THE ASSOCIATION FOR COMPUTING MACHINERY*

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As the Association for Computing Machinery enters a new phase of its existence, it seems befitting to review, briefly, the conditions in the computing field just prior to its organization and the events of the past six years of its life. Since its formation, in 1947, the Association has adhered to the originally established policy of informality. That is, meetings and discussions were encouraged and information was generally put out in mimeographed form and more formal publications were discouraged. The function of the organization was to maintain a mailing list of members paying only such dues as were necessary to cover the cost of printing or mimeographing and mailing. Such an organization served its purpose excellently, but times have changed.

Prior to the formation of the Association, the automatic computing field, as such, hardly existed. Probably the first meeting of those interested in the field was held at the Massachusetts Institute of Technology in 1945. The occasion was to introduce the differential analyzer, designed by Dr. Vannevar Bush and Dr. Samuel H. Caldwell, to the public. This machine is a refinement of the original machine built

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by Dr. Bush in 1925. The earlier machine served as a pattern for several machines which were in operation in 1945, including those at the Aberdeen Proving Ground, the Moore School of Electrical Engineering, the General Electric Company and in Manchester, England.

It is interesting to note that, at the time of this first meeting, other analog type machines were in operation. Network analyzers were employed to simulate power distribution systems and aid in their study. None of these machines employed digital representation but represented the values in analog form, such as voltage, current or angular position. Digital computation was possible only by hand operated calculators or by some business machines.

Although automatic digital computation by machinery was the goal Charles Babbage strove to reach, it was not until the Hollerith rotary counter was suggested in 1890 and the International Business Machines Corporation began producing machines employing such counters for accounting purposes in the period from 1903 to 1905, that such goal was reached. The automatic multiplying punch machine was not produced until 1931.

Computation by means of telephone relays was first introduced in the Bell System Complex Computer, known as Model I, in 1939. The method of employing the relays was suggested by Dr. George R. Stibitz and the machine was designed by Samuel B. Williams. This was not a fully automatic machine. The complex quantities for a single

arithmetic operation, such as addition, multiplication or division, were written into the machine from a keyboard. The machine performed the complex operation automatically and both the problem numbers and the answer were printed on a teletypewriter.

At about the same time, the International Business Machines Corporation, with the help of Dr. Howard H. Aiken, built the Harvard Mark I machine. This machine was put into service in May, 1944, on classified work and presented to the Harvard Computation Laboratory in August, 1944. The *World War Requirements stimulated the design and development of computing machinery. The Moore School of Electrical Engineering designed and built the ENIAC for the Aberdeen Proving Ground, thus producing the first all-electronic digital digital computer.*

The Bell System had produced their models II, III and IV which were not intended for general use but were designed for specific problems that arose during the war. These, together with the Harvard Mark I and the several analog machines, were in operation at the time of the 1945 meeting and the ENIAC and Bell Model V were in the design and early production stage. The Harvard Mark II and the EDVAC were under consideration. It was generally believed that large scale machines would prove a tremendous saving in research, both in time and money.

A course of instruction in the design and use of automatic computers was conducted by the Moore School of Electrical Engineering during the summer of 1946.

In January 1947, the first Symposium on Large-Scale Digital Calculating Machinery was held at Harvard University under the leadership of Dr. Aiken. The attendance was a surprise to all concerned. Instead of 50 to 60 scientists, mathematicians and engineers, some 250 turned up. It was at the closing session that Dr. Samuel H. Caldwell suggested an organization to provide for an interchange of ideas among those engaged in this relatively new field. The suggestion was endorsed by the Symposium and was informally referred to the National Research Council committee on large-scale calculating machinery.

A proposal was put before the next meeting of the committee held in New York April 28th. Unfortunately, the committee was not convinced that there was sufficient interest to warrant the formation of another society. Several of the conferees from the Symposium did not press the matter and it was laid aside until the next committee meeting to be held a year later. Some of the younger men in the field felt the need for a means of getting together informally without waiting for the action of the Council. A "Temporary Committee for an Eastern Association for Computing Machinery" was formed in May, 1947. The group consisting of E. C. Berkeley, R. V. D. Campbell, J. H. Curtiss, H. E. Goheen, J. W. Mauchly, T. K. Sharpless, R. Taylor and C. B. Tompkins formed a committee to represent the four centers of computer interest, Boston, New York, Philadelphia and Washington.

After receiving several hundred expressions of interest in response to their inquiry, a meeting was held at Columbia University on September 15, 1947, at which 78 persons attended. After hearing a discussion of the pilot model of the EDVAC, the "Eastern Association for Computing Machinery" was organized and the following officers were elected:

Dr. John H. Curtiss, President
Dr. John W. Mauchly, Vice President.
Mr. Edmund C. Berkeley, Secretary.
Mr. Robert V. D. Campbell, Treasurer.

The Council met several times in the next few months and established the policy: to keep the organization informal, to encourage meetings and discussions, to issue mimeographed information but no printed or more formal publications, and to maintain a mailing list of persons interested in the field (at first both members and non-

members, later only members). The possibility of becoming a section of some other established society interested in the field was not considered feasible because the Council did not want to saddle computing machinery men with the heavy dues of a regular professional society or send them a large proportion of information that they would not be interested in.

The second meeting of the Association was held at the Aberdeen Proving Grounds in December, 1947, with an attendance of 300.

In January, 1948, the Executive Committee dropped the word "Eastern" from the name of the Association, because the membership had grown to such wide representation. The membership has grown from the original 78 to approximately 1200 and the members are located not only all over the United States but in many other parts of the world including Australia, Belgium, Canada, England, France, the Netherlands and Sweden.

Annual meetings have been held at Oak Ridge, Tennesee; Harvard Computation Laboratory; Rutgers University; Washington, D. C.; Wayne University; Mellon Institute; and Toronto University.

In 1951, the large engineering societies, AIEE and IRE appointed committees for the design and use of computer equipment. The Association has joined with them to form a Joint AIEE, IRE and ACM Committee. The JCC Committee has held meetings in Philadelphia, Pennsylvania; New York City; and Los Angeles, California. It is interesting to note that the attendance at the various computer meetings has grown from 78 in 1947 to an estimated 1500 in 1953.

The Association has become an important factor in the field of computing machinery. Until the engineering societies, AIEE and IRE, became sufficiently interested to struggle with the "hardware", the Association provided a forum for all phases of the field. Now the Association can direct its efforts to the other phases of computing systems, such as numerical analysis, logical design, application and use, and last, but not least, to programming. Committees to implement these are in the formative stage.

Because of the large attendance at the various meetings and of the widespread interest in this field, it has been found desirable to issue printed "Proceedings". Also, because of its growth, it has become necessary to depart somewhat from the original informal manner of disseminating information. In fact, the Association has grown up. The Constitution and Bylaws have been changed by vote of the members to increase the dues to provide for the publication of a Journal; a permanent headquarters office has been arranged with The New York Academy of Sciences at 2 East 63rd Street, New York 21, New York; and the Office of Naval Research (ONR) has provided the Association with a copy of their Digital Computer News Letter for reproduction in the Journal, thus providing non-government persons with this excellent publication which economy has forced the ONR to restrict to government agencies.

The various sections of the Association join with the sections of the other societies in local meetings, in addition to those mentioned above. The officers and Council are striving to make the Association of very real use to its members and will welcome any suggestions to that end.

Acknowledgment must be made to the former Secretary, Mr. Edmund C. Berkeley for his zeal and enthusiasm in organizing the Association and for his work in its behalf, all of which has contributed to its present success. The author wishes, also, to thank Mr. Berkeley for his aid in the preparation of this article.