Editorial

If the American Society for Cybernetics is to fulfill its purpose, it must address important problems in an effective manner; that is, bring to bear the interdisciplinary concepts fundamental to cybernetics in such a way as to find new solutions to existing problems. The problems of an urban society offer a suitable testing ground in this regard. Pollution, transportation, education, crime, ghettos, and other problems interlock in the urban community in such a way as to prohibit effective individual consideration. Hopefully, the ASC might provide the breadth of capability necessary to gain an overview of these interactive problems within their social context. Clearly, local optimization is not enough. There is a need for an inter-related evaluation of each suggested course of action in the search for global optimization.

Unfortunately, the formal symposia which have characterized other technical societies fail to provide the kind of environment suitable for addressing problems of such wide scope. It is not enough to hear the momentary opinions of a few experts. There must be time for them to interact on an interpersonal basis; time for those who hold responsibility for solving these problems to consider suggested courses of action; and time for those who observe the proceeding to interact to the extent they desire, thus contributing new ideas and improving the (continued on page 6)

Chicago ASC Chapter Hosts Annual Meeting

The ASC Annual Business Meeting convened on January 17 at the Chicago Academy of Sciences in conjunction with the inaugural session of the Society's Chicago Chapter. At the business session, the treasurer's financial statement for 1967 was read, the secretary's tally of votes cast in the recent election of officers was presented, and the location of future ASC Chapters was considered.

I.I.T. Research Institute's Dr. George Jacobi arranged for the necessarily brief business meeting between the morning and afternoon sessions of the substantive program of which he was the chairman.

ASC's President-elect, Dr. Heinz Von Foerster, opened the program. R. C. Gesteland, program coordinator for the Chicago Chapter's first formal meeting, had arranged a program that dealt with a variety of topical problems in bio-cybernetics. The growing inter-penetration of the mathematical, biological and engineering disciplines was evidenced in the papers presented on biological control mechanisms; communication processes in society; the problem of information transfer in the regulation of complex systems; and on the application of statistical mechanics in the analysis of neural networks.

The listing of the speakers' institutional affiliations and the variety in the backgrounds of the 70 attendees reflected the interdisciplinary flavor of the meeting. Biomedical engineering and systems engineering were represented by attendees from the University of Illinois Medical School, and biological and computer scientists from Dr. Von Foerster's laboratory in the E. E. Department at Urbana represented another side of the cybernetics house.

This trend toward the creation of a universe of discourse mediated by cybernetics was cited by Warren McCulloch in his closing remarks as one of the hopeful signs that the traditionally compartmentalized approaches to a better understanding of the common control laws operative in living, technical, and social substrates may give way eventually to a mathematically-based communalism of the sciences and technologies.

— John Ford
Cybernetics Applied to USSR Legal System

The Soviet newspaper, Izvestiya, on February 14, described the research directed by the "Cybernetics and Law" Section of the Council on Cybernetics of the Academy of Sciences, USSR. The Section's chairman, A. Shlyakhov, relates that the application of cybernetics to the previously sacrosanct subject of law involves at the present time the automation of inquiry-information services and legal experts' investigations, the mechanization of processing of criminological and social and legal information. In the Central-Research Institute of Legal Examinations, laboratories have been established for the development of the application of cybernetics in the area of law.

Another important development involves the formulation of principles and methods for automating systems for retrieval of legal information (legal regulations, standards, of deeds, judicial literature). A group of scientists of the Central-Scientific Research Institute of Legal Examinations, headed by Candidate of Judicial Sciences, V.I. Ivanov, has conducted a detailed investigation which produced promising results.

At the end of 1967, an experimental system of automated retrieval of standard materials was installed for legislative files, the parameters of an automated information-retrieval system were determined in the area of law, and methods for developing a legal information retrieval language and system logic were established. It was possible to develop a system of algorithms and programs for the retrieval of legal data. This somewhat difficult problem was solved in about one year.

The legal information retrieval system for pension legislation employs the Minsk 22 computer. Sections from the Law on State Pensions and the Regulation on the Order of Granting and Paying of State Pensions According to Age were stored in the computer memory. Within 1-2 minutes the Minsk-22 computer retrieved and printed out the complete text of the desired article. The standards of labor legislation related to material responsibility were also stored in the computer memory. The computer was given two or three key words. Accordingly, in 1-3 minutes it retrieved all sections of the law in which the given words appeared. For example, the computer was given the term: "lost profit." Soon the consumer retrieved the text, page 83 in the Lanor Code and page 3 of the Resolution of the Central Executive Committee and the Council of National Commissars of the USSR of 12 June 1929, "On the Property Liability of Workers and Employees for Losses Inflicted on Them by Their Employers."

Widespread research is being conducted on the development of cybernetic methods for the solution of individual legal problems using computers. For "communication" with the computer, the standards of pension legislation were first expressed in the form of logical-mathematical formulas, and later in the form of a set of logical operations — i.e., essentially a mathematical model of the activity of inspectors in regional Departments of Social Maintenance was developed. Exhaustive data on pension legislation related to the granting of pensions according to age and disability were input to the computer. Arbitrarily named "pension" algorithms and programs were developed, which ensured a fast (0.1-0.2 sec) solution of the most frequently encountered practical problems.

The computer "learned" to quickly and accurately "grant" pensions and determine the amount. In the future, it will be necessary to input to the computer all pension legislation in order to develop synchronized algorithms and programs for the solution of any problems dealing with the granting of pensions.

Recently in legal institutions a large amount of organizational law, statistical, criminological, judicial, and other social and legal information has been accumulated. This has important significance for improving crime prevention, for determining its dynamics, and for prognosis. At present this information is processed manually and, as a result, up to 90 percent of this data is not utilized in practice.

The prevention of embezzlement of state and public property has long been studied. The Institute involved in this had to process a large bulk of information. The problem of finding principles, methods, and programs for automated processing of statistical data in embezzlement cases was assigned to a group of specialists. Before starting computer processing of such data, a method of statistical analysis, a system of coding, recording of data onto punch-cards, and special programs for punchcard equipment were provided. With the help of the latter, more (continued on page 6)

IEEE Spectrum Features ASC

ASC Fall Symposium

We were pleased to note that the April issue of IEEE SPECTRUM featured the society's 1967 symposium in an excellent 12 page section by Staff Writer Nilo Lindgren. A number of photographs of this meeting were used in this penetrating analysis of the Purposive Systems meeting. The society's activity has been extremely well covered in the nation's press and has resulted in a number of new members joining our society.

Reprints of the Lindgren article were distributed to our members of record. If you did not receive a copy, or wish more, please contact Dr. Carl Hammer, c/o UNIVAC Division Sperry Rand Corporation, 2121 Wisconsin Ave., N.W., Washington, D.C.
Seven Directors Take Office
Amarel, Fraser, and Jacobi bring new faces and new ideas to ASC Board


Dr. Saul Amarel. Presently, head, Computer Research Theory, RCA Laboratories, Princeton, N.J., since 1957. He received his undergraduate education at the Israel Institute of Technology, Haifa, Israel, and his Doctor of Engineering Science Degree at Columbia University, New York in 1955.

Alex S. Fraser, Ph.D. Presently, head, Department of Biological Sciences, Univ. of Cincinnati. B.S. Botany, 1943 and M.S. Cytogenetics 1944, Univ. of New Zealand; Ph.D. Developmental Genetics, U. of Edinburgh 1952. Previously, Prof. of Genetics, Univ. of Cincinnati; Chairman, Dept. Genetics, U. of C. at Davis.

George T. Jacobi. Presently, Assistant Director, Electronics Research Division, IIT Research Institute, Chicago, Illinois. B.E.E., Ohio State University 1947, M.Sc., Ohio State University 1948. Mr. Jacobi is currently Project Dir. of Reliability Central, a major Air Force effort on a computerized reliability information system.


1967 Proceedings to be Published by Spartan Press
A contract has been signed with Spartan Press of New York City to publish the Society's 1967 Proceedings "Purposive Systems: The Edge of Knowledge". Copies are expected to be received from the printer in time for distribution at the October Symposium. Editors of the Proceedings are members of the staff of the Biological Computer Laboratory, University of Illinois in Urbana.

All members of record in the Society as of July 1, 1968, will automatically receive a copy of the Proceedings at no charge. The hardcover book will be available to all non-members of the Society who attended the 1967 conference at 40 per cent off the list price. All attendees of the upcoming fall conference can buy copies of the 1967 Proceedings at 40 per cent off as long as our supply of 200 books holds out.

Until October 25, 1968 (close of conference), new members in the Society will receive copies of the 1967 Proceedings at no cost. After that date, orders can be placed through the society at a flat 20 per cent discount.

Wiener Medal
Scientists, engineers and scholars take note. The American Society for Cybernetics takes pleasure in announcing the Wiener Medal, a solid gold award of approximately 3 ounces in weight, in a handsome fitted presentation case.

This gold honorarium will be presented once every year at the society's annual scientific symposium to the scientist, engineer or scholar, age 30 or under, who, in the opinion of the judges, has presented to the society the most significant paper in the field of cybernetics during the past 12 months. To qualify, the papers must be unique, not presented previously elsewhere. Papers considered by the judges will include those submitted for presentation at national or local ASC symposiums, or submitted for publication in the ASC Journal, ASC Communications, or other ASC publication.

All papers submitted for the October symposium will be considered for the 1968 Wiener Medal.
New Officers

President  Warren S. McCulloch, M.D. Presently, a senior staff member of the M.I.T. Research Laboratory for Electronics. Dr. McCulloch received his B.A. from Yale in 1921; his M.A. from Columbia in 1927 and his M.D. from Columbia Medical School in 1927. Professor of psychiatry at the College of Medicine, University of Illinois until 1952. Society memberships include: Fellow AAAS, Fellow IEEE, Member: Aerospace Medical Association, American Academy of Science and the N. Y. Academy of Science. Dr. McCulloch's pioneering work with Pitts described for the first time, the input-output relationships in neural structures. This formed the beginning of a set of new disciplines including neurocybernetics and bionics.

Vice President  Lawrence J. Fogel. President, Decision Science, Inc., and Associate Professor, Department of Sociology, San Diego State College. Dr. Fogel received his B.S.E.E. from New York University in 1948; his M.S.E.E. from Rutgers University in 1952; and his Ph.D. in Engineering and Biotechnology from U.C.L.A. Previous posts include: Special Assistant to Director of Research, National Science Foundation 1960. Senior Staff Scientist, General Dynamics Astronautics Division 1965. Holds five patents; published 45 different papers, wrote four books and edited three others. Past President, San Diego Bio-Medical Engineering Symposium; on editorial board, IEEE Transactions, for a number of years.

Vice President  Carl Hammer, Ph.D. Presently, Director, Scientific and Computer Services, UNIVAC Division of the Sperry Rand Corporation. Born in Chicago, Illinois, Dr. Hammer graduated from the Luitpold Oberrealschule at Munich, Germany, in 1933. He continued his studies at the University of Munich, with a diploma in mathematical statistics in 1936 and a Ph.D. (magna cum laude) in the same field. Following his return in 1938 to the United States, Dr. Hammer taught at Columbia University and Hunter College. Dr. Hammer is a visiting Professor at the American University and at the Industrial College of the Armed Forces. From 1966 to 1968 he has been Chairman of the Washington Chapter of the Association for Computing Machinery.

Treasurer  Douglas E. Knight. Presently, senior member of Corporate Communications Staff, IBM, Armonk, N. Y. Formerly, division advertising and sales promotion manager, IBM Federal Systems Division, Director, American Society for Cybernetics 1964-67. ASC Press Relations Officer 1967. Senior Member IEEE; National Editor-in-Chief, Assn. of Technical Writers and Editors, 1955-1957; Editor TWE Journal 1953-1957; Active Member, Society of Magazine Writers; Member IEEE Group on Systems Science & Cybernetics; Past Vice Chairman, Convention Committee, American Rocket Society. Tufts University BA, 1949; Boston University Graduate School; Columbia University Management School, 1958; Stern Foundation Scholarship, 1964.

Secretary  Rudolph Constantine. Presently, Mr. Constantine is a National Account Manager for the UNIVAC Division of the Sperry Rand Corporation where he has been employed for the past five years, Mr. Constantine graduated with a B.S. in Russian Language at Georgetown University's Institute of Languages and Linguistics in 1958. He taught in Latin America and in Baghdad, Iraq, and he attended the American University of Beirut. In 1962 he received an M.A. at Harvard University in a combined Russian and Middle East Area Studies Program.
Video-Tape Proposed as a Tool to Probe Urban Problem

An ASC proposal has been submitted to the National Science Foundation to address the problems which arise in complex social entities such as pollution, transportation, education, delinquency, crime, ghettos and disease. Through use of video taped workshops, the society's program would serve to identify and contribute new insight into problems of the physical, psychological and sociological health of the community.

Through the medium of television, the proposed "workshop" will attempt to overcome some of the problems inherent in the classical meeting—the inability to provide sufficient dialog between speakers and audience due to the pressures of time.

At the frontier of knowledge, there needs to be a more active interchange of ideas, not only among the experts but among all interested parties. This need could be satisfied in the form of a new kind of conference—a conference which takes place on the platform of video tape. Specifically, ASC proposes to bring together a group of some seven experts in the individual specialties mentioned above and allow them to interact for as long as required so that they can resolve their initial semantic differences, so that they can react to each other with their different points of view, and so that they can restate the individual aspects of the community health problem in terms of a global optimization.

The video tape of the two-day meeting will be edited to include highlights of the interpersonal activities of the working group, specific conclusions of each of the members of this group and a commentary which provides a storyline so that the tape may be viewed by the intelligent layman with understanding. Copies of this tape will then be made available to interested parties in government and industry. Their comments will be edited and added to the tape in order to provide a viewpoint from those who face these problems in a practical sense. The tape would also be exposed to members of the Scientific and Engineering Committee who take part in Chapter meetings of the American Society for Cybernetics. Their comments will also be added, (thus having provided the membership with an extensive opportunity for interaction on this subject of significant importance). This tape could then form the basis for a broad-based future symposium.

A report on the proposal status will be submitted in a later issue of the newsletter.

ASC Fall Symposium Announced

The Society has just announced plans for its fall symposium to be held at the National Bureau of Standards Auditorium in Gaithersburg, Maryland on October 24-25, 1968. The program is being sponsored by the National Bureau of Standards and is funded under a grant from the National Science Foundation. The program will concern itself with the goal seeking and management properties of large physical, biological, and social systems.

Registration for the two-day symposium is $15.00 for members and $20.00 for non-members. On Thursday evening, Oct. 24, 1968, there will be a general banquet at the Mayflower Hotel, Washington, D.C., open to all registrants at $10.00 per person. Following the symposium, on Friday afternoon, Oct. 25th, the society plans to hold an open discussion forum providing an opportunity for discussion between the speakers and the attendees of the conference.

Attendance at the symposium is open to all interested individuals. For further information, write: Dr. Carl Hammer, Director of Scientific Marketing, UNIVAC Division Sperry Rand Corporation, 2121 Wisconsin Ave., N.W., Washington, D.C.

Ford Continues as Executive Director

Dr. Frank Fremont-Smith (left) N.Y. Academy of Science, an ASC Founder, congratulates John J. Ford (center) on his reappointment as the society's executive director. This post is filled by appointment by the president of the society. Dr. Warren S. McCulloch, ASC President (right) adds his condolences. Ford has been active in the society's business since its conception in 1963.

Call for Papers

Papers are being invited for the fall symposium of the American Society for Cybernetics. Subject of the symposium is "Cybernetics and the Management of Large Systems". Papers will fall into three categories under that general title: (1) physical systems (2) biological systems and (3) social systems.

Interested contributors must submit 200-500 word abstracts before September 15th to Dr. Heinz Von Foerster, Program Chairman for the 1968 ASC Symposium. Dr. Von Foerster can be reached at the University of Illinois, Urbana, Illinois 61801 or by phone (217) 333-2654.

A newsletter thrives on news, it thrives on participation. The content of our pages will be as good as the material contributed. Rough drafts, notes, suggestions, typed or handwritten, all are welcome. It's your newsletter — drop us a line.
than 8,000 statistical cards with a large number of factors about persons convicted for embezzlement were processed. As a result, interesting data of social-demographic, criminological, and penal-judicial character about the personality of the criminal was obtained.

Analogous investigations were conducted in the area of residivistic crime, penal cases involving highway accidents, and so on. Using punchcard equipment, in approximately 40-50 days, 4,000 driving examinations and several hundred statistical cards were "counted" of persons convicted of breaking driving safety rules. They contained several hundred factors. Naturally, without a computer it would have taken many months of work of a large group of specialists and even then it would have been impossible to extract all the necessary information.

Courts, organs of the office of procurator and protection of public order, and scientific judicial institutions recently have been working on the problem of a single legal statistical system. Here an important role is played by the immediate availability of generalized data, the possibility of conducting comparative investigations on blocks, cities, regions, and Republics.

Such a system is impossible without punchcard equipment (in the regions and Republics) and computers (in all-union organizations). On this basis they hope to develop a high-speed, general-purpose, single system for the legal statistics of all administrative organs. Later, statistics can include also data on infractions tried by people's court, administrative commissions of executive committees, commissions on juvenile affairs.

Legal experts, L. G. Edzhubov, V. P. Vapnik, N. V. Troshko, and A. A. Zhurav', obtained positive results using computers for identification of images. Pattern recognition using computers has already been used in legal handwriting science. The Leningrad scientists Professor V. A. Yakubovich and Docent R. M. Lantsman conducted this project. The analysis of similar handwriting, employs a completely new algorithm for recognition of identical (similar) types. A major role in the development of the algorithm was played by the investigations of staff members of the Institute of Automation and Remote Control (Engineering Cybernetics) of the Academy of Sciences of the USSR, Professor L. Ya. Lerner and Candidate of Technical Sciences, V. P. Vapnik.

Due to the immense computer "memory," it is possible to record all standard regulations adopted from the time of the establishment of the Soviet state. Without removing them from the computer "memory," it is possible to "cancel" all the legal regulations which have been superseded (upon adoption of new ones). Computers make it possible to organize the recording, classification, storage, and processing of the most diversified legislative proposals as received from scientists, state institutions, and public organizations, especially during the discussion period of bills in the press and at the sessions of the Supreme Soviet of the Union and the Union Republics.

In the USSR the application of cybernetics to the activity of legal institutions has been evaluated as a dependable method for the introduction of scientific organization methods in the courts, penal organs, and in the protection of public order. To realize the full potential of cybernetics in the field of law, it has been recommended that an all-union legal computer center should be created as a component part of the state information system.

**FINANCIAL STATEMENT OF AMERICAN SOCIETY FOR CYBERNETICS FOR FISCAL PERIOD ENDING DECEMBER 31, 1967**

<table>
<thead>
<tr>
<th>Source of Income</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Annual Symposium</td>
<td>$5,935.00</td>
</tr>
<tr>
<td>Dues (Regular and Student)</td>
<td>$1,660.00</td>
</tr>
<tr>
<td></td>
<td>$7,595.00</td>
</tr>
<tr>
<td></td>
<td>$8,601.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symposium</td>
<td>$2,513.40</td>
</tr>
<tr>
<td>Travel Expenses</td>
<td>2,323.31*</td>
</tr>
<tr>
<td>Printing and Photography</td>
<td>733.38</td>
</tr>
<tr>
<td>Government Fees and Taxes</td>
<td>9.00</td>
</tr>
<tr>
<td>Repayment of Loans by Directors</td>
<td>640.00</td>
</tr>
<tr>
<td>and Friends of the Society</td>
<td></td>
</tr>
<tr>
<td>Refunds and overpayments of dues</td>
<td>155.00</td>
</tr>
<tr>
<td>Telegraph Services</td>
<td>18.23</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>71.43</td>
</tr>
<tr>
<td></td>
<td>$6,463.75</td>
</tr>
<tr>
<td></td>
<td>$6,463.75</td>
</tr>
<tr>
<td>Checkbook balance as of December 31, 1967</td>
<td>$2,138.24</td>
</tr>
</tbody>
</table>

*To be reimbursed by NSF grant

**Editorial from page 1**

Efficiency of assimilation of all those who care to listen.

Dr. Warren Brody of M.I.T. suggested a way to achieve this end. A small number of specialists would interact with their considered opinions being video taped during the course of the discussion and edited by them for final presentation. This tape would then be presented to the Mayors of major cities and other individuals who hold responsibility affected by these problems so that they can add to the tape their comment and opinion. The extended tape would be duplicated, reviewed, and re-viewed by the membership-at-large in small intimate groupings. Their added comments could be edited to provide the contribution of the society, thus setting the stage for further consideration of the management of large systems and the global optimization of urban problems.

A proposal in this regard is presently being considered by the National Science Foundation. Their sponsorship would open the door to a new concept in the activities of a technical society, a concept clearly suitable to the nature of this society and the problem areas it chooses to address, Fogel.