shaw per se in 1963, but his name had come up in the probe of "Clay Bertrand."

Earl Warren

At about the same time Ramsey Clark was making his first attempt to give Shaw a boost, another voice was heard from abroad. The voice was that of Chief Justice Earl Warren, who was traveling in Peru. When asked about Shaw's possible implication in the assassination, Warren said, "I have not heard anything which would change the (Warren Commission) Report in any way, shape, or form."

Ramsey Clark Again

Not satisfied with his first fluff, Attorney General Clark tried again on October 13, 1967. Following a speech to the Student Legal Forum at the University of Virginia, he told students and newsmen that Garrison had taken "a perfectly fine man, Clay Shaw, and ruined him just for personal aggrandizement." He added, "Much as I may hate to do it, I might just have to prosecute Jim Garrison." He did not say what Federal charges might be brought against Garrison.

When these remarks hit the Nation's front pages the next day, the Department of Justice realized how unethical Clark's remarks must have seemed, as Shaw's trial was still pending. A spokesman for the Attorney General — who had not been present in Charlottesville to hear the remarks — denied that Clark had said anything concerning Shaw or Garrison, but had confined his remarks to a purely hypothetical question which had been posed: Ray Barry, the reporter who had given the story to the Associated Press, retorted, "The quotes were exactly word-for-word."

Army Medical Records

A galling example of the duplicity of the federal government in this case concerns the availability of Army medical records. When prosecutor Garrison attempted, through judicial channels, to subpoena defendant Shaw's Army records for purposes of aiding in a criminal prosecution, he was informed by the Federal Government that such records were confidential and could not be released for any purpose without consent of the person involved. Yet, someone in the Federal Government "leaked" Garrison's records to a Chicago reporter, and the next morning the Nation read all of the confidential details of Garrison's psychiatric treatment of seventeen years previously. Needless to say, the individual who "leaked" the records was never found, and no punishment for him seems imminent today.

Surveillance and Harassment

During this whole period Garrison and his staff were subject to almost constant surveillance and harassment at the hands of federal agents. As Dick Billings, a former Life reporter put it:

> Contending with Garrison has been Washington's problem for some time. Officially, the federal government won't admit he's worthy of concern, while in fact the FBI watches every move he makes. Agents trail him whenever he leaves New Orleans. (There is a story on the West Coast that the way to find Garrison when he comes to town is to call the FBI.)

No Cooperation

However, the real pinch of the shoe was felt in the complete inability of Garrison to elicit a shred of the normal and routine cooperation that exists between local prosecutors and the Federal Government, particularly the Department of Justice and the FBI. In the vast majority of cases, local prosecutors can count on federal agents and federal agencies to supply information and witnesses as needed for prosecution. But such was not the case here. Garrison got no information, no witnesses, nothing. And as can be imagined, this made the prosecution of Shaw infinitely more difficult.

Subpoena of Allen W. Dulles

Frustration was compounded when Garrison attempted to subpoena Allen W. Dulles, former head of the CIA, before the local Grand Jury. Dulles was needed to give testimony relative to whether or not Lee Harvey Oswald, one of the alleged conspirators along with Clay Shaw and David Ferrie, might or might not have had any type of association with the CIA. As Mr. Dulles was residing in Washington, D.C., the only proper way in which he could be served with a subpoena was under the Uniform Out-of-State Witness Act to which both the State of Louisiana and the District of Columbia are parties. If a Louisiana witness is needed in D.C., the local Parish D. A. has the witness served with a subpoena and a judicial hearing is held to see if the witness should be extradited back to D.C. Conversely, when a D.C. witness is required for a trial in Louisiana, the U.S. Attorney in the District of Columbia has the subpoena served and a hearing is held in Washington. It is purely routine. But not when Garrison wished to subpoena Allen Dulles before the Orleans Parish Grand Jury. The following is the answer the prosecutor received back from Mr. David Bress, U.S. Attorney for the District of Columbia:

> This will acknowledge your letter of March 6, 1968, concerning the Uniform Act to Secure Attendance of Witnesses from without a State in Criminal Proceedings in which you request us to represent your interests in compelling the attendance of a witness before the Orleans Parish Grand Jury.
>
> We decline to represent you in this matter. I am returning the documents you forwarded, including the check, so that you may pursue the matter yourself or arrange for other counsel.

As Alcock commented, "You can't arrange for

other counsel. You can't get private counsel to rule somebody into court. I might just add that subsequently Allen Dulles was on a television show, and he stated that he had no objections to going to New Orleans and he wanted to get a subpoena, and up to that date he hadn't been served a subpoena. Well, obviously, he couldn't be served because the U.S. Attorney's office refused to cooperate. So although he was being magnanimous on that TV program, it was with the knowledge that he would never be served."

Subpoena for Items From the National Archives

A similar federal roadblock was encountered in attempts to subpoena certain items from the National Archives, but a way was found around this roadblock, albeit too late for the Shaw trial. Garrison had attempted to have a subpoena duces tecum (i.e., for production of documents) served on the Archivist of the United States in order that he might obtain for his criminal proceeding certain important exhibits, especially the photographs and x-rays of the autopsy of President Kennedy. His request for the Archives items met with the usual refusal.

Garrison asked me if I would represent him in a renewed attempt to get the items. I reluctantly agreed because at long last the Shaw trial was scheduled to be heard and I knew that, even if we were successful, the Government could delay the execution of the order till after the trial. This notwithstanding, Garrison asked that I try to secure the records.

According to D.C. procedures the subpoena to the Archivist could be taken before any of the twelve judges of the D.C. Court of General Sessions. Of these, there was one with the reputation of not being intimidated by the Federal Government. This was Judge Charles Halleck, son of the former Minority Leader of the House of Representatives. Bypassing the U.S. Attorney, Judge Halleck ordered the U.S. Marshal to serve the subpoena upon the Archivist, and set the date of January 17, 1969, for the Archivist to appear in his court to show cause why the photographs and x-rays of JFK's autopsy should not be sent to New Orleans per the routine request filed by D. A. Garrison.

For the first time, Garrison seemed to be winning a victory in a federal court and the federal government began to panic. On the night of January 16, 1969, on the eve of the hearings and four days before he was to leave office, Attorney General Ramsey Clark released a Review of the Autopsy, which had been secretly made in early 1968 and held since then. Ostensibly the Review upheld the Warren Report and made "unnecessary" any further consideration of the matter.

Upon closer scrutiny, the Review did just the opposite. As the subsequent hearing before Judge Halleck revealed, the Ramsey Clark Review established: (1) there was a heretofore unmentioned "mass" in the President's brain, 1/2 x 3/4 inches, and possibly an "extra" bullet or large fragment; (2) the wound in the President's head had moved upward by four inches (quite a distance on an object the size of a scalp); and (3) there were heretofore unreported metal fragments in the President's neck, casting more doubt on the "single bullet theory" of the Warren Report.

Having heard expert testimony on this from Dr. Cyril Wecht, one of the leading pathologists in the country, Judge Halleck ordered the Archivist either to permit Dr. Wecht to examine the photos and x-rays or to send the photos and x-rays to New Orleans. This unexpected order must have sent shivers down the spine of the opposition to Garrison; and the Archivist promptly filed an appeal. In view of the fact that the Shaw trial was then in its final stages, the victory didn't help the prosecution. The case did, however, demonstrate most vividly the dogged determination of the federal government to block Garrison at every turn, for if the photos and x-rays showed what Ramsey Clark said they did, what harm would there have been in letting one independent pathologist examine them?

State "Road Blocks"

If Garrison was frustrated by federal road blocks, he was to be equally frustrated by state road blocks. At least five key witnesses were located outside Louisiana and, in each case, Garrison was unsuccessful in getting them returned to New Orleans for the trial. For the record, here is the list of witnesses and states from which they could not be extradited:

Kerry Thornley — Oswald's Marine buddy — Florida
Gordon Novel — Boy Nazi and CIA operative — Ohio
Sergio Arcaeba-Smith — Cuban operative — Texas
Sandra Moffett — Friend of Perry Russo — Nebraska
Edgar Bradley — suspect according to Garrison — California

It is not known to what extent, if any, the successive refusal of five states to extradite witnesses to Louisiana was influenced by Federal desires, but as we have seen the federal government wields a big stick with local officials.

Federal Court Orders That Witnesses Did Not Have to Appear

There is no doubt, on the other hand, as to the usefulness of the Federal Courts in Clay Shaw's efforts to fend off prosecution in the Louisiana courts. They were utilized in three ways: to delay the state court proceedings for considerable periods of time; to "protect" prospective prosecution witnesses from having to appear before the Orleans Parish Grand Jury; and to intimidate those who sought to help the prosecutor.

At least three witnesses summoned by Garrison before the Orleans Parish Grand Jury sought and received "relief" in the federal courts which ordered that they did not have to appear. These included Walter Sheridan of NBC, Chief of the Anti-Garrison squad; Richard Townley also of NBC; and David Chandler of Life. The other side of the coin was the calling of a federal grand jury in November of 1968 in Nashville, Tennessee, following a court appearance there of Walter Sheridan. Since grand jury proceedings are conducted behind closed doors, it is not known how many witnesses were summoned before this jury or who they were, but one who is known to have appeared was Gordon Novel, a man under indictment in New Orleans and a fugitive from Louisiana. Another was Arthur Egan, a New Hampshire reporter who had accidentally overheard Sheridan's attempts to persuade Dean Andrews to "change sides" in the case. Egan worked for a newspaper that sympathized with both Jimmy Hoffa and Jim Garrison regarding the tactics being used on them by the Department of Justice. Egan's being summoned before

the Nashville grand jury could serve but one purpose: intimidation to remain silent.

Internal Revenue Service

The federal government did not rely solely on the Department of Justice and the Courts to "lean" on Jim Garrison. Other federal agencies got into the act.

Although he files a "short form" federal income tax return, Jim Garrison has undergone an intensive civil and criminal tax investigation since he sought to open the Warren Commission findings. On one occasion, two criminal investigators from IRS showed up at Garrison's office, warned him of his rights, and began asking him questions. As he related it,

> I asked if they were looking into possible criminal violation of the Federal tax laws. When they replied "Yes," I said, "We are in the business of putting people in jail, and I'm not going to help you put me in jail." They then left rather apologetically.

To this point, IRS has come up with nothing on Garrison, but each year they can try again, until they "get him".

Securities and Exchange Commission

Soon thereafter, the Securities and Exchange Commission in Washington took a swing at Garrison, which ultimately boomeranged. The Philadelphia Inquirer of October 4, 1968, ran the following story from New Orleans:

> Two finance companies that collapsed, Louisian Loan & Thrift Corp., New Orleans, and Arkansas Loan & Thrift Corp., Van Buren, Ark., have touched off an investigation by the SEC and a Federal grand jury in New Orleans.
>
> The Inquirer seeks to uncover possible links between organized crime and State and local politicians, including Jim Garrison, district attorney of New Orleans Parish.
>
> Government men see some evidence organized crime may have had a role in jeopardizing the more than $6 million in assets of the finance companies.
>
> The widening inquiry in the collapse of the two finance firms is being conducted by a Federal grand jury here and by the SEC. Criminal indictments may result. Some Federal men hope the case will expose how organized crime had a role in dissipating the more than $6 million in assets of the finance companies. The assets came largely from more than 3000 savings accounts solicited from the public.

After much fanfare in the papers and resultant bad publicity, the SEC found that it could not link Garrison to the "scandal." However, it did "net" several large fish in the local pond, including the Governor and Attorney General of Louisiana.

The foregoing is a fairly conclusive account of the publicly known efforts of the federal government to interfere with Garrison's trial of Clay Shaw and his public challenge of the conclusions of the Warren Commission Report.

In June 1971 the New York Times and other newspapers began to publish the "Pentagon Papers" –

(Continued in next column)

DANIEL ELLSBERG

1. From Edmund C. Berkeley
Editor, Computers and Automation

Like many other persons in the United States during June, we watched with fascination the struggle between the press of the United States (The New York Times, the Washington Post, the Boston Globe, etc.) and the Administration under President Nixon and Attorney General Mitchell over the publication of the details of some 7000 pages of Pentagon documents, classified as secret and dealing with the history of United States involvement in the war in Vietnam.

Fortunately for the people of the United States, the U.S. Supreme Court held that the documents could be published and that the Administration was in error in charging that this history could not be published on grounds of national security. No security of the nation was involved — only the security of a group of men in the government, presidents like Eisenhower, Kennedy, and Johnson, and officials like McNamara, Rostow, and Rusk.

The Pentagon papers show an appalling history of deception of the people of the United States by the government of the United States. For example, when President Lyndon B. Johnson campaigned in 1964 for reelection, saying that he was not going to send American soldiers to combat in Vietnam, he was lying — he had made the decision and put the processes in motion to do just that.

Thanks to a hawk who became a dove, Daniel Ellsberg, at one time an analyst in the Defense Department, and now a research associate at Mass. Inst. of Technology, the story now becomes known. He was the person who made copies of the documents and gave them to the New York Times, the Washington Post, the Boston Globe, the St. Louis Post-Dispatch, and other papers.

In July, the New York Times Book Division published "The Pentagon Papers," a paperbound book of over 600 pages, containing a narrative, summaries, extracts, and comments by New York Times reporters, based on the original 7000 pages of Pentagon documents. Over one million copies have been printed; at time of writing a second printing is under way.

Some of the things that Daniel Ellsberg has said in the last few weeks in answer to questions from the press are worth recording in the pages of "Computers and Automation". We also are a part of the U.S. press that is interested in the task of telling the truth where hitherto lies have been uttered.

(Continued on next page)

an inside history of 25 years of war in Vietnam pursued by the federal government with thorough deception of the people of the United States. This deception suggests that there is much more still to be found out about the federal government's interference with Garrison's challenge of the Warren Commission Report.

AND THE PENTAGON PAPERS

2. From Daniel Ellsberg
Research Associate
Mass. Inst. of Technology
Cambridge, Mass. 02139

(Based on verbatim quotations as they were printed in the newspapers)

The Action: Releasing "The Pentagon Papers"

I delivered the Pentagon papers to the Senate Foreign Relations Committee and to the people through the American press.

All these actions were clearly in contradiction of security regulations, secrecy regulations, and, even more, the information practices of the Department of Defense.

Nevertheless, I felt as an American citizen, as a responsible citizen, I could no longer cooperate in concealing this information from the American people. I took this action on my own initiative and I am prepared for the consequences. I have no regrets about publication of the documents, and would be glad to go to jail to end this war.

I wonder if many people wouldn't think 10 years in jail is a cheap price to pay to end the war.

I gave the information contained in the Pentagon study to Sen. J. William Fulbright, chairman of the Senate Foreign Relations Committee, in October, 1969.

This spring, two invasions later and after 9000 more Americans have died, I could only regret that I had not at that time released that information to the American people through the newspapers.

The press and I share the responsibility for bringing this history, this news, to the American public. I couldn't have done this by myself, obviously.

Guilt

The simple fact is that I have not ever felt tortured by guilt. The kind of things that I do blame myself for is not informing myself earlier than I did about the origins of the conflict and the complex political nature of the conflict. I operated on the same stereotypes as everyone else.

Non-Violent Civil Disobedience

I took it for granted, that I would be subject to successful criminal prosecution. I always intended to take responsibility for this — to preclude friends of mine from being suspected.

You know what Ghandi's term is for what is otherwise called non-violent civil disobedience? He called it "Satyagraha." That means, "truth force."

Availability of All the Information to the Public

I have felt for a couple of years that the public is not well served by relying on me or any other dozen experts to analyze that material and give recommendations in secret to the Executive branch. It is essential that it be available for the citizens of this country to read.

I really am anxious not to divert attention at this time from the content of those papers. I know better than anyone else how hard it is to get any citizen of this country to sit down and read those documents.

The Pentagon study contains adequate information at every point in the war to make better decisions than were made.

The Nixon Administration's declarations of ignorance of the documents are a set of lies, no different from the lies of the past. I must expose the duplicity of the government.

The Issue of "National Security"

It was my judgement that not one of the 7000 pages that were released could meet the standards that have been quoted ... for grave danger to the national interest. Obviously, if I had felt differently, I would not have revealed that particular page.

Concealing the Information Until Now

If I feel guilty about my early role, and I do to some degree, it's based on some rather high standards I tend to hold for public officials. You might say it's a feeling of wishing I had felt guilty about concealing this information before now.

The concealment of these papers for [as long as] 25 years has led to the death of 50,000 American men and several hundred thousand Vietnamese in recent years and more than a million Vietnamese over the last 20 years. The odds have been weighted in favor of secrecy. Judgments of the American people can now be made in light of these documents on where secrecy has led us over 25 years.

I had plenty of good reasons to think that I was doing good things for the country and good things for the people [while working for the Executive branch]. I told myself "It's good for an official like me who's critical, let's say, of the bombing, to have access to this material and have his voice heard...

I must say that I came to the feeling, especially after I had read the study, that those reasons have never been good enough. They have been wrong. I should have demanded more of myself; the public should demand more of its elected officials.

Loyalty vs. Secrecy

The Executive branch has received splendid loyalty from its employees over the last 20 years as evidenced by the surprises in these documents. The ability of this country to keep secrets has gotten too good for its own good. This ability of government employees has served their boss, but not the country.

The moral choice that's involved in something like this — and I say moral choice not to be dramatic, but because it is a hard choice — is one that each person who's had access to this material has faced ... should secrecy override the need and the right of the public to have this kind of information? I reached the point where I couldn't opt for secrecy.

(Continued on next page)

3. From Edmund C. Berkeley
Editor, Computers and Automation

(drawn from the editorial in the April 1969 issue of *Computers and Automation*)

The Misdirection of Defense

Few of the citizens of any nation would I believe disagree with this proposition:

> The main objective of the Defense Department of any nation is to try to guarantee the successful defense of that nation against attack.

For there is no doubt that armed attacks by one nation against another do occur — one of the most recent examples being the military invasion of Czechoslovakia by the Soviet Union and four other nations in August 1968. In Czechoslovakia, the government chose not to resist the overwhelming force, but to try to adjust to the demands, i.e., surrender. This was also the choice made by the commanding officer of the U.S. electronic spy ship *Pueblo* when the ship was taken over by North Korean naval vessels either just inside or outside North Korean waters.

In the case of the Defense Department of the United States, there is now substantial evidence that its main objective has shifted — it is only secondarily "the successful defense of the United States against attack" and is mainly something else. In fact there is good evidence that the something else is the serving of the interests of what President Dwight D. Eisenhower identified in 1960 as the "military industrial complex" and warned Americans against.

What is the military industrial complex? Briefly, it is a portion or segment of the United States, consisting of industries, regions, lobbies, and people (of many kinds), who make a great deal of money (profits, income, salaries, wages, research and development grants, pensions, consulting fees, etc.) from the vast budget of the U.S. Department of Defense, some $80 billion a year. According to tables in a book *The Depleted Society* by Professor Seymour Melman, 73% of this budget has been paid to 100 companies.

From 1965 to 1967, the main reason the people of the United States put up with the enormous, rising costs of "defense" was the pair of arguments: "We have to fulfill our commitments to the government of South Vietnam" (no matter that it was the ninth dictatorship since Ngo Dinh Diem was shot), and "We can't let our boys down in Vietnam — we must give them all they want or need".

But in 1968 it became clear that the war in Vietnam was not being won. By 1969, over 32,000 Americans had been killed there; over 150,000 Americans, wounded; over 4000 planes and helicopters had been lost; over $100 billion, spent; more bombing tonnage had been dropped in Vietnam than the United States dropped in all the theaters of World War II; and still no substantial progress. What is the main trouble? Basically, we cannot tell the difference between Vietnamese on our side and Vietnamese on the other side, and so our fire power produces hatred for Americans on a large scale.

In 1965 it may have seemed true to many people in the United States that "defense of the United States" required winning a land war in Asia more than 9000 miles away from California.

But it looks now as if the people of the United States no longer believe that fighting such a war is necessary to our interests, and they want the war stopped. So the civilian government of the United States is saying to the Defense Department and the Saigon government, "No, with 500,000 American soldiers in Vietnam, you cannot have any more". And a president of the United States has been denied reelection to the presidency because of the war in Vietnam.

As a result, the theory and practice of the U.S. Defense Department and of the U.S. military industrial complex are being questioned by thousands of influential persons, including Senators and Congressmen. Even President Nixon in one of his campaign speeches promised to bring the war in Vietnam to a conclusion within six months of his inauguration.

The way in which the military industrial complex operates is particularly clear in the present pressure from the Defense Department and associated defense industries to obtain public approval for the proposed Sentinel, "thin" Anti-Ballistic Missile System. The proposed system has aroused a great deal of opposition in the U.S. Congress and in Boston, Chicago, and elsewhere in locations which are threatened by the proposed anti-missile sites. Clearly these sites will increase the danger of those areas becoming priority targets in event of a nuclear war. In fact, as soon as the first antimissile has been fired against the first incoming missile, according to a statement by Senator Edward Kennedy, then radio location of the second incoming missile becomes impossible, because of the effects of radiation from the nuclear explosion in the high atmosphere! But does the Defense Department honestly and patriotically admit this flaw? It does not.

Instead, the Pentagon makes use of an Assistant Secretary of Defense for Public Affairs and a Chief of Information Office of the U.S. Army. Both these offices with a total budget of over $6 million a year have been "programmed" into the public affairs plan of Lt. Gen. A. D. Starbird for "promoting" the Sentinel Anti-Ballistic Missile system. He is to provide for "speaking engagements, information kits, exhibits, films, press releases", etc. In other words, the Pentagon is using the taxpayers' money to try to persuade the taxpayers to support a technically illogical project. For example, the Selectmen of Reading, Mass., are being invited by the Army on a sightseeing trip to anti-ballistic missile centers.

The military industrial complex (the MIC) by its very nature, evolution-wise, cannot be considered to be really interested in the defense of the United States. Since a large part of the MIC could not exist competitively in the civilian market, it must continue to seek large funds from the government, using good arguments if they exist, and any arguments at all if good arguments do not exist. What it is really interested in is making money from defense contracts. So the real preferences of the MIC are for billion dollar procurement programs, which sound meaningful and which can be escalated, even if technologically they are unsound, logically they are unreasonable, politically they increase the insecurity of the United States, and financially they threaten the solvency of the United States and the deepening neglect of our domestic needs. ...

We must help to change the climate of public opinion away from the usual rubber-stamp "yes" for expensive proposals from the MIC.

The military industrial complex will then make less money. But the people of the United States and the world will then make more money, and they will live more instead of dying more. Even American boys, instead of dying in Vietnam, will stay alive in the United States.

ACROSS THE EDITOR'S DESK

APPLICATIONS

RENO COMPANY LOCATES TRAVELERS' LOST LUGGAGE WITH HELP OF IBM COMPUTER

People often spend months planning a trip, make reservations, read travel literature, buy travelers checks — and then arrive without their luggage. International Luggage Registry (Reno, Nevada) now offers a computer-based locator service to the traveler whose baggage doesn't land where he does. An IBM System/360 Model 20 sees to most of the details. ILR's system works like this:

A traveler pays $5 yearly for his listing with the registry. ILR records his home address and telephone number in a master file and sends him 17 computer-printed adhesive labels that he attaches to his luggage. (He also receives a wallet card.) Each label bears the traveler's initials in inch-high letters and carries his private code number. In addition, the copyrighted ILR name, its address and toll-free telephone number are on each label, plus instructions to the finder.

If a clerk finds an unclaimed bag, he simply calls ILR — toll free — and reports his find. By then the traveler almost certainly has called ILR to report his loss. ILR's President Frank N. Bender said, "Usually, we can match bag and owner in a matter of a few seconds. Most often a bag is back in the right hands within 24 hours. Without ILR, even if the bag is found, it is often sent to the owner's home, and he's without it for the duration of his trip. Our system allows the bag to be sent to the traveler's next stop."

Mr. Bender said the young company already has been accorded complete cooperation by most of the world's airlines. (In this country alone, airlines paid over $20 million last year in baggage claims. This represented the profit on $200 million in ticket sales.) All transportation companies pay lost luggage claims, and bus and train companies also have promised their cooperation.

"This is a supplementary service. The transportation companies do a good job with luggage," Mr. Bender said. "But when there is a loss it's an awfully important one to a man who needs his suitcase the next day."

RANDOM SELECTION OF JURORS BY COMPUTER WORKING FOR JUSTICE

The first Tuesday in every month an IBM computer at Superior Court of the District of Columbia, Washington, D.C., turns 10,000 District residents into anonymous, six-digit numbers. It's from that list of 10,000 numbers that will come the 1,000 jurors needed the following month to try the civil and criminal cases that come before Washington's courts. "In the past six months, this advanced jury selection system has helped streamline court operations and, in turn, improved the quality of justice itself," says Harold H. Greene, Chief Judge for the Superior Court of the District of Columbia.

Although many courts across the nation use computers to generate the names of prospective jurors from tax rolls and voter files, the task of selecting, preparing summons and record keeping is most often done by hand. The District's system — one of the most advanced in the nation — is an exception. From the time a resident is qualified for jury duty, until his name is printed on a summons, the person remains an anonymous number stored in the computer. "...For any jury system to be successful, it must be more than efficient; it has to ensure that no individual gets preferential treatment over anyone else," says James M. Vaseleck, director of data processing for the District of Columbia's Superior Court.

Without the computer, it would take a full-time staff to make the selections and keep the records required by the court. With the leased IBM System/360 Model 40, Vaseleck and his staff, make jury selections, update the computer's files with name, address and status changes, and produce the reports required by the courts — all in less than five hours a month.

MICROSCOPES AND COMPUTER HELP ITALIAN CENTER REPORT ON WOMEN'S CANCER TESTS

In Reggio Emilia, Italy, microscopes and a computer are being used to collect, process, control and report on uterine cancer detection tests for women in this district of about 400,000 persons. The Reggio Emilia Center was established under the Health Education program of the Italian Ministry of Health. More than 100 examinations are performed each day by the center staff, which includes a cytological doctor, four cytologists and four administrative personnel.

The Center obtains its samples from 25 specimen collection centers in the district. Specimens are attached to a pair of numbered slides and forwarded, along with data, to the district center.

Data from the examinations is fed into a Honeywell G-105 computer system. If the test is negative (no evidence of uterine tumor), the computer prints a standard reply that is mailed to the woman and her local doctor. The letter to the doctor contains a cytological evaluation of the examination, while the woman's letter includes a suggestion that she schedule another examination at a future date.

If the test is "suspected positive", the answer prepared by the computer contains only an invitation to the woman to have a further examination at an early date. The doctor's copy includes the test result. In the event of a positive test showing the presence of a uterine tumor, the computer lists pertinent information so that a personal letter can be sent by the center to the woman's local doctor.

During the last three years the medical center has examined and reported on specimens taken from 29,000 women. Of these about 90% showed negative results, 3% were suspected-positive, 1% were positive; and the others could not be interpreted and required a new specimen.

JOHNS HOPKINS UNIV. CHECKS PROPOSED TRANSIT SYSTEMS BY SIMULATION DISPLAY

At The Johns Hopkins Applied Physics Laboratory (Silver Spring, Md.) engineers are using a simulation-driven display of an automated small-vehicle transportation system to display the operation of proposed mass transit systems even before a single piece of hardware has been manufactured. The computer-based transportation system with simulated conflicts (in such areas as merging, diverting, headway control, and dispatching) is designed to show up weaknesses, design errors, and other pitfalls.

Robert B. McDowell, project engineer for the automated transit system simulation, explained that the system includes a digital computer with an interactive terminal. The simulation terminal, a modified IBM process operator's console, permits McDowell and his staff to feed num-

bers such as speed, size and number of vehicles, position and speed of vehicles, etc., to the computer. The console interface allows connection of actual hardware in place of analytical models — which then introduces further realism into the simulation.

The whole test route is displayed on a 4 x 3 foot bakelite covered board. White lights represent the normal track and the vehicles upon it. A second string, using amber and red lights for display, represents disabled cars, trouble on the line or whatever handicap the engineers incorporate.

A typical automated system being evaluated by the Applied Physics Laboratory operates 10 cars 15-feet long at 50 to 75 foot separations and speeds to 30 feet per second. There are three stations in the route and cars must turn off the main track to approach the stations. Passengers board and leave the cars during 10 second station stops.

The test track is being prepared for evaluation by the Urban Mass Transportation Administration which is studying a number of automatic systems running from small six-passenger cars to 200 passenger compact trains that travel at very high speeds.

POSTAL SERVICE AUTOMATES PRODUCTION OF KEYS FOR POSTAL LOCK BOXES

The United States Postal Service has installed a single automated system that cuts, stamps, inspects, and packages keys for postal lock boxes for mailing throughout the country. The Postal Service decided to automate this operation because of the continuing large demand for replacement of lost keys, and for new keys due to transfer of lock box ownership and by the construction of new post office facilities.

The system is controlled by a Digital Equipment Corporation PDP-8/S small computer, and was designed and developed by Comstock & Wescott, Inc., a Cambridge, Mass., based consulting and engineering firm. The system can process one key every 5½ seconds — 1 million per year based on a single 8-hour work shift.

COMPUTER HELPS PREDICT SUPREME COURT ACTIONS

Dr. Harold J. Spaeth, a Michigan State University professor, publicly predicted the high court's ruling in the Pentagon papers case several days before it was handed down. In a Sports Illustrated article, April 18, he also called the unanimous 9-0 decision in the bout between ex-heavyweight champion Muhammad Ali and his draft board. As a matter of fact, since the first of the year, the political science professor has correctly predicted the court's ruling in 91 percent of the cases he has studied. He's also foretold the votes of the individual justices accurately 81% of the time.

Dr. Spaeth's "crystal ball" is MSU's CDC 6500 computer. Into the computer he feeds data on each case under consideration and the men who will decide it. He winds up with an indication of how each justice will vote. Dr. Spaeth works under the assumption that judicial behavior is no different from other types of human behavior, except for the limitations imposed by the rules of the court.

Biographical data, voting records and written opinions of the justices give Dr. Spaeth part of his input. The rest comes from careful analysis of the case in question. Each case is classified according to one or more of 73 different categories and coded for the computer.

Despite its predictability, Dr. Spaeth rejects the idea that the third branch of government could be replaced by a judicial automation. The court is a human institution, he insists, and success in forecasting its actions is rooted in psychology.

EDUCATION NEWS

GTE SYLVANIA AUTOMATES MORSE CODE TRAINING FOR ARMY & NAVY

Computerized training systems, designed and produced by GTE Sylvania Inc., Waltham, Mass., are accelerating Morse Code instruction at Army and Navy training centers. Mastery of Morse Code reception is taught to a maximum of 30 words per minute. The systems provide individual instruction to 64 students simultaneously. Individual responses are recorded for subsequent printout and analysis.

A central control unit, two instructor consoles and 64 student stations are integrated by computer. Each student position is furnished with a keyboard, visual prompter-display and earphones. From his console, the instructor can monitor any student, countermanding instructions if he wishes, over the student's earphones.

In the first of a three-phase course, the trainee develops keyboard dexterity by responding to a display light designating the letter to be typed. When he depresses the correct key, the light is extinguished and a second appears. In the second stage of instruction, the student receives Morse Code signals through his earphones. When he reacts rapidly and correctly by striking the proper key, another audible signal occurs. The final stage simulates actual operating environment. Code is transmitted continually in five-character groups, with transmission speed automatically increasing in relation to the student's ability. As in the second phase, the student receives extra practice in signals which are difficult to him.

NYU SCHOOL OF CONTINUING EDUCATION ANNOUNCES TWO NEW PROGRAMS

A Spanish-language certificate program in computer programming and a work-study program have been added to the Data Processing and Systems Analysis Institute of the New York University School of Continuing Education's Division of Business and Management, the Institute's director, Prof. Stuart S. Fink, has announced.

The new Spanish-language program will meet twice weekly, Sept. 27 through Nov. 1. All classroom instruction and textbooks will be in Spanish. Students will be able to complete their certificate studies in one academic year.

The work-study program will allow students to combine classroom learning with on-the-job experience. Classes will meet weekday mornings, Oct. 4 through Jan. 21. Individual working schedules will be arranged for each student.

Further information about both programs is available from Prof. Stuart S. Fink, Suite 2-A, One Fifth Ave., NYU School of Continuing Education, New York, NY 10003.

RESEARCH FRONTIER

HITACHI, LTD. DEVELOPS A HIGH-DENSITY HOLOGRAPHIC MEMORY SYSTEM

The central research laboratory of Hitachi, Ltd., Tokyo, Japan, has apparently made a major breakthrough in data recording and information retrieval as applied to large capacity information processing. They have developed a high-density holographic memory system capable of

storing 20,000 bits of digital information, equivalent to 2,500 characters, in a circular space one-half of a millimeter in diameter. All of the information in one volume of the Encyclopedia Britannica, approximately 10 million characters, could thereby be crammed into an area equivalent to the surface of two postage stamps (2 x 2cm x 2.5cm).

The memory storage density is 100,000 bits per square millimeter. This is about 10 times more than memory devices previously announced and about 1,000 times more than integrated circuit memory systems. To achieve this 100,000 per mm^2 density, the Hitachi system utilizes a special optical plate developed in their laboratories. The plate, which evenly diffuses the information-bearing laser beams, is made of multi-layered thin film of cerium oxide evaporated on a glass substratum through several kinds of random-patterned screens. The plate is called a "Random Phase Shifter" since the data carrying laser beams disperse as they pass through.

Since reading of the stored information is simplified by throwing a laser beam on the holographic memory, the time factor has been cut down to one micro-second (one millionth of a second). This is approximately 10,000 to 100,000 times faster than achievable with a disc memory system.

Among the possible applications of the Hitachi system are high speed image file memory in information retrieval systems and for large capacity high speed computers. In the latter, for example, a total of 10,000 holographic memories can be placed on a 5 cm x 5 cm plate. This would provide a storage capacity of 2,000 million bits with a read-out speed of a few micro seconds.

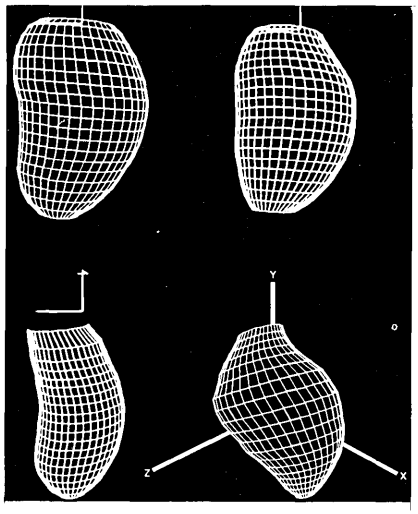
Details of the system were presented at the recent Conference of Laser Engineering and Applications (CLEA) held in Washington, D.C.

ANIMATED COMPUTER-DISPLAY IS NEW DIAGNOSTIC TOOL FOR HEART DISEASE

With a computer-based system devised by a NASA-Stanford University medical team in Mountain View, Calif., doctors can watch a movie of a patient's diseased heart as it beats. The method, still under development, by scientists from NASA-Ames Research and the cardiology division of Stanford University Medical Center, improves upon current complex diagnostic methods by providing a simple means of viewing the heart in action. Figuratively, doctors can "walk around" the isolated beating heart, viewing it from any desired angle. They also can stop the heart at any point of expansion or contraction and play back the picture.

The method, built around an IBM 1800 data acquisition and control system, projects a three-dimensional, animated image of any desired chamber of the patient's heart on an IBM 2250 screen. The displays are derived from x-ray movies, a computer program based on intensive research into heart configurations and dimensions, plus new three-dimentional computer display techniques. The method allows the computer to calculate the changing positions of the entire interior surface of the heart chamber in question, so the moving heart can be seen from any point.

Excerpts from animated computer display (below) show the left ventricle (main pump) of a patient's heart in various stages of contraction (top left, right, and bottom left). Bottom right is the expanded



left ventricle of another heart which has a plastic valve. The new diagnostic tool eliminates all irrelevant details. The animated display is exact enough to show a dead section of the heart wall about the size of a nickel, details of large malfunctions and holes between heart chambers. Combined with standard clinical measurements of blood-flow per heartbeat, it can measure inefficient pumping by heart chamber.

Heart disease is the leading cause of death in the United States. The new method could make it relatively easy for a physician to determine the patient's need for heart surgery, coronary artery grafts and treatment of various heart conditions.

MISCELLANEOUS

BRAILLE PRINTING DEVELOPED FOR SMALL COMPUTER

David A. Schwartzkopf, a partially-sighted IBM programmer, has developed a way for small computers to print Braille characters. A Braille programming feature for the IBM System/3 Model 10 RPG II compiler was developed by Schwartzkopf at the General Systems Division development laboratory (Rochester, Minn.) under an IBM program that allows employees to work on innovative projects not connected with their regular work assignments.

The period in the System/3 printer is used to form the Braille characters. A simple elastic strip is stretched over the type to make the proper print impression. Unlike conventional printing, which is done from left to right, the computer produces Braille characters from right to left. This means that the output from the printer must be reversed before it can be used.

"Since data processing is a field in which blind people can work effectively, Braille printing can be very useful for blind or partially-sighted programmers," said Schwartzkopf. The feature is now available to IBM customers.

CONTROL DATA CORPORATION ESTABLISHES NATIONAL LIBRARY OF SHIPBUILDING PROGRAMS

Under the auspices of the U.S. Naval Ship Systems Command and the Shipbuilding Industry Advisory Committee (SIAC), Control Data Corporation, Minneapolis, Minn., has announced the establishment of a national library of computer programs for use by the shipbuilding industry.

SIAC and the Navy will contribute programs to the library which they have developed especially for ship design and construction. By pooling software that already has been developed and by processing information on CDC-owned and operated computers, shipbuilders hope to realize greater efficiency and cost effectiveness. Several programs for inclusion in the library already have been received from the U.S. Naval Ship Engineering Center.

Control Data will make duplicate libraries of the programs available to users of its nationwide network of computers and terminals called CYBERNET.

NEW CONTRACTS

TO	FROM	FOR	AMOUNT
Computer Sciences Corp., Los Angeles, Calif.	National Aeronautics and Space Administration	Continuation of mission support services to Computation Laboratory, Marshal Space Flight Center, Huntsville, Ala.; approximate value over 3-year period is $20 million	$6+ million
Univac Division of Sperry Rand, Philadelphia, Pa.	Bache & Co., Inc., New York, N.Y.	Purchase of satellite computer systems and peripheral equipment ($2 million) and a long term equipment lease for UNIVAC 494 subsystems ($1.5 million); will be used in brokerage firm's worldwide communications network	$3.5 million
Honeywell Information Systems	RAFA, Stockholm, Sweden	A Series 6000 system to form nucleus of communications network for social security branch of Swedish government; when fully implemented, 500 offices throughout Sweden will be linked through over 800 CRT terminals	$3.2 million
National Cash Register Company, Dayton, Ohio	The Hecht Company, Washington, D.C.	Over 700 NCR 280 retail data terminals and associated equipment	$3 million
Univac Division of Sperry Rand Canada Limited	City of Edmonton, Alberta, Canada	Two UNIVAC 1106 computers; main applications revolve around Customer Service Information System handling about 2500 transactions per day for power, water, telephone and assessment inquiries	$2.96 million
Computer Sciences Corp., Los Angeles, Calif.	Hercules, Incorporated	Installation and engineering of an automated process control system at the Radford Army Ammunition Plant, Radford, Va.	$2.4 million (approximate)
Digital Development Corp., San Diego, Calif.	Hewlett-Packard, Cupertino Div., Cupertino, Calif.	DDC 7300 Series Disc Memory Systems for use on H-P 2000 Series Time-Share Systems.	$2+ million
Ogakikyoritsu Bank, Gifu Prefecture, Tokai, Japan	Sperry Rand Corp., Univac Division, Philadelphia, Pa.	Two UNIVAC 418-111 and two UNIVAC 9300 systems for on-line service for processing deposit and loan accounts and money exchange	$2 million
Control Systems Division, Applied Data Research, Inc., Princeton, N. J.	Cleveland Clinic Foundation, Cleveland, Ohio	Computer-based communications system to serve the Cleveland Clinic and the Cleveland Clinic Hospital; includes 3 PDP-11 computers, many terminals, printers and card punchers	$1.5 million
Instrument Division of Lear Siegler, Inc., Grand Rapids, Mich.	Cubic Corporation, San Diego, Calif.	Attitude and heading reference system for U.S. Navy Aircraft Combat Maneuvering Range (ACMR) to be installed at Marine Corps Air Station, Yuma, Ariz., with a remote debriefing and display terminal at the Naval Air Station, Mirmar, Calif.	$1 million (approximate)
Honeywell Aerospace Division St. Petersburg, Florida	Space and Missile Systems Org. (SAMSO), Norton Air Force Base, Calif.	Design and development of a radiation-hardened MINI-Wire memory system to be used for advanced Intercontinental Ballistic Missile (ICBM) development and testing	$733,637
TRW Systems, Redondo Beach, Calif.	Los Angeles County, Calif.	Computerized traffic control system, called SAFER (Systematic Aid to Flow on Existing Roadways), to be installed at 111 intersections in Los Angeles County areas, unincorporated county areas and state highways	$645,000
Automated Health Systems, Inc., Burlingame, Calif.	Department of Health of the City and County of San Francisco, Calif.	A clinical laboratory information system at San Francisco General Hospital	$500,000
Associated Computer Services, a division of SEACO Computer Display, Inc., Garland, Texas	Southwestern Public Service Company, Amarillo, Texas	Computer oriented energy control system to be furnished under a 5-year lease contract	$452,760
El Camino Hospital, Mountain View, Calif.	Department of Health, Education and Welfare	Determining patient care and economic benefits of Technicon Medical Information System known as MIS-I which is currently being installed in the 440 bed hospital	$373,000
Sierra Research Corp., Buffalo, N.Y.	Department of Transportation	Study and demonstration of an automatic vehicle monitoring (AVM) system for urban areas	$263,000
Dicom Industries, Sunnyvale, Calif.	Fairchild Systems Technology	Dicom's 344 Cassette Magnetic Tape Systems for use in Fairchild 5000C Computerized Test Instrumentation System	$75,000
Norden Division of United Aircraft, Norwalk, Conn.	Project SPRED (School Progress Reaches Each District), Norwalk, Conn.	Installation in the Stamford (Conn.) school system of a computer planning model designed to help school administrators run their schools more effectively; will be available to other school systems following pilot program	$36,000
Computer Sciences Corp., Computer Sciences of Australia	Queensland Totalizer Administration Board, Brisbane, Australia	Planning studies for automated off-track betting system; analysis of present manual system, define technical requirements, and prepare detailed plans for implementing computer-based system	—
Computer Sciences Corp., Los Angeles, Calif.	U.S. National Oceanic and Atmospheric Administration	Processing data gathered on aftershocks from major February earthquake in Los Angeles; second phase in a three-phase study aimed at developing improved methods of selecting building sites and designing earthquake-resistant structures	—

NEW INSTALLATIONS

OF	AT	FOR
Burroughs B 500	Digitek Corporation, Marina del Rey, California (3 systems)	On-line interactive financial management system for firm's time sharing customers who are linked to two of the B500's; the third is used in a batch processing mode as well as for debugging programs (systems valued at over $1 million)
Burroughs B 2500	Audience Studies, Inc., Los Angeles, California	Processing audience response studies and administrative applications
Burroughs B 5500	Murphy Oil Corporation, El Dorado, Arkansas	General accounting for Murphy and two subsidiary companies and a range of technical applications including economic evaluations and mathematical models of forests, market areas and refineries
Control Data 3150	Workmen's Compensation Board, Alberta, Canada	Procedures of assessments levied and collected from employers, payments made to injured workmen, improve record keeping and analysis and also provide statistics for accident prevention studies and programs, (system valued at $500,000)
Control Data 3100	Pacific Lutheran University, Tacoma, Washington	Administrative data processing, academic research projects and instructional training programs (system valued at $200,000)
EMR 6155 dual processor	Bessemer and Lake Erie Railroad Company, Pittsburgh, Pa.	Control of flow of critical real time information between an IBM 360/40 central computer and the company's data communications network
Honeywell Model 1642	Cincinnati Technical Institute Cincinnati, Ohio	Instruction and problem-solving tasks; teaching time sharing computer techniques; solving a variety of engineering problems
Honeywell Model 6050	Fulton National Bank, Atlanta, Ga. (2 systems)	Increasing computational power and customer service (system valued at over $2.5 million)
IBM System/360 Model 20	Rocky Mountain Better Business Bureau, Denver, Colorado	Compiling and analyzing approximately 700,000 consumer inquiries and complaints received annually by four bureaus
IBM System/360 Model 22	Control-By CRT, Torrance, California	Use initially to process and maintain major credit grantors files in California and Nevada
IBM System/360 Model 195	McDonnell Douglas Automation Co., St. Louis, Missouri	Handling advanced, on-line information systems
IBM System/370 Model 145	Stanford University, Stanford, California	Implementation of results of Project INFO (a 3-year development effort to streamline university administrative decision-making; will be hub of a university management system
IBM System/370 Model 165	State Farm Mutual Automobile Insurance Co., Bloomington, Ill	Part of data processing system servicing over 12,000,000 policyholder records and processes claims
NCR Century 50 system	Allegany Community College, Cumberland, Maryland	Instruction in data processing and stewardship accounting
	Franklin Furniture Company, Youngstown, Ohio	Inventory, order-entry, accounts-receivable and payroll processing
	Moore Realty, Denver, Colorado	General accounting applications
	Tajon, Inc., Mercer, Pa.	Preparing broker-driver and employee-driver payrolls, and billing
NCR Century 100 system	Capital City Press, Baton Rouge, Louisiana	Processing payrolls both in mechanical departments and administrative operations
	Gibson Distributing Company, Midland, Texas	Keeping track of operations of its stores in Midland, Odessa and El Paso, Texas
NCR Century 200 system	Ministry of Justice, Spain	Achieving better control over criminal records and handling a variety of other data processing tasks
Tempo I	Jet Propulsion Laboratory, California Institute of Technology, Fullerton, California	Heart of evaluation system for simulation experiments on deep space probe which will be sent to Mars
UNIVAC 1106 system	Kellogg Company, Battle Creek, Michigan	Production statistics, engineering applications, payroll, general accounting functions (system valued at $2.3 million)
UNIVAC 9200 system	City of San Leandro, California	Marina, sewer and garbage billing; business licenses, revenue reporting, general accounting and payroll processing
	United Foundation of Detroit Detroit, Michigan	Community analysis requirements, miscellaneous reporting systems, campaign master file maintenance, general accounting and service bureau work
UNIVAC 9200-II system	Metropolitan Transity Authority Baltimore, Maryland	Bus scheduling, payroll, accounts payable and general accounting functions
UNIVAC 9300 system	City of Warren, Michigan	Water billing, voter registration, payroll preparation, general accounting
UNIVAC 9400 system	Cherry Hill School District, Cherry Hill, New Jersey	Student use for problem solving and compilations; payroll, automobile ticket control, local real estate taxation, utility billing for Cherry Hill Township
	General Commissariat for Supply and Transportation (C.A.T.), Madrid, Spain	Statistical market research, data collection through teleprocessing, price lists of food products and general administrative tasks
	Henkels & McCoy, Blue Bell, Pa.	Estimating job costs, equipment inventory, payroll processing
	Herald A. Moller A/S, Oslo Norway	Inventory control, statistics and accounting related to marketing activities in Norway

MONTHLY COMPUTER CENSUS

Neil Macdonald
Survey Editor
COMPUTERS AND AUTOMATION

The following is a summary made by COMPUTERS AND AUTOMATION of reports and estimates of the number of general purpose electronic digital computers manufactured and installed, or to be manufactured and on order. These figures are mailed to individual computer manufacturers from time to time for their information and review, and for any updating or comments they may care to provide. Please note the variation in dates and reliability of the information. Several important manufacturers refuse to give out, confirm, or comment on any figures.

Our census seeks to include all digital computers manufactured anywhere. We invite all manufacturers located anywhere to submit information for this census. We invite all our readers to submit information that would help make these figures as accurate and complete as possible.

Part I of the Monthly Computer Census contains reports for United States manufacturers. Part II contains reports for manufacturers outside of the United States. The two parts are published in alternate months.

The following abbreviations apply:

(A) -- authoritative figures, derived essentially from information sent by the manufacturer directly to COMPUTERS AND AUTOMATION
C -- figure is combined in a total
(D) -- acknowledgment is given to DP Focus, Marlboro, Mass., for their help in estimating many of these figures
E -- figure estimated by COMPUTERS AND AUTOMATION
(N) -- manufacturer refuses to give any figures on number of installations or of orders, and refuses to comment in any way on those numbers stated here
(R) -- figures derived all or in part from information released indirectly by the manufacturer, or from reports by other sources likely to be informed
(S) -- sale only, and sale (not rental) price is stated
X -- no longer in production
\- -- information not obtained at press time

SUMMARY AS OF JULY 15, 1971

NAME OF MANUFACTURER	NAME OF COMPUTER	DATE OF FIRST INSTALLATION	AVERAGE OR RANGE OF MONTHLY RENTAL $(000)		NUMBER OF INSTALLATIONS In U.S.A.	Outside U.S.A.	In World	NUMBER OF UNFILLED ORDERS
Part II. Manufacturers Outside United States								
A/S Norsk Data Elektronikk	NORD-1	8/68	2.0		0	52	43	31
Oslo, Norway	NORD-2B	8/69	4.0	(S)	0	5	5	10
(A) (July 1971)	NORD-5	-	-		0	0	0	1
A/S Regnecentralen	GIER	12/60	2.3-7.5		0	40	40	0
Copenhagen, Denmark	RC 4000	6/67	3.0-20.0		0	16	16	3
(A) (Apr. 1971)								
Elbit Computers Ltd.	Elbit-100	10/67	4.9	(S)	-	-	225	50
Haifa, Israel								
(A)(Feb. 1971)								
GEC-AEI Automation Ltd.	Series 90-2/10/20							
New Parks, Leicester, England	25/30/40/300	1/66	-		-	-	13	X
(R)	S-Two	3/68	-		-	-	1	X
(Jan. 1969)	130	12/64	-		-	-	2	X
	330	3/64	-		-	-	9	X
	959	-/65	-		-	-	1	X
	1010	12/61	-		-	-	8	X
	1040	7/63	-		-	-	1	X
	CON/PAC 4020	-	-		-	-	0	X
	CON/PAC 4040	5/66	-		-	-	9	-
	CON/PAC 4060	12/66	-		-	-	5	-
International Computers, Ltd. (ICL)	Atlas 1 & 2	1/62	65.0		0	6	6	X
London, England	Deuce	4/55	-		0	7	7	X
(A)	KDF 6-10	9/61	10-36		0	58	58	X
(July 1971)	KDN 2	4/63	-		0	1	1	X
	Leo 1, 2, 3	-/53	10-24		0	59	59	X
	Mercury	-/57	-		0	13	13	X
	Orion 1 & 2	1/63	20.0		0	17	17	X
	Pegasus	4/55	-		0	30	30	X
	Sirius	-/61	-		0	22	22	X
	503	-/64	-		0	16	16	X
	803 A, B, C	12/60	-		0	83	83	X
	1100/1	-/60	5.0		0	22	22	X
	1200/1/2	-/55	3.9		0	68	68	X
	1300/1/2	-/62	4.0		0	196	196	X
	1500	7/62	6.0		0	110	110	X
	2400	12/61	23.0		0	4	4	X
	1900-1909	12/64	3-54		0	2000	2000	C
	Elliott 4120/4130	10/65	2.4-11.4		0	160	160	C
	System 4-30 to 4-75	10/67	5.2-54		0	160	160	C
								Total: 400
Japanese Mfrs.	(Mfrs. of various models include: Nippon Electric Co., Fujitsu,							
(N) (Sept. 1970)	Hitachi, Ltd., Toshiba, Oki Electric Industry Co., and Mitsubishi Electric Corp.)						Total: 4150 E	Total: 800 E
Marconi Co., Ltd.	Myriad I	3/66	£36.0-£66.0	(S)	0	37	37	9
Chelmsford, Essex, England	Myriad II	10/67	£22.0-£42.5	(S)	0	17	17	12
(A) (Jan. 1970)								
N.V. Philips Electrologica	P1000	8/68	7.2-35.8		-	-	60	60
Apeldoorn, The Netherlands	P9200	3/68	-		-	-	300	50
(A)	P9200 t.s.	3/70	-		-	-	4	3
(July 1971)	P800	9/70	-		-	-	9	60
	ELX1	5/58	12.0		-	-	22	-
	ELX2/8	3/65	6-21		-	-	27	-
	DS714	-/67	-		-	-	27	8
	PR8000	1/66	-		-	-	23	-
Redifon Limited	R2000	7/70	-		0	10	10	6
Crawley, Sussex, England								
(A) (Apr. 1971)								
Saab-Scania Aktiebolag	D21	12/62	7.0		0	38	38	-
Linkoping, Sweden	D22	11/68	15.0		0	22	22	4
(A) (Mar. 1971)	D220	4/69	10.0		0	10	10	5
Selenia S.p.A.	GP-16	7/69	10.9	(S)	0	71	71	26
Roma, Italy								
(A) (July 1971)								

NAME OF MANUFACTURER	NAME OF COMPUTER	DATE OF FIRST INSTALLATION	AVERAGE OR RANGE OF MONTHLY RENTAL $(000)	NUMBER OF INSTALLATIONS In U.S.A.	Outside U.S.A.	In World	NUMBER OF UNFILLED ORDERS
Siemens	301	11/68	0.75	-	-	82	C
Munich, Germany	302	9/67	1.3	-	-	28	C
(A)	303	4/65	2.0	-	-	70	C
(Apr. 1971)	304	5/68	2.8	-	-	61	C
	305	11/67	4.5	-	-	93	C
	306	-	6.5	-	-	-	C
	2002	6/59	13.5	-	-	39	C
	3003	12/63	13.0	-	-	31	C
	4004/15/16	10/65	5.0	-	-	100	C
	4004/25/26	1/66	8.3	-	-	53	C
	4004/35	2/67	11.8	-	-	182	C
	4004/135	-	17.1	-	-	-	C
	4004/45	7/66	22.5	-	-	242	C
	4004/46	4/69	34.0	-	-	10	C
	4004/55	12/66	31.3	-	-	22	C
	4004/150	-	41.0	-	-	-	C
	4004/151	-	51.5	-	-	-	C
	404/3	-	1.9	-	-	-	C
	404/6	11/69	4.1	-	-	6	C
						Total:	298
USSR	BESM 4	-	-	-	-	C	C
(N)	BESM 6	-	-	-	-	C	C
(May 1969)	MINSK 2	-	-	-	-	C	C
	MINSK 22	-	-	-	-	C	C
	MIR	-	-	-	-	C	C
	NAIR 1	-	-	-	-	C	C
	ONEGA 1	-	-	-	-	C	C
	ONEGA 2	-	-	-	-	C	C
	URAL 11/14/16 and others	-	-	-	-	C	C
						Total: 6000 E	Total: 2000 E

C.a PROBLEM CORNER

Walter Penney, CDP
Problem Editor
Computers and Automation

PROBLEM 718: ODDS ON ACES

"What's Joe doing with those cards – playing solitaire?" asked Al.

"Not exactly", said Bob. "He's trying to work out a certain probability problem empirically. He's also got a little Monte Carlo program running to check his results."

"I'm sure he's not doing all this just to solve a problem in some course. What gives?"

"Well, he got suckered into a little betting with some smart operators – machine operators, that is. He lost and he's trying to figure out why."

"What were they betting on?" Al's curiosity was beginning to stir. "Maybe I can make a little money."

"First, they set him up by taking the spades out of a deck of cards, shuffling them and betting that an Ace wouldn't show up in the first seven cards."

"I'd take that bet. The probability in his favor ought to be 7/13 if everything was honest."

"Oh, everything was honest all right," said Bob. "After Joe won a little on this they proposed an extension. They took the hearts out of the deck too, shuffled all 26 cards and again bet that an Ace wouldn't show up in the first seven cards dealt out."

"That should be a good bet too. There are twice as many cards, but there are twice as many Aces so that the ratio shouldn't change. And since probability is just a ratio everything should work out the same."

"That's what Joe thought. But they raised the stakes and he was cleaned out.

How come?

Solution to Problem 717: A Stream With No Patterns

If the first seven values are A B A C A B A, the stream cannot be continued. The next element cannot be A because of A A, or B because of A B A B, or C because of A B A C A B A C. Any other stream would allow continuation.

Readers are invited to submit problems (and their solutions) for publication in this column to: Problem Editor, Computers and Automation, 815 Washington St., Newtonville, Mass. 02160.

ADVERTISING INDEX

CALENDAR OF COMING EVENTS

Aug. 3-5, 1971: ACM '71 "Decade of Dialogue", Conrad Hilton Hotel, Chicago, Ill. / contact: Al Hawkes, Computer Horizons, 53 West Jackson Blvd., Chicago, Ill. 60604

Aug. 3-6, 1971: IFAC Symposium on The Operator, Engineer and Management Interface with the Process Control Computer, Purdue University, Lafayette, Ind. / contact: Dr. Theodore J. Williams, Purdue Laboratory for Applied Industrial Control, Purdue University, Lafayette, Ind. 47907

Aug. 11-13, 1971: Joint Automatic Control Conference, Washington Univ., St. Louis, Mo. / contact: R. W. Brockett, Pierce Hall, Harvard Univ., Cambridge, Mass. 02138

Aug. 16-19, 1971: International Symposium on the Theory of Machines and Computations, Technion — Israel Institute of Technology, Haifa, Israel / contact: Sheldon B. Akers, Secretary, IEEE Technical Comm. on Switching and Automata Theory, General Electric Co., Bldg. 3, Room 226, Electronics Park, Syracuse, N.Y. 13201

Aug. 16-20, 1971: Jerusalem Conference on Information Technology, Jerusalem, Israel / contact: The Jerusalem Conference on Information Technology, P.O.B. 7170, Jerusalem, Israel

Aug. 23-28, 1971: IFIP (International Federation for Information Processing) Congress 71, Ljubljana, Yugoslavia / contact: U.S. Committee for IFIP Congress 71, Box 4197, Grand Central Post Office, New York, N.Y. 10017

Aug. 24-27, 1971: Western Electronic Show & Convention (WESCON), San Francisco Hilton & Cow Palace, San Francisco, Calif. / contact: WESCON Office, 3600 Wilshire Blvd., Los Angeles, Calif. 90005

Aug. 30-Sept. 10, 1971: International Advanced Summer Institute on Microprogramming, Saint Raphael, French Riviera / contact: Guy Boulaye and Jean Mermet, Institute de Mathematiques Appliquees, Cedex 53, 38 - Grenoble/Gare, France

Sept. 1-3, 1971: Second International Joint Conference on Artificial Intelligence, Imperial College, London, England / contact: The British Computer Society, Conference Department, 29 Portland Place, London, W.1., U.K.

Sept. 6-10, 1971: DISCOP Symposium (IFAC Symposium on Digital Simulation of Continuous Processes), Gyor, Hungary / contact: The Organizing Committee, Synposium on Simulation, Budapest 112, P.O.B. 63, Hungary

Sept. 7-9, 1971: IEE 1971 Conference on Computers for Analysis and Control in Medical and Biological Research, University of Sheffield, Sheffield, England / contact: Manager, Conference Dept., IEE, Savoy Place, London WC2R OBL, England

Sept. 9-10, 1971: Third Annual Conference of the Society for Management Information Systems, Denver, Colo. / contact: Gerald M. Hoffman, Secy., Society for Management Information Systems, One First National Plaza, Chicago, Ill. 60670

Sept. 14-17, 1971: Canadian Information Processing Society (CIPS) Annual National Conference, Royal York Hotel, Toronto, Canada / contact: Jack McCaugherty, James Lovick Ltd., Vancouver, British Columbia, Canada

Sept. 15-17, 1971: Canadian Computer Conference and Show, Royal York Hotel, Toronto, Canada / contact: Conference Chairman, P.O. Box 343, Toronto Dominion Centre, Toronto 111, Ontario, Canada

Sept. 27-29, 1971: Elettronica '71 — 1st International Conference on Applications of Electronics in the Industry, 21st International Technical Exhibition, Turin, Italy / contact: Dr. Ing. Giovanni Villa, Elettronica 71, Corso Massimo d'Azeglio 15, 10126 Turin, Italy

Oct. 6-8, 1971: Conference on "Two-Dimensional Digital Processing", Univ. of Missouri-Columbia, Columbia, Mo. / contact: Prof. Ernest L. Hall, Dept. of Electrical Engineering, Univ. of Missouri-Columbia, Columbia, Mo. 65201

Oct. 10-12 1971: First Annual ASM Southwest Division Conference (sponsored by Assoc. for Systems Management, Div. Council 18), Jung Hotel, New Orleans, La. / contact: Albert J. Krail, 636 Baronne St., New Orleans, La. 70113

Oct. 12-14, 1971: Input/Output Systems Seminar '71, Regency Hyatt House-O'Hare, Atlantic City, N.J. / contact: Carroll A. Greathouse, Exec. Director, DPSA (Data Processing Supplies Association), P.O. Box 1333, Stamford, Conn. 06904

Oct. 18-20, 1971: 27th Annual National Electronics Conference and Exhibition (NEC/71), Pick-Congress Hotel, McCormick Place, Chicago, Ill. / contact: NEC, Oakbrook Executive Plaza #2, 1211 W. 22nd St., Oak Brook, Ill. 60521

Oct. 18-20, 1971: International Computer Forum & Exposition, McCormick Place-On-The-Lake, Chicago, Ill. / contact: International Computer Forum & Exposition, Oak Brook Executive Plaza #2, 1211 West 22nd St., Oak Brook, Ill. 60521

Oct. 25, 1971: Second Annual SIGCOSIM (ACM Special Interest Group on Computer Systems Installation Management) Symposium, Washington, D.C. / contact: I. Feldman, Wiley Systems, Inc., 6400 Goldsboro Rd., Bethesda, Md. 20034

Oct. 25-29, 1971: IEEE Joint National Conference on Major Systems, Disneyland Hotel, Anaheim, Calif. / contact: Institute of Electrical and Electronics Engineers, Inc., 345 East 47th St., New York, N.Y. 10017

Oct. 25-29, 1971: Systems Science & Cybernetics Conference & 1971 ORSA (Operations Research Society of America) Meeting, Disneyland Hotel, Anaheim, Calif. / contact: Dr. Michael W. Lodato, Xerox Data Systems, 701 So. Aviation Blvd., El Segundo, Calif. 90245

Oct. 29, 1971: Sixth Annual ACM Urban Symposium, New York Hilton Hotel, New York, N.Y. / contact: Gerald M. Sturman, Parsons Brinckerhoff, 111 John St., New York, N.Y. 10038

Nov. 1-2, 1971: Computer Science and Statistics: Fifth Annual Symposium on the Interface, Oklahoma State University, Stillwater, Okla. / contact: Dr. Mitchell O. Locks, Oklahoma State Univ., Stillwater, Okla. 74074

Nov. 4-5, 1971: 1971 American Production & Inventory Control Society (APICS) International Conference, Chase Park Plaza Hotel, St. Louis, Mo. / contact: Henry F. Sander, American Production & Inventory Control Society, Inc., Suite 504 Watergate Bldg., 2600 Virginia Ave. N.W., Washington, D.C. 20037

Nov. 7-11, 1971: 34th Annual Meeting of the American Society for Information Science (ASIS), Denver Hilton Hotel, Denver, Colo. / contact: Miss Sheryl Wormley, ASIS, 1140 Connecticut Ave., N.W., Suite 804, Washington, D.C. 20036

Nov. 16-18, 1971: Fall Joint Computer Conference, Las Vegas Convention Center, Las Vegas, Nev. / contact T. C. White, AFIPS Headquarters, 210 Summit Ave., Montvale, N. J. 07645

Dec. 16-18, 1971: IEEE Conference on Decision and Control (including the 10th Symposium on Adaptive Processes), Americana of Bal Harbour, Miami Beach, Fla. / contact: Prof. J. T. Tou, Univ. of Florida, Gainesville, Fla.

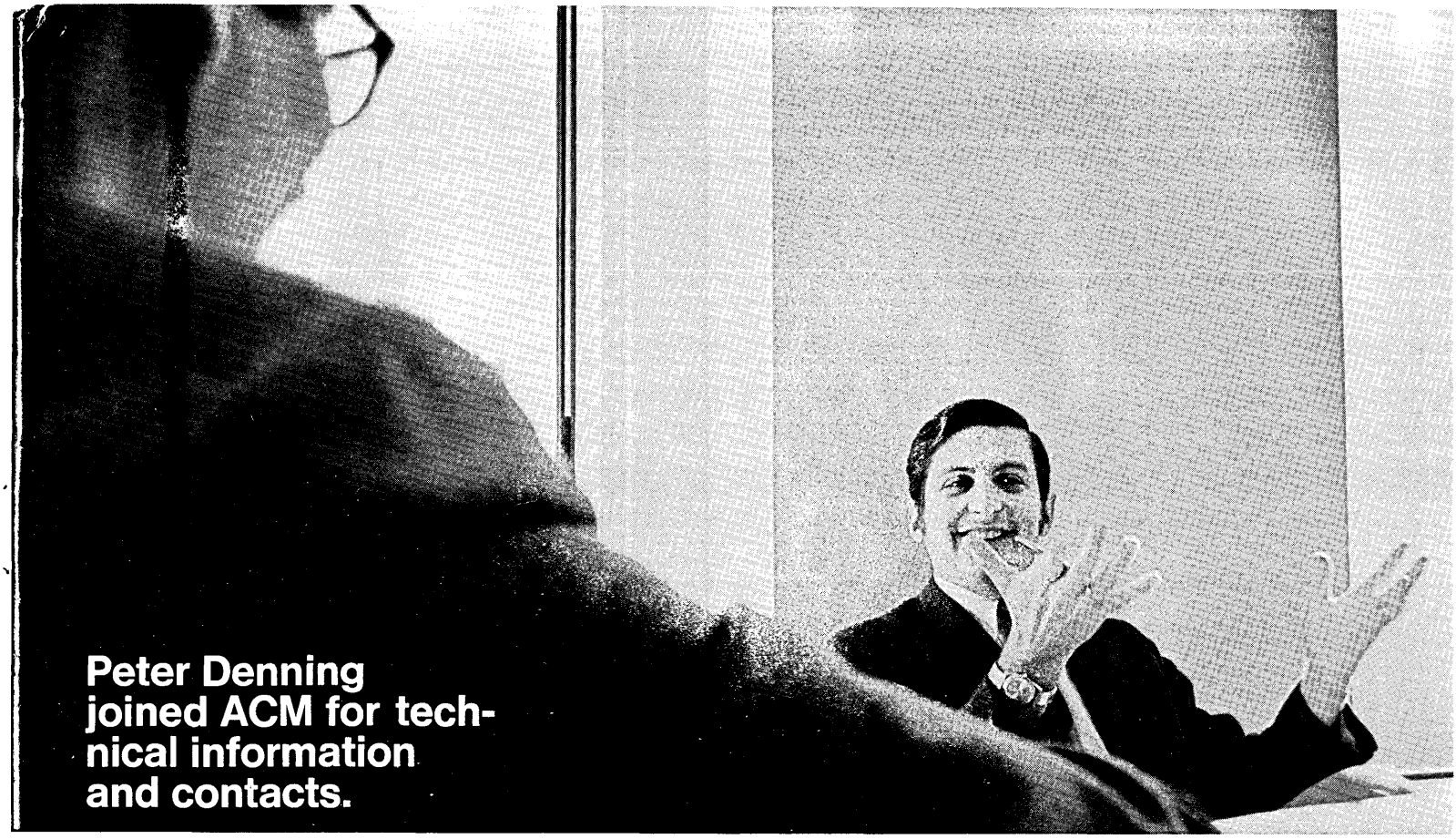
Mar. 20-23, 1972: IEEE International Convention & Exhibition, Coliseum & N. Y. Hilton Hotel, New York, N. Y. / contact: IEEE Headquarters, 345 E. 47th St., New York, N. Y. 10017

April 5-8, 1972: "Teaching Systems '72", International Congress, Berlin Congress Hall, Berlin, Germany / contact: AMK Berlin, Ausstellungs-Messe-Kongress-GmbH, Abt. Presse und Public Relations, D 1000 Berlin 19, Messedamm 22, Germany

May 15-18, 1972: Spring Joint Computer Conference, Convention Ctr., Atlantic City, N.J. / contact: AFIPS Headquarters, 210 Summit Ave., Montvale, N.J. 07645

May 16-17, 1972: IIT Research Institute Second International Symposium on Industrial Robots, Chicago, Ill. / contact: K. G. Johnson, Symposium Chairman, IIT Research Institute, 10 West 35 St., Chicago, Ill. 60616

May 24-26, 1972: Second Annual Regulatory Information Systems Conference, Chase-Park Plaza Hotel, St. Louis, Mo. / contact: William R. Clark, Missouri Public Service Commission, Jefferson City, Mo. 65101



Now he's involving other members in everything from microprogramming to data banks and privacy.

Peter Denning, 29, is an Assistant Professor of Electrical Engineering at Princeton. He's also an ACM member and chairman of our committee on special interest groups and committees (SIGs/SICs). He wasn't always as active in ACM.

"I joined in 1965 while working on my thesis," says Peter. "Mainly for technical material and a chance to meet other computer professionals. In 1968, I was asked to edit the Operating Systems (SIGOPS) newsletter. I got involved and quickly took on more responsibility. After two leadership positions, I ran for SIG/SIC chairman.

"Special interest groups are what ACM is all about," says Peter. "We've got 27 now, from microprogramming techniques to the impact of computers on society. One out of three ACM members belong to at least one group. I want this share to grow.

"Now I can do something about it. Like help restructure the whole SIG/SIC operation. Some groups may have to be split up, to cover less ground. Others need stronger leadership. A few we should have don't even exist yet, like performance evaluation and computer architecture."

Peter Denning is involved in ACM, the oldest and most respected association in the computer field. He's advancing his career. Sharing his ideas. And making a contribution to the computer profession.

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