Electronic Information Handling

Exploring some of the complexities of information processing as a basis for decision-making and for analyzing the ever-increasing volume of research and other information was the aim of the conference on electronic information handling held in Pittsburgh, Pennsylvania, 7–9 October 1964. Information requirements, work now being done in the field of information-handling systems, limitations of electronic information-handling systems, and what should be done in the future were some of the main topics discussed. In order to cover the entire range of information-handling problems, speakers were drawn from the fields of government, industry, and education.

The relation between industry and the university in solving information-handling problems was outlined by Thomas A. Knowles (Goodyear Aerospace Corporation). Edison Montgomery (University of Pittsburgh) discussed the problems of interdisciplinary information transfer. He also spoke of the University of Pittsburgh's Knowledge Availability Systems Center, a unique research organization dedicated to the investigation and application of novel approaches to information processing.

In the session devoted to analysis of the field, Robert Hayes (University of California) analyzed the various forms of input, from signals through nonnumeric information, that are available to an electronic information-processing system. Interpretation and analysis of nonnumerical information were covered by Alan J. Perlis (Carnegie Institute of Technology), who emphasized the limitations as well as the capabilities of present computers for solving information-handling problems. The proper relation between activities of man and machine should be established, he said, and the computer should be used principally for repetitive tasks.

Andrew D. Booth (University of Saskatchewan) discussed mechanical resolution of linguistics problems and presented the results of work that has been undertaken over the past decade in mechanical translation. Leonard Uhr (University of Michigan) dealt with automatic recognition of patterns —either symbols, alphabetic characters, pictures, photographs, or x-rays.

Covering the requirements of different types of information-users and

the necessity for permitting the users' needs to influence the design of information-handling systems, Henry W. Brosin (Western Psychiatric Institute and Clinic, University of Pittsburgh) commented on the failure of many systems to consider the needs of the individual user. When an information-handling system becomes large, it must take into account too many users, and thus must generalize to a certain extent. Thus the system sometimes neglects the requirements of the individual user.

Representing the government users was Walter Carlson (Department of Defense) who discussed the requirements of defense scientists. He pointed out that many technically trained persons have had almost no formal instruction in the use of information resources. He suggested that information systems and information itself are approaching the status of a commodity and should accordingly be tested in the market place. Charles P. Bourne (Stanford Research Institute) noted ways in which scientists and other professional people make use of libraries. The record of their withdrawals of books and periodicals from the library, for example, might provide useful data that could be engineered into future library systems.

In the session on operational experiences Martin M. Cummings (National Library of Medicine) explained the current program of preparing an index, as well as selective bibliographies, by computers and related equipment. He mentioned use of GRACE, a high-speed photocomposing device used in conjunction with a computer to avoid the usual delays in printing.

Assembling, interpreting, and reporting of information relevant to national defense were discussed by George W. N. Schmidt (NORAD). He discussed a large-scale system which handles impulses from radar installations and similar-data gathering devices, as well as verbal and alphabetic information. Frank L. Hassler (Defense Communication Agency) pointed out that the definition of data and policies should become increasingly the responsibility of the person who will ultimately use the information system.

Jiri Nehnevajsa (University of Pittsburgh) discussed command and control systems—the very large systems which attempt to gather information for presentation and interpretation at the highest decision-making levels, that

is, at presidential or chief-of-staff levels. Sydney and Beatrice Rome (Systems Development Corporation) discussed a large-scale, computer-based program for information gathering, communication, and decision-making at various levels within an organization. The presentation showed a simulated organization and interrogation of an information system by people at different administrative levels.

During the banquet James Miller (Western Michigan University) spoke about what is expected of our libraries. He stressed the need for the expenditure by educational institutions of additional funds for exploring and putting into use new concepts of information dissemination which would make information simultaneously available to more users.

Orrin Taulbee (Goodyear Aerospace Corporation) explored potential uses of modern mathematics in modeling, analyzing, and evaluating systems.

Shortcomings of information-handling processes were noted by two speakers. In discussing university attitudes, Allen Newell (Carnegie Institute of Technology) spoke about the present limitations of ideas for problem-solving, and John M. Holland (University of Michigan) discussed capacity theorems for adaptive systems. Government views were reported on by John Keto (Wright-Patterson Air Force Base), who spoke of the limitations of current equipment in solving the electronic information-processing dilemma, especially in the area of bionics. Ruth M. Davis and Richard Wilcox discussed the general area of man-machine interaction. Davis (Department of Defense) spoke of the practical applications of artificial intelligence to the solution of military problems, while Wilcox (Office of Naval Research) discussed possibilities of utilizing the electronic computer as a tool in augmenting the human decision-making processes.

Plans for the future were noted by Harold Wooster (Air Force Office of Scientific Research). He emphasized the need for more research in order to advance the field of electronic information handling beyond its present limitations. Donald L. Rohrbacher (Goodyear Aerospace Corporation) spoke of the necessity for new equipment and, especially, for a computer with an associative memory. Educational needs of both users and designers of information-handling systems were discussed by William F.

Atchison (Georgia Institute of Technology).

The final paper was presented by Allen Kent (University of Pittsburgh) who spoke of the Information Retrieval Game. The game is a novel means of collecting data on the decision-making processes of various types of individuals, for the purpose of determining the relevance or irrelevance of a given piece of information to a specific search question. Data derived from repeated plays of the game may provide useful bench marks in developing the criteria for the design of future information-processing systems.

The conference was cosponsored by the University of Pittsburgh, Goodyear Aerospace Corporation, and Western Michigan University. The proceedings of the conference will be published by Spartan Books, Washington, D.C., in March 1965.

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Forthcoming Events

April

30–1. **Indiana** Acad. of Science, Culver. (C. F. Dineen, St. Mary's College, Notre Dame, Ind. 46556)

30–1. **Nebraska** Acad. of Sciences, Lincoln. (C. B. Schultz, Morrill Hall 101, Univ. of Nebraska, 14th and U St., Lincoln 68508)

30–2. Society of **Biological Psychiatry**, New York, N.Y. (G. N. Thompson, 2010 Wilshire Blvd., Los Angeles, Calif.)

30–2. Academy of **Psychoanalysis**, annual, New York, N.Y. (A. H. Rifkin, 125 E. 65 St., New York 10021)

30–2. American **Psychosomatic** Soc., annual, Philadelphia, Pa. (APS, 265 Nassau Rd., Roosevelt, N.Y. 11575)

30–3. American **Psychoanalytic** Assoc., 52nd annual, New York, N.Y. (APA, 1 E. 57 St., New York 10022)

May

1–2. Academy of **Psychoanalysis**, New York, N.Y. (A. H. Rifkin, AP, 125 E. 65 St., New York 10021)

1–2. American **Psychosomatic** Soc., 22nd annual, Philadelphia, Pa. (E. Meyer, 265 Nassau Rd., Roosevelt, N.Y.)

1–4. Southern **Surgeons'** Club, 22nd annual, Louisville, Ky. (H. M. Carney, 619 Main St., Texarkana, Ark.-Tex.)

1–5. American Assoc. of **Medical Record Librarians**, Chicago, Ill. (Mrs. M. J. Waterstraat, 840 N. Lake Shore Dr., Chicago 60610)

1–6. American **Ceramic** Soc., 67th annual, Philadelphia, Pa. (ACS, 4055 N. High St., Columbus, Ohio 43214)