

1945

9/17

PARTICIPATION IN ADMINISTRATION

SCHOOL OF MATHEMATICS

GENERAL

VON NEUMANN, JOHN

✓ E. C. P.

APPLIED MATHEMATICS

Academic Personnel

Academic Organization

Government Relations

Biographical

Academic Activities

For memo on above headings see Chronological File under
1945, 9/17, or any one of the first 4 headings.

Faculty Minutes, 9/17/45

1.24.3
1946

10/9
2/13
3/5

✓ ELECTRONIC COMPUTER PROJECT

Academic Activities

SCHOOL OF MATHEMATICS

Academic Organization

No reference in minutes whatever to action by School of Mathematics on the Computer Project outlined of which were approved by Board October 9, 1945.

On February 13, 1946, first mention occurs in the allocation of office space : agreed that the room connected with Dr. Gödel's office might be used by people working on the computing machines.

On March 5, 1946, the School approved the sum of \$500 for a visit from M. H. A. Newman of the University of Manchester, actively concerned with the development of computing devices-- the visit to Princeton.

Minutes, School of Mathematics

1945

10/19

✓LABORATORY (Electronic Computer Project)

Facilities

Director's report and recommendation to Board for \$100,000 of a \$300,000 project. Aid to be secured from outside. Computations 1000 times faster than "the best devices now in existence". Like to 200 inch telescope. Contribution to research in physics, biology, mathematics, economics and statistics.

"Curiously enough the plan of such a machine is partly based on what we know about the operation of the central nervous system in the human body. This means, of course, that it would be the most complex research instrument now in existence." Prof. John von Neumann, Mathematical physicist, will design.

Board authorized \$100,000

1945

10/19

SCHOOL OF MATHEMATICS

Academic Organization

✓ELECTRONIC COMPUTER PROJECT

Academic Activities

The Board authorized \$100,000 of \$300,000 for Computer.
There is no faculty minute indicating the School of Mathematics approved the project.

The only possible reference to authorization was a note on unrecorded discussion of general policy in re-orienting mathematicians and theoretical physicists who had been in war work to "regular scientific work."

Mathematics Faculty Minutes, 10/19/45

1946-1948

SCHOOL OF MATHEMATICS

Academic Organization

THEORETICAL PHYSICS

Academic Activities

✓ E. C. P.

Memorandum Dyson to Chandra Sekhar, October 20, 1954.

"School of Mathematics has a permanent establishment which is divided into three groups, one consisting of pure mathematics, one consisting of theoretical physics, ~~xxxxx~~ physicists, and one consisting of Professor von Neumann. Von Neumann originated in 1946 and has since directed our computer project. The computer project built and operates a fast digital computer, the cost of the machine and of almost all of the staff being paid by government money and not by the Institute. Rather by accident it has turned out that the most active users of the machine have been meteorologists... Under the leadership of Dr. Charney, have set themselves a task of understanding the theoretical basis of meteorology by solving numerically various forms of the hydro-dynamical equations of the atmosphere and comparing the results with observation.

They have had a good deal of success in making short-ranged (24 hours) weather predictions by these methods, as a consequence of which the Government is very willing to pour money into the project. Von Neumann and Charney are anxious not to get too deeply involved with practical applications, in order to concentrate on the more difficult problems of understanding large-scale and long-range atmospheric motions... The meteorologists would prefer to be on the Institute establishment on the same footing as the physicists and mathematicians in order to be free of any sort of obligation to produce useful results on a short-term basis..."

✓ Purpose of the Institute is to carry on long-term academic research in a scholarly atmosphere. The original purpose of the computer project was to be the nucleus for a group of applied mathematicians who would use the machine for research of this kind, either for investigating physical problems or for developing the mathematical theory of complex non-linear systems of equations. The question is now, whether meteorology is an appropriate subject for the Institute

to support in a major and permanent way, and if not, whether there are other branches of applied mathematics which would be more appropriate.

Questions posed:

(1) To incorporate the existing meteorology group into permanent Institute organization,

(2) To extricate the Institute from direct support of the computer and let the government run it as a practical and meteorological project,

(3) To let the meteorologists go elsewhere and keep the computer for the Institute in the hope of establishing a school of fundamental research in some other branch of applied mathematics.

Dyson asks for advice.

D, E. C. P., Considerations, Future of

1946

✓ ELECTRONIC COMPUTER PROJECT

Academic Activities

BIGELOW

Biographical

GOLDSTEIN

VEBLEN, O.

VON NEUMANN

EINSTEIN

Pp. 5-6

Morse Interview, 6/21/56

1946-1951

SCHOOL OF MATHEMATICS

Academic Organization

✓ E. C. P.

Academic Activities

Institute has undertaken to construct an electronic computing device to cost estimated \$300,000 of which Board will give no more than \$100,000. Balance Sheet shows \$12,511 in process of construction by 1947, \$118,275 by 1948, \$322,810 of which \$96,905 was for buildings and equipment, by 1948, \$365,952 (w/o building equipment), by 1950 \$599,063 gross in Project #1, and beginning of Project #2, on which \$13,444 is shown .

By 1951

#1 \$587,496

#2 229,024

816,521

Less land & Buildings

184,487

Net projects

\$632,034

Liability column shows:

I. A. S.

\$100,000

Liability column shows:

I. A. S.	\$100,000
Others:	
#1	556,138
#2	<u>176,000</u>
	\$832,138

Treasurer's Report, Exhibit A

1946

5/13

SCHOOL OF MATHEMATICS

Academic Organization

✓ E. G. P.

Academic Activities

MORSE, MARSWON

Biographical

PANOFSKY, ERWIN

ZWORYKIN

Aydelotte discussed Zworykin's plan for scientific control of the weather which would involve calculations by the Electronic Computer based on measurement of the amount of radiation emanating from the ground. He reported the Navy Department wanted to sign a contract with the Institute for approximately \$30,000 for two or three years to develop these studies. S. M. faculty would discuss the matter at their meeting May 14, 1946. Asked for comments, Morse opposed primarily an empirical rather than theoretical science. (Study of the weather). And it belonged in an engineering school rather than in an institution devoted to the liberal arts. If it is embarked upon it should be separated from the Institute as such; otherwise

the Institute might have a permanent weather forecasting station on its hands. Panofsky recalled primary consideration in the development of the E. C. P. was to solve theoretical problems, not practical ones.

D, Minutes Standing Committee of the Faculty, 1940-1946

1946

5/15

✓ E. G. P.

Academic Activities

BUILDINGS AND GROUNDS

Facilities

HOUSING

COMMITTEES (ON BUILDINGS & GROUNDS)

Corporation

Minutes of the meeting of the Committee on Buildings and Grounds, May 15, 1956; letter from Aydelotte to John Furlow, Egaly Engineers, May 16, 1946; and copy of a memorandum of conversation with Mr. G. Harmon Gurney, New York Life Insurance Company by Frank Aydelotte.

Extra copies from D Files filed in Vertical File under "B" for Buildings and Grounds.

Extra Copies from Files in D Office

1946

5/20

SCHOOL OF MATHEMATICS

Academic Organization

✓ E. C. P.

Academic Activities

METEOROLOGY

MORSE, MARSTON

Biographical

Standing Committee: Morse, Panofsky, and Riefler met with Aydelotte and Bamberger May 20, 1946 . Aydelotte reported School of Mathematics had on May 14, 1946 voted that the Institute enter into a contract with the Navy Department for meteorological research in connection with the E. C. P. This work will be carried on in the Computer building which will be expanded to accommodate the additional staff. Morse pointed out that "with the exception of Professors von Neumann and Veblen, the members of the mathematics faculty approved of this step with some reluctance." Consensus: development of the E. C. P. seemed a point to ~~mathematical~~ meteorological research as the next logical step, and although this research might lead to new theoretical discoveries in the field of mathematics and physics, the work carried on at the Institute by Professor Siegel, for example, was of more fundamental importance. Some members of the

faculty believed that the great contributions to learning were made by individuals not by institutions and raised the question whether the Institute should not give more attention to promoting the scientific work and influence of men like Siegel. "This view is of course at variance with the attitude held by society in general, which gives to projects devoted to the improvement of the material welfare of man a political and social significance greatly out of proportion to their intrinsic value."

D, Minutes of the Standing Committee of the Faculty, 1940-1946

1946

5/27

SCHOOL OF MATHEMATICS

Academic Organization

POLICIES

~~Academic~~ Administration

GENERAL

Publications

✓ E. C. P.

Academic Activities

Meeting Bamberger, Morse, Panofsky and Riefler with

Aydelette. Consensus was that a paragraph describing the E. C. P. project should be included in the chapter on the School of Mathematics but that the names of the Computer personnel should not appear in the list of Institute members. "Members of the Computer staff are, after all, employed to do a specific job and are not invited to the Institute to pursue research of their own choosing." But they should be listed with their addresses in the staff list. Aydelette said he would discuss the question further with von Neumann and report back to the Committee at its next meeting. No evidence.

D, Minutes of the Standing Committee of the Faculty, 1940-1946

1946

11/7

✓ E. C. P.

Academic Activities

VON NEUMANN, JOHN

Biographical

AYDELOTTE, F.

Letter from Aydelotte to von Neumann, November 7, 1946,
which was not sent.

"I have thought over this proposal for a mathematical
computing center as it might possibly affect the Institute,
and must say that it seems to me the housing difficulty which
has deterred Princeton University would of course be the same
for us.

"So far as a building is concerned, I think it might
be possible to build something which would in the long run
serve our own purposes and which we might rent to the Government
for 15 % of its cost for say a period of ten years.
Whether our Trustees would see this or not, I have no idea.

"The greatest difficulty which I see is the question of
whether such a center, if established here, would be of

scientific value to you in the work which you are doing, or whether it would on the whole be a distraction. I can see a real possibility that it might be a hinderance rather than a help.

"I should like to talk that over with you when there is a chance."

A, 10/18/56 Home, Board of Trustees (File # 46)

1947

10/9

APPLIED MATHEMATICS

Academic Activities

✓ELECTRONIC COMPUTER PROJECT

OPPENHEIMER, R.

Biographical

AYDELOTTE, F.

Oppenheimer corrects Aydelotte's report on the E. C. P. as an instance of applied mathematics by saying that the project was primarily "a developmental job in pure science and not a facility."

Trustees' Minutes, October 9, 1947

1948

7/3

✓ E. C. P.

MATHEMATICS

WORLD WAR II

Academic Activities

Academic Activities

✕ Government Relations

Excerpt from Wichita, Kan. Beacon, July 3, 1948.

It says, "Because the army will need to know about lightning-quick calculation in tomorrow's atomic and rocket warfare it has called upon an advisory committee of mathematicians to help it.

"Maj. Gen. A. C. McAuliffe, deputy director for research, announced the appointment of the six-man panel today," the panel to consist of John von Neumann; Hendrick Bode, director of mathematical research of the Bell Telephone Company; H. P. Robertson of the California Institute of Technology; J. B. Rosser, Cornell University; and J. J. Stoker and Richard Courant, both of New York University.

Questions which the group will answer: What new applications of mathematics to military problems seem most important? What will the army need in the way of high-speed computing

machines? How should mathematical methods be applied in working out problems in strategy, tactics and logistics? What steps should be taken to provide mathematically trained personnel within the army?

Dr. Edgar R. Lorch, Columbia University, was named as mathematics advisor to the research group for a six months period (See Joplin, Mo. News-Herald story, July 3, 1948).

A File, I. A. S.

1949

11/15

✓ELECTRONIC COMPUTER PROJECT

Academic Activities

A new ECB contract was under negotiation which would provide \$150,000 a year for the next two-years, plus a 60 o/o contribution from the government. The contract was to be made either jointly with the Atomic Energy Commission and the Army, or solely with the AEC.

1950

10/11

PROFESSORS

Academic Personnel

SALARIES

MEMBERS (PERMANENT)

✓ ELECTRONIC COMPUTER PROJECT

Academic Activities

GOLDSTEIN

BIGELOW

The faculty recommended Montgomery, Pais, and Selberg be made Professors in the School of Mathematics. "This recommendation carries with it the recommendation that there be established two grades of Professor in the Institute for Advanced Study without formal distinction in title with but with an actual distinction corresponding to seniority, and with two levels of salaries of which the lower was tentatively put at \$12,000. The above new appointments were recommended at the lower level." The upper level was discussed, but no substance was reflected.

Von Neumann raised the question of making Goldstine and Bigelow permanent members, "it being understood that this implied a possible financial commitment in the future." No immediate responsibility for salaries now; discussed but not approved. (On November 9 the Mathematics Faculty voted to make Bigelow and Goldstine permanent members with appropriate T. I. A. A. arrangements with stipends of not more than \$9,000 and at least \$1000 more than they were receiving a year ago. Presently their salaries will come out of the government grants).

Minutes, School of Mathematics, 10/11/50 and 11/9/50

1955

6/30

SCHOOL OF MATHEMATICS

Academic Organization

✓ELECTRONIC COMPUTER PROJECT

Academic Activities

Balance Sheet shows I. A. S. had spent \$65,271 on E. C. P. and others had and would contribute \$1,423,068.22, making total on liability side \$1,488,339.

On asset side, Cost of 2 computers built:
(Proj. #1 & #2)

Cost of buildings

Proj. #3 continuing research

Total

\$	797,641
	<u>184,471</u>
	982,112
	<u>506,227</u>
	1,488,339

Project #3 Institute has contracted for further research and development work on electronic computing devices.

~~XXXXXXXXXXXX~~ Treasurer's Report, Exhibit A

*Project relates
to use for
E.C.P.?*

1956

April

POLICIES

Administration

PRINCETON UNIVERSITY

Relations WOA1

APPLIED MATHEMATICS

Academic Activities

✓ ELECTRONIC COMPUTER PROJECT

METHODOLOGY

See draft report, pp. 9-10. Note similarity of requirements for statistical and engineering work requiring personnel. Similar to the needs early cited for economics work at the Institute. The Committee recommends early disposal of the E. C. P. except for the necessities of Princeton University Mathematics and Physics Department people who have come to rely on it for calculations.

Draft Report Joint Trustee-Faculty Committee, / April, 1956

1956

6/15

GENERAL

✓ELECTRONIC COMPUTER PROJECT

FELLOWSHIPS

APPOINTMENTS

MEMBERS

PARTICIPATION IN ADMINISTRATION

MONTGOMERY, DEAN

VEBLEN, O.

LEFSCHETZ

OPPENHEIMER

KENNAN

Academic Organization

Academic Activities

Academic Personnel

Biographical

Interview with Dean Montgomery, June 15, 1956.

Filed in Vertical File under Montgomery Interviews.

1926

6/21

PRINCETON (8, 9, 10)
HARVARD (1)
MATHEMATICS (2, 7, 14)
✓ E. C. P. (5, 6)
APPOINTMENTS (2, 3, 4, 5)
SALARIES (3)
FACULTY (10, 11)
SCHOOL OF MATHEMATICS (5, 9, 14, 15)
SCHOOL OF HISTORICAL STUDIES (14)
JOHNS HOPKINS (7, 8)
DIRECTOR (10, 11)
TRUSTEES (11)
RESEARCH (13)
MORSE (1, 5, 8, 10)
BIRKHOFF (1, 4)
WHITNEY (2)
STEWART (2, 3)
PLEKNER (3, 7, 8)
GODEL (3, 5)
MAYER, WALTHER (3)
SIEGEL (5)
BIGELOW (5, 6)
ELIOT, T. S. (7)
STRAUSS (10)
EARLE (10)
BOREL (15)

VEBLEN (1, 2, 4, 5, 8, 13)
DODDS (2)
WARREN (2, 3)
VON NEUMANN (3, 5, 6)
~~XXXXXXXXXX~~
WIENER, ROBERT (4, 6)
WEYL (5, 8)
EINSTEIN (6, 8, 11, 12, 16)
VINE (9, 10)
AYDELOTTE (10, 11)
OP ENHEIMER (15)
PLAZCEK (3)

Relations WOI

Academic Activities

Academic Personnel

Academic Organization

Educational Institutions

Administration

Corporation

Academic Procedures

Biographical

Interview with
Morse 6/21/56.

Filed in
Vertical File
under Morse
Interviews.

1956

8/12

✓ E. C. P.

GENERAL

APPOINTMENTS

SALARIES

PROFESSORS

MONTGOMERY

VON NEUMANN

PAULI

Academic Activities

Academic Organization

Academic Personnel

Biographical

Interview with Professor Montgomery, August 12, 1956.

Filed in Vertical File under Montgomery Interviews.