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THE PRINCETON MATHEMATICS COMMUNITY IN THE 1930s

AN ORAL-HISTORY PROJECT

These interviews concern primarily the mathematics community in Princeton in the 1930s. Most of the discussion focuses on the institutional and social context of the development of an eminent mathematical research and graduate-education center, and on the personalities and biographies of the individuals involved. Information about technical accomplishments within mathematics are only peripherally considered.

In the 1930s, with Princeton University and the Institute for Advanced Study, Princeton became the site of one of the strongest and largest centers of mathematics research and graduate education in the world, as well as a leader in the formation of an indigenous American mathematical-research community. These mathematicians played prominent roles during this period in developing the new fields of mathematical logic, topology, and mathematical statistics, and made noteworthy contributions to differential geometry, mathematical physics, and other mathematical specialties. The distinguished faculties of the University mathematics department and the IAS School of Mathematics included James Alexander, Salomon Bochner, Albert Einstein, Luther Eisenhart, Solomon Lefschetz, Marston Morse, Oswald Veblen, John von Neumann, Hermann Weyl, and Eugene Wigner. Hundreds of others were participants in this decade as faculty members, permanent researchers, visitors, post-doctoral students, or graduate students.

The period studied here begins with the planning of a mathematics building (Fine Hall) in 1929 and the charter of the Institute for Advanced Study in 1930. It terminates with the completion of separate

quarters (Fuld Hall) for the Institute in 1939 and the beginning of the second world war. While most of the faculty members at the University and the Institute in the 1930s had died by the time this interview project began in 1984, there were several faculty members alive and willing to participate, as well as a number of graduate students, visitors, and permanent researchers.

Their testimony concerns primarily the reasons for their decision to come to Princeton, their assessments of the educational and research programs, and the effects of the Depression and the European political situation on academic life. However, the interviews do reach back to 1905 when Princeton President Woodrow Wilson introduced the preceptorial system, which allowed the hiring of a number of promising young mathematicians, and traces institutional developments through the 1920s that helped to shape the mathematical environment of the 1930s. The interviews occasionally extend forward and deal with such topics as war-time mathematical research and the building of an electronic computer at Princeton just after the war.

The following is an alphabetical list of the participants in the oral-history project.

John Bardeen
Valentine Bargmann
George W. Brown
Robert Cameron
Alonzo Church
Leon W. Cohen
Joseph Daly
William L. Duren
Churchill Eisenhart
William Flexner
Merrill Flood
Alfred Leon and Ilse Foster
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Robert E. Greenwood
Israel Halperin
Leon Henkin
Banesh Hoffmann
Robert Hooke
Nathan Jacobson
John Kemeny
Stephen Kleene
Derrick and Emma Lehmer
Jack Levine
Edward J. McShane
Deane Montgomery
Alexander M. Mood
Frances Morrey
Malcolm Robertson
J. Barkley Rosser
Robert Singleton

Ernst Snapper
Abraham H. Taub
Angus E. Taylor
Albert W. Tucker
John Tukey
Robert Walker
Hassler Whitney
Eugene Wigner
Shaun Wylie

This oral-history project was the idea of Albert W. Tucker, who has been a member of the Princeton University mathematics department almost continuously since 1929, first as a graduate student and later as a faculty member and chairman of the department. He mentioned his idea to Professor Charles C. Gillispie of the Princeton University Program in History of Science. Professor Gillispie arranged for support from the Alfred P. Sloan Foundation of New York, and he served as the administrator of the project. Professor Tucker and William Aspray conducted the majority of the interviews—Dr. Aspray's time being donated by the Charles Babbage Institute of the University of Minnesota. Frederik Nebeker, a graduate student in the Program in History of Science at Princeton, edited the transcripts, prepared the index, and handled many administrative matters.

The interviewing began in April of 1984 and ended in June of 1985. Three interviews of Albert Tucker, which had been conducted earlier but not transcribed, were added to the project (Transcripts 38, 39, 40). The project comprises 42 interviews and three written contributions. All interviews have been transcribed and edited and then been reviewed by the interviewee(s). The principal aim of the editing has been clarification. Secondary aims have been to reduce redundancy and to verify names of people and titles of books.

Because there is no present plan to publish the transcripts and because it will not be possible to provide photocopies on request, the transcripts are being made available for consultation at the University Archives in the Seeley G. Mudd Library of Princeton University, at the American Philosophical Society in Philadelphia, at the Charles Babbage Institute in Minneapolis, and at the Mathematical Association of America Archives at the University of Texas, Austin, for responsible scholarly use. Copyright resides with the Trustees of Princeton University, and the transcripts are made available for use according to the Fair Use provisions of the U.S. copyright revisions of 1976.

THE PRINCETON MATHEMATICS COMMUNITY IN THE 1930s

AN ORAL-HISTORY PROJECT

Administrator: Charles C. Gillispie
Dayton-Stockton Professor of History;
Professor of History of Science
Princeton University

Interviewers: Albert W. Tucker
Albert Baldwin Dod
Professor of Mathematics,
Emeritus
Princeton University

William Aspray
Associate Director
Charles Babbage
Institute
University of Minnesota

Editor: Frederik Nebeker
Doctoral Candidate
Program in History of Science
Princeton University

TABLE OF CONTENTS

* Albert Tucker participated in these interviews.

THE PRINCETON MATHEMATICS COMMUNITY IN THE 1930s

AN ORAL-HISTORY PROJECT

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ACKNOWLEDGMENTS

All concerned wish to acknowledge in the first instance the generosity of the Alfred P. Sloan Foundation, which granted the funds that have defrayed the major portion of the cost of the project. In addition, we are grateful to the Charles Babbage Institute, which authorized the participation of Dr. William Aspray; and at Princeton University to the Department of Mathematics, the Program in History of Science, and the Computer Center, all of which contributed time and services. The most general obligation, however, is to all the participants, who entered into the interviews and went to the further trouble of rewriting and correcting the transcripts.

ABSTRACTS OF THE INTERVIEWS

The Princeton Mathematics Community in the 1930s
Transcript Number 1 (PMC1)

JOHN BARDEEN

This is an interview on 29 May 1984 with John Bardeen at the University of Illinois. The interviewer is William Aspray.

Bardeen recounts his early career: undergraduate education in electrical engineering, work in geophysics while employed by the Gulf Oil Company in Pittsburgh, the math Ph.D. program at Princeton, and Junior Fellow of the Society of Fellows at Harvard. He talks about Eugene Wigner, John Van Vleck, and John Slater as pioneers of solid-state physics. Bardeen describes his years at Princeton and the close relationship between the mathematics and physics departments in those years.

The Princeton Mathematics Community in the 1930s
Transcript Number 2 (PMC2)

VALENTINE BARGMANN
(with ALBERT TUCKER)

This is an interview of Valentine Bargmann at Princeton University on 12 April 1984. The interviewers are William Aspray and Albert Tucker.

Bargmann tells of his immigration to the United States in 1937. He became a member of the Institute for Advanced Study and worked as an assistant to Einstein. Bargmann talks about the relationship between mathematicians and physicists at Princeton and elsewhere, and about his wartime work. In 1948 he accepted a tenured position in the physics department at Princeton. Bargmann and Tucker describe conditions in Princeton in the 1930s and talk about von Neumann, Einstein, Milton White, and others.

The Princeton Mathematics Community in the 1930s
Transcript Number 3 (PMC3)

GEORGE W. BROWN and ALEXANDER M. MOOD

This is a conversation between George W. Brown and Alexander Mood at the University of California, Irvine, on 25 July 1984.

Brown and Mood explain why they chose to go to Princeton for graduate work and how they came to work for Sam Wilks. They give two different pictures of the social life of graduate students: Mood was married and his wife took part in Wyman Club activities; Brown was single and lived at the Graduate College. They talk about courses and faculty members—Albert Einstein, Kurt Goedel, Paul Erdos, and others—and about the difficulties of getting work having just earned a Ph.D. in statistics.

The Princeton Mathematics Community in the 1930s
Transcript Number 4 (PMC4)

ROBERT CAMERON

This is an interview of Robert Cameron in his office at the University of Minnesota on 31 July 1984. The interviewer is William Aspray.

Cameron tells of his coming to Princeton, as a National Research Council Fellow, after completing his Ph.D. at Cornell University in 1932 and working briefly at Brown University. He arrived in Princeton in January 1934 and stayed through the following academic year. Cameron talks about the social life in Princeton and tells a story about Einstein.

The Princeton Mathematics Community in the 1930s
Transcript Number 5 (PMC5)

ALONZO CHURCH

Alonzo Church is interviewed by William Aspray on 17 May 1984 at the University of California at Los Angeles.

Church mentions his two years as a National Research Fellow, the first year at Harvard, the second year at Gottingen and Amsterdam (where he worked with L.E.J. Brouwer). Church talks at greater length about his years as a graduate student at Princeton. He was especially influenced by Oswald Veblen. Church talks about his first years of teaching at Princeton and about his graduate students, including Steve Kleene, Barkley Rosser, John Kemeny, and Alan Turing. Church tells of his discussions with Kurt Goedel and of his work as editor of the *Journal of Symbolic Logic*.

The Princeton Mathematics Community in the 1930s
Transcript Number 6 (PMC6)

LEON W. COHEN
(with ALBERT TUCKER)

This is an interview of Leon Warren Cohen at Princeton University on 13 April 1984. The interviewers are William Aspray and Albert Tucker.

Cohen, who came to Princeton after completing his Ph.D. at the University of Michigan, talks about the two schools of topology whose leaders were, respectively, R.L. Moore and Oswald Veblen. Cohen describes working with Solomon Lefschetz and spending a summer with James Alexander in the French Alps. Cohen tells how he helped to find a position for the refugee mathematician Richard Brauer in 1931. Other people Cohen discusses are Emmy Noether, John Tukey, and Charles Fefferman.

The Princeton Mathematics Community in the 1930s
Transcript Number 7 (PMC7)

JOSEPH DALY and CHURCHILL EISENHART

This is an interview on the 10 July 1984 with Joseph F. Daly and Churchill Eisenhart at Mr. Daly's home in New Carrollton, Maryland. The interviewer is William Aspray.

Daly describes the Princeton mathematics community in the fall of 1935, which was when he arrived in Princeton. Daly and Eisenhart discuss what research in statistics was going on at various universities at that time, and they talk at length about Sam Wilks. Other people they talk about are Harold Hotelling, Luther Eisenhart, H.L. Rietz, John Tukey, and Achison Duncan. Daly and Eisenhart tell something about the connection between economics and mathematical statistics in the 1930s.

The Princeton Mathematics Community in the 1930s
Transcript Number 8 (PMC8)

WILLIAM L. DUREN, NATHAN JACOBSON,
and EDWARD J. McSHANE

This is an interview of William L. Duren, Nathan Jacobson, and Edward J. McShane on 10 April 1984 at the University of Virginia. The interviewer is Karen Parshall.

Jacobson talks about the mathematics community in Fine Hall and especially about the following members of the University or the Institute: James Alexander, Solomon Lefschetz, Paul Alexandroff, Hermann Weyl, J.H.C. Whitehead, and Emmy Noether. McShane talks about conditions in Palmer Laboratory before the move to Fine Hall, about the large number of foreigners in Fine Hall, and about Noether, von Neumann, Einstein, and others. Duren tells of his year ('36-'37) at the Institute. He explains the influence Reinhold Baer, Marston Morse, and others had on him. Jacobson talks about how the math graduate students learned as much from each other as from the faculty. He describes the rivalry between two schools of topology: algebraic topology, as practised by Oswald Veblen at Princeton, and point-set topology, as practised by R.L. Moore at Texas.

The Princeton Mathematics Community in the 1930s
Transcript Number 9 (PMC9)

CHURCHILL EISENHART

This is an interview on 10 July 1984 with Churchill Eisenhart in his office at the National Bureau of Standards, in Gaithersburg, Maryland. The interviewer is William Aspray.

Churchill Eisenhart talks at some length about his father, Luther P. Eisenhart. He discusses also other members of the faculty at Princeton University and at the Institute for Advanced Study in the 1930s, including H.P. Robertson, Edward Condon, John von Neumann, Salomon Bochner, and H.F. Bohnenblust. Eisenhart tells something about the Eisenhart family and about the fact that his father left behind virtually no archival papers.

The Princeton Mathematics Community in the 1930s
Transcript Number 10 (PMC10)

WILLIAM FLEXNER
(with ALBERT TUCKER)

This is an interview on 13 October 1984 with William Flexner in London. The interview is by telephone. The interviewers are Albert Tucker and William Aspray in Princeton, New Jersey.

This interview is not to be released before the year 2020 without the permission of William Flexner.

Flexner, who came to Princeton for graduate work in 1926, talks about the mathematics faculty, including James Alexander, Henry B. Fine, Solomon Lefschetz, and J.H.M. Wedderburn. In addition, Flexner discusses some fellow graduate students—including H.F. Bohnenblust and Alonzo Church—and some visitors to Princeton—including Paul Alexandroff and G.H. Hardy.

The Princeton Mathematics Community in the 1930s
Transcript Number 11 (PMC11)

MERRILL FLOOD
(with ALBERT TUCKER)

This is an interview of Merrill Flood in San Francisco on 14 May 1984. The interviewer is Albert Tucker.

Flood describes his coming to Princeton in 1931 after earning a master's degree in number theory at the University of Nebraska. Flood talks about faculty members: he was assistant to Luther Eisenhart, he took courses from James Alexander and H.P. Robertson, and he worked under J.H.M. Wedderburn for his Ph.D. Flood tells of graduate-student life, including poker playing, and how he came to switch to applied mathematics after completing his Ph.D.

The Princeton Mathematics Community in the 1930s
Transcript Number 12 (PMC12)

ALFRED LEON and ILSE FOSTER,
DERRICK and EMMA LEHMER, and FRANCES MORREY
(with ALBERT TUCKER)

This is an interview of Alfred Leon and Ilse Foster, Derrick and Emma Lehmer, and Frances Morrey (wife of Charles B. Morrey, Jr.) on 18 May 1984 in Berkeley, California. The interviewers are Albert Tucker and William Aspray.

Alfred Foster talks about how he came to do his graduate work at Princeton, where he worked under Oswald Veblen and Alonzo Church, and about getting a job (at Berkeley, through the mediation of Jules Hildebrandt) after completion of the Ph.D. The Lehmers talk about the social life of the mathematical community at Princeton in the '30s, about economic conditions, and about the Veblens (who did much to promote social contact among the mathematicians and their families). Tucker, the Fosters, and Morrey contribute their recollections concerning these matters. Tucker describes Einstein's arrival in Princeton and talks about the period, '31-'32, when he (Tucker) was in charge of providing for afternoon tea at Fine Hall. Derrick Lehmer explains how he came to get a job at Princeton and talks about the people he worked with at Princeton, especially H.S. Vandiver and Hermann Weyl. Derrick Lehmer and Tucker talk about the mathematics library at Princeton. Morrey tells how she and her husband came to Princeton and talks about their stay in Princeton.

The Princeton Mathematics Community in the 1930s
Transcript Number 13 (PMC13)

JOHN GIESE

This is a oral contribution by John Giese. It was recorded on 13 October 1984.

Giese relates how he came to Princeton as a graduate student and how, in a course on Riemannian geometry taught by Luther Eisenhart, he found a thesis topic. Giese talks about his part-time work when he was a graduate student (clerical work for the *Annals of Mathematics* and teaching), about life at the Graduate College, about fellow graduate students (especially D. Ransom Whitney), and about Paul Erdos.

The Princeton Mathematics Community in the 1930s
Transcript Number 14 (PMC14)

JAMES WALLACE GIVENS, ABRAHAM H. TAUB,
and ANGUS E. TAYLOR
(also LEON HENKIN, with ALBERT TUCKER)

This is an interview session on 18 May 1984 at the Berkeley campus of the University of California. Interview subjects are Wallace Givens, Abraham Taub, and Angus Taylor with, as they say in certain parts of California, a guest appearance by Leon Henkin. The interviewers are Albert Tucker and William Aspray.

Henkin relates some of his experiences (with Hermann Weyl, Solomon Lefschetz, and others) as a graduate student at Princeton. Taylor tells how he came to spend one year (1937-38) at Princeton and talks about Salomon Bochner. Taub tells of his coming to Princeton for graduate work in 1931, just after Fine Hall was opened, and of his returning, to work with Oswald Veblen and then for defense-related work, in the early 1940s. Givens explains how he came to work with Veblen and talks at some length about him. Taub and Tucker add some of their recollections of Veblen. Givens tells several anecdotes about Albert Einstein and J.H.M. Wedderburn. Givens, Taub, Taylor, and Tucker discuss American mathematics in general, also in the period before 1930, and particular mathematicians they got to know in the 1930s, such as H.P. Robertson and Luther Eisenhart.

The Princeton Mathematics Community in the 1930s
Transcript Number 15 (PMC15)

HERMAN GOLDSTINE
(with ALBERT TUCKER)

This is an interview of Herman Goldstine at his home in Princeton, New Jersey, on 22 March 1985. The interviewers are Albert Tucker and Frederik Nebeker.

Goldstine tells how, through wartime work, he got to know Oswald Veblen. Goldstine talks about the group that worked at Aberdeen Proving Grounds during the war and about how he came to be in charge of Ballistic Research Laboratory project at the Moore School of Engineering at the University of Pennsylvania (the laboratory which built the ENIAC, an electronic computer). Goldstine gives his recollections and impressions of, especially, Veblen and von Neumann, and of G.A. Bliss, Enrico Fermi, Kurt Goedel, Hermann Weyl, and others.

The Princeton Mathematics Community in the 1930s
Transcript Number 16 (PMC16)

ROBERT E. GREENWOOD
(with ALBERT TUCKER)

This is an interview on 12 July 1984 with Robert E. Greenwood at the University of Texas at Austin. The interview is being conducted over the telephone. The interviewers, located at Princeton University, are Albert Tucker and William Aspray.

Greenwood came to Princeton in 1936 to study mathematical physics, but soon switched to mathematics. He tells about life at the Graduate College, about courses, and about the two schools of topology (Princeton's algebraic and combinatorial topology and Texas's point-set topology). Greenwood talks about Salomon Bochner, with whom he did his thesis, and about Alan Turing, Maurice Pryce, and others.

The Princeton Mathematics Community in the 1930s
Transcript Number 17 (PMC17)

ROBERT E. GREENWOOD

This is a written contribution, dated 5 September 1984, by Robert E. Greenwood.

Greenwood describes graduate-student life at Princeton in the late Thirties, his fellow graduate-students, their activities (especially at the Graduate College), and the professors (Luther P. Eisenhart, Paul Erdos, Witold Hurewicz, and others). Greenwood writes about the topology seminars at Princeton and about his oral examination (with Solomon Lefschetz) for the Ph.D. Finally, Greenwood describes the H. Petard spoof, a tongue-in-cheek article published in the *American Mathematical Monthly* in 1938.

The Princeton Mathematics Community in the 1930s
Transcript Number 18 (PMC18)

ISRAEL HALPERIN
(with ALBERT TUCKER)

This is an interview of Israel Halperin at Princeton University on 25 May 1984. The interviewer is Albert Tucker.

After one year of graduate work at the University of Toronto, Halperin entered the Ph.D. program at Princeton in 1933. He talks about student life, about Fine Hall (especially the common room), and about his preliminary examinations for the Ph.D. He tells of working under John von Neumann for his thesis. Tucker and Halperin discuss mathematicians at Princeton in the middle Thirties, including Norman Levinson, Nathan Jacobson, Hermann Weyl, and, especially, von Neumann. Tucker tells of working briefly on the von Neumann computer project just after World War II. Tucker and Halperin talk about the beginnings of game theory.

The Princeton Mathematics Community in the 1930s
Transcript Number 19 (PMC19)

LEON HENKIN and ALBERT TUCKER

This is an interview of Leon Henkin and Albert Tucker on 18 May 1984 in Berkeley, California. The interviewer is William Aspray.

Tucker and Henkin talk about John Addison, who became Alonzo Church's son-in-law. As an undergraduate at Princeton Addison became committed to mathematics as a result of taking Church's course in logic. Tucker tells how he helped bring it about that Addison did graduate work at the University of Wisconsin with Steve Kleene.

The Princeton Mathematics Community in the 1930s
Transcript Number 20 (PMC20)

BANESH HOFFMANN
(with ALBERT TUCKER)

This is an interview of Banesh Hoffmann by telephone. He is in New York. The interviewers, in Princeton, New Jersey, are Albert Tucker and William Aspray. The date is 13 October 1984.

Hoffmann tells how he came to Princeton from Oxford in 1929 to become a graduate student and a research assistant to Oswald Veblen. Hoffmann and Tucker talk about Veblen as a teacher and as a researcher. Other people discussed are Ed Condon, T.Y. Thomas, John von Neumann, H.P. Robertson, and Max Newman. Hoffmann talks about his Ph.D. thesis. Tucker and Hoffmann discuss Fine Hall and compare the atmosphere of the mathematics department at Oxford with that at Princeton. Hoffman tells of working three years at Rochester after completing his Ph.D. and then returning to Princeton to become Albert Einstein's research assistant.

The Princeton Mathematics Community in the 1930s
Transcript Number 21 (PMC21)

ROBERT HOOKE

This is a written contribution, dated 30 December 1984, by Robert Hooke.

Hooke describes some classes he took as a graduate student, especially ones given by Salomon Bochner and J.H.M. Wedderburn. Hooke tells of satisfying the requirements for the Ph.D.—prelims and thesis (under Claude Chevalley)—and about getting a job after earning the Ph.D.

The Princeton Mathematics Community in the 1930s
Transcript Number 22 (PMC22)

JOHN KEMENY
(with ALBERT TUCKER)

This is an interview of John Kemeny at Bradley Hall, Dartmouth College, on 7 June 1984. The interviewer is Albert Tucker.

Kemeny entered Princeton as an undergraduate in February 1943. He describes undergraduate mathematics courses, and he talks about Fine Hall, about fellow students (including Stan Ulam), and about contacts between the University's mathematics department and the School of Mathematics of the Institute for Advanced Study. Kemeny talks about John von Neumann and, at some length, Kurt Goedel, and Tucker talks about Alan Turing. Kemeny tells how he became interested in computing.

The Princeton Mathematics Community in the 1930s
Transcript Number 23 (PMC23)

STEPHEN C. KLEENE and J. BARKLEY ROSSER

This is an interview with J. Barkley Rosser and Stephen C. Kleene in Madison, Wisconsin on 26 April 1984. The interviewer is William Aspray of the Charles Babbage Institute.

Both Kleene and Rosser explain how they came to do graduate work at Princeton and how they came to be interested in logic. Both describe taking courses from Alonzo Church and Kurt Goedel. Kleene and Rosser discuss some of the other logicians doing work at that time, including W.V.O. Quine and Haskell Curry, and describe their Ph.D. research under Church. Kleene and Rosser talk about their own contributions and those of Church, E.L. Post, and Alan Turing to the clarification of the notion of computability. They talk, too, about the founding of the *Journal of Symbolic Logic*.

The Princeton Mathematics Community in the 1930s
Transcript number 24 (PMC24)

JACK LEVINE
(with ALBERT TUCKER)

This is a telephone interview with Jack Levine at North Carolina State University in Raleigh. The interviewers are Albert Tucker and William Aspray at Princeton University. The date is 11 October 1984.

Levine tells of coming to Princeton as a graduate student in 1930. He talks about the faculty, including J.H.M. Wedderburn, Einar Hille, Luther Eisenhart, Solomon Lefschetz, and especially T.Y. Thomas, under whom Levine did his Ph.D. thesis. Levine then discusses others, including H.F. Bohnenblust, Malcolm Robertson, and E.J. McShane. Levine describes Fine Hall and especially the various activities that went on in the common room.

The Princeton Mathematics Community in the 1930s
Transcript Number 25 (PMC25)

DEANE MONTGOMERY
(with ALBERT TUCKER)

This is an interview of Deane Montgomery at the Institute for Advanced Study on 13 March 1985. The interviewers are Albert Tucker and Frederik Nebeker.

Montgomery, after completing his Ph.D. at the University of Iowa, spent a year at Harvard and then a year (1934-35) at Princeton. During World War II he returned to Princeton; he taught Army students and worked for a year with John von Neumann. In 1948 Montgomery became a permanent member, in 1951 a professor, of the Institute for Advanced Study. Montgomery describes the atmosphere at Princeton, and Tucker and Montgomery talk at length about Oswald Veblen, who played a large role in the building up of the mathematics department at the University and the main role in the establishing of the School of Mathematics at the Institute. Montgomery discusses the beginnings of the Institute.

The Princeton Mathematics Community in the 1930s
Transcript Number 26 (PMC26)

MALCOLM ROBERTSON

This is a written contribution, dated 11 October 1984, by Malcolm Robertson.

Robertson describes his coming to Princeton in 1931, following two years of graduate work at the University of Toronto. He tells about student life in the Depression years and about the mathematics community centered on Fine Hall.

The Princeton Mathematics Community in the 1930s
Transcript Number 27 (PMC27)

ROBERT SINGLETON
(with ALBERT TUCKER)

This is an interview of Robert Singleton at the Cromwell Inn on 6 June 1984. The interviewer is Albert Tucker.

Singleton tells about the courses he took, as a graduate student, from Luther Eisenhart, Albert Einstein, Alonzo Church, and J.H.M. Wedderburn. Singleton mentions also his friendship with Israel Halperin and his serving as teaching assistant in a course taught by Albert Tucker.

The Princeton Mathematics Community in the 1930s
Transcript Number 28 (PMC28)

ERNST SNAPPER
(with ALBERT TUCKER)

This is an interview with Ernst Snapper at Bradley Hall, Dartmouth College, on Thursday 7 June 1984, conducted by Albert Tucker.

Snapper tells of his coming to Princeton in 1938 and talks about Solomon Lefschetz, J.H.M. Wedderburn, and other faculty members. Snapper tells an anecdote about Albert Einstein and one about Guido Fubini-Ghiron.

The Princeton Mathematics Community in the 1930s
Transcript Number 29 (PMC29)

ALBERT TUCKER
THE MATHEMATICS COMMUNITY AT PRINCETON BEFORE 1930

This is an interview of Albert Tucker on 10 April 1984. The interviewer is William Aspray.

Tucker begins by describing the American mathematics community as it was in about 1900, when Princeton awarded its first Ph.D. in mathematics. Tucker describes the building up of the Princeton mathematics department, which was to a considerable extent the result of efforts by Henry Burchard Fine. Tucker discusses, at least briefly, all those who were members of the mathematics faculty, including part-time intructors and research assistants, at the beginning of the 1930s. Tucker tells how various fellowships, such as the National Research Council Fellowships, the Procter Fellowships, and the Commonwealth Fellowships, brought young mathematicians from many places to Princeton. Tucker explains how Fine Hall (completed in 1931) came to be built and how the Institute for Advanced Study was established.

The Princeton Mathematics Community in the 1930s
Transcript Number 30 (PMC30)

ALBERT TUCKER
FINE HALL

This is an interview of Albert Tucker on 11 April 1984. The interviewer is William Aspray.

Tucker tells how Fine Hall came to be built and about the opening ceremony in October 1931. Tucker describes first the library in Fine Hall, which was run by Margaret Shields, then the arrangement of offices in the building. He explains how the practice of having afternoon tea started, and he tells some of the things that went on during tea and at other times in the common room. Tucker describes also the Professors' Lounge, the furnishings of the offices, and the two classrooms in Fine Hall. He tells of other mathematics buildings that were, at least in part, modeled on Fine Hall.

The Princeton Mathematics Community in the 1930s
Transcript Number 31 (PMC31)

ALBERT TUCKER
THE EDUCATIONAL PROGRAM AT PRINCETON IN THE 1930s

This is an interview of Albert Tucker on 12 April 1984. The interviewer is William Aspray.

Tucker talks about admission to the graduate program in mathematics, then about what was expected of the graduate students, including language requirements and the preliminary examination for the doctorate (usually taken in the second year of graduate study). Tucker describes how a graduate student would select a thesis topic and mentions the unusual thesis written by Marvin Minsky. Tucker then discusses the courses, seminars, and talks that took place in Fine Hall. He talks also about the teaching of undergraduates, including the writing, by each mathematics major, of a "junior paper" and a "senior thesis".

The Princeton Mathematics Community in the 1930s
Transcript Number 32 (PMC32)

ALBERT TUCKER
MATHEMATICAL JOURNALS AND COMMUNICATION

This is an interview of Albert Tucker on 13 April 1984. The interviewer is William Aspray.

Tucker tells how the journal *Annals of Mathematics*, which was begun in 1884 by a professor of mathematics at the University of Virginia, became a Princeton publication, with J.H.M. Wedderburn and later Solomon Lefschetz doing most of the editing. Tucker describes the editorial policies of Lefschetz. Other journals that Tucker talks about are *Journal of Symbolic Logic* and *Annals of Mathematical Statistics*. He describes in some detail—having had himself the leading role in the story—how *Annals of Mathematical Studies* came into being and how it developed.

The Princeton Mathematics Community in the 1930s
Transcript Number 33 (PMC33)

ALBERT TUCKER
AREAS OF MATHEMATICAL RESEARCH AT PRINCETON IN THE 1930s

This is an interview of Albert Tucker on 11 July 1984. The interviewer is William Aspray.

Tucker talks first about geometry, which at Princeton was the most active area of mathematical research. He talks about Luther Eisenhart and Oswald Veblen, both of whom had become interested in Riemannian geometry following the publication of Albert Einstein's general theory of relativity in 1916. Tucker tells something about the beginnings of topology as a recognized branch of mathematics, discussing, in particular, the work of Solomon Lefschetz and James Alexander. Tucker mentions some of the people doing work in analysis (especially H.F. Bohnenblust) and in algebra (especially J.H.M. Wedderburn). The work of Alonzo Church and Kurt Goedel in logic is discussed, as is the work of Sam Wilks in statistics.

The Princeton Mathematics Community in the 1930s
Transcript Number 34 (PMC34)

ALBERT TUCKER
THE INSTITUTE FOR ADVANCED STUDY IN THE 1930s

This is an interview of Albert Tucker on 12 July 1984. The interviewer is William Aspray.

Tucker describes the personalities and research interests of the permanent members of the Institute for Advanced Study in the 1930s. He talks about John von Neumann, Hermann Weyl, Marston Morse, and Kurt Goedel. Tucker mentions several visitors to the Institute, such as P.A.M. Dirac.

The Princeton Mathematics Community in the 1930s
Transcript Number 35 (PMC35)

ALBERT TUCKER
THE PEOPLE AT PRINCETON IN THE 1930s

This is an interview of Albert Tucker on 13 July 1984. The interviewer is William Aspray.

Tucker begins by talking about the professors, including assistant and associate professors, at Princeton in 1930. He tells most about James Alexander, Alonzo Church, Luther Eisenhart, Solomon Lefschetz, and H.P. Robertson. Other faculty members Tucker talks about at some length were Einar Hille, Morris Knebelman, T.Y. Thomas, and Oswald Veblen.

The Princeton Mathematics Community in the 1930s
Transcript Number 36 (PMC36)

ALBERT TUCKER
OVERVIEW OF MATHEMATICS AT PRINCETON IN THE 1930s

This is an interview of Albert Tucker on 8 October 1984. The interviewer is William Aspray.

In this interview Tucker tells what he regards to be the most important contributions of the Princeton mathematics community: the training of graduate students (to be productive researchers and to acquire what Tucker calls "mathematical statesmanship"), the production of mathematical publications (such as the *Annals of Mathematics* and the *Annals of Mathematics Studies*), post-doctoral training (some 50 National Research Fellows in the '20s and '30s choose to work at Princeton), and the research of faculty members (especially in geometry, topology, and logic).

The Princeton Mathematics Community in the 1930s
Transcript Number 37 (PMC37)

ALBERT TUCKER
THE REPUTATION OF PRINCETON MATHEMATICS

This is an interview of Albert Tucker on 9 October 1984. The interviewer is William Aspray.

Tucker talks about the history of the Princeton mathematics department, beginning with Woodrow Wilson's institution of the preceptor system in 1905. Tucker describes the work of Henry Burchard Fine in building up the mathematics department. Tucker talks about the importance of fellowships, expecially the National Research Council Fellowships. He tells about the beginnings of the Institute for Advancéd Study.

The Princeton Mathematics Community In the 1930s
Transcript Number 38 (PMC38)

ALBERT TUCKER
CAREER, PART 1

This is an interview of Albert Tucker in September 1975. at the University of Western Australia. The interviewer is T.P. Speed.

Tucker talks about growing up as the son of a Methodist minister in Ontario, Canada, and about his education (4 different high schools, the University of Toronto, and Princeton University). He talks at some length about his years as a graduate student at Princeton and describes many of the faculty members, including Luther Eisenhart, Solomon Lefschetz, J.W. Alexander, and Oswald Veblen. Tucker tells of the beginnings of the Institute for Advanced Study.

The Princeton Mathematics Community in the 1930s
Transcript Number 39 (PMC39)

ALBERT TUCKER
CAREER, PART 2

This is a continuation of the account of the career of Albert Tucker that was begun in the interview conducted by Terry Speed in September 1975. This recording was made in March 1977 by Evar Nering.

Tucker tells of becoming interested in the history of topology, partly as a result of contact with Eric Temple Bell. Tucker describes his wartime work; he was associate director the Fire Control Research Project, and he was in charge of the mathematics portion of the Army Specialized Training Program at Princeton. He tells how he came to work in the fields of linear programming and game theory. He tells of his work editing the *Annals of Mathematics Studies,* and how he became an editor of the Princeton Mathematical Series. Tucker describes his research activities (nonlinear programming as well as game theory and linear programming) in the late 1940s and early 1950s. He talks also about administrative and committee work; in 1953 he became chairman of the Commission on Mathematics of the College Entrance Examination Board, and from 1961 to 1963 he was president of the Mathematical Association of America. He talks about other of his activities, including travel to Australia and New Zealand, in the 1950s and 1960s.

The Princeton Mathematics Community in the 1930s
Transcript Number 40 (PMC40)

ALBERT TUCKER
CONVERSATION WITH ALBERT LEWIS

This is an interview of Albert Tucker on 9 April 1979. The interviewer is Albert Lewis.

Tucker talks about J.W. Alexander, his family background, his education, and his personality. Two other topologists that Tucker talks about are Solomon Lefschetz (who introduced the word 'topology' into English) and R.L. Moore (who visited Princeton in the Thirties). Tucker recounts his experiences with Marston Morse, first when Tucker was a post-doctoral fellow at Harvard, later after Morse accepted a position at the Institute for Advanced Study. Then Tucker describes Oswald Veblen and Alonzo Church, and discusses his interest in the history of matrix algebra.

The Princeton Mathematics Community in the 1930s
Transcript Number 41 (PMC41)

JOHN TUKEY
(with ALBERT TUCKER)

This is an interview of John Tukey on 11 April 1984. The interviewer is William Aspray, assisted by Albert Tucker.

Tukey tells something about his background and about how he came to do graduate work at Princeton. He earned a Ph.D. in topology. Tukey talks about his wartime work (at Fire Control Research in Princeton) and how as a result of this work statistics came to be his principal interest. He talks about fellow mathematicians, including Frederick Mosteller, Charles Winsor, Sam Wilks, and George Snedecor. Tukey talks also about the social atmosphere at the Graduate College and at Fine Hall, in the period when he was a graduate student.

The Princeton Mathematics Community in the 1930s
Transcript Number 42 (PMC42)

ROBERT WALKER
(with ALBERT TUCKER)

This is an interview on 12 July 1984 with Robert Walker of Pittsburgh. The interviewers are Professor Albert Tucker and William Aspray, interviewing by telephone from Princeton.

Walker tells of coming from Carnegie-Tech (now Carnegie-Mellon) to Princeton in 1930 to begin graduate work. He describes courses he took and the atmosphere of Fine Hall. Tucker and Walker talk about some fellow graduate students at the time, including John Vanderslice and Nathan Jacobson. Walker talks about his thesis research, in algebraic geometry with Solomon Lefschetz, and about Harald Bohr, Paul Alexandroff, and P.A.M. Dirac.

The Princeton Mathematics Community in the 1930s
Transcript Number 43 (PMC43)

HASSLER WHITNEY
(with ALBERT TUCKER)

This is an interview of Hassler Whitney at the Institute for Advanced Study on 10 April 1984. The interviewers are Albert Tucker and William Aspray.

Whitney talks about his year in Princeton, '31-'32, as a National Research Council Fellow. In particular he talks about James W. Alexander and Solomon Lefschetz and about the social atmosphere in Fine Hall. Tucker contributes some of his recollections about Alexander and the dedication ceremony of Fine Hall, and he compares the mathematical community at Princeton with that at Harvard and with that at Chicago. Whitney tells how an incident with Chuck Morrey led to his (Whitney's) writing an important paper.

The Princeton Mathematics Community in the 1930s
Transcript Number 44 (PMC44)

EUGENE WIGNER
(with ALBERT TUCKER)

This is an interview with Eugene Wigner at his home in Princeton on 12 April 1984. The interviewer is William Aspray with the assistance of Albert Tucker.

Wigner begins by describing how he came to Princeton (in early 1931). He mentions some of his students, including Fred Seitz, John Bardeen, Conyers Herring, and Leonard Eisenbud. Wigner describes how he officially became a physicist; his Ph.D. was in chemical engineering. He tells of some of his friends and colleagues, including E.U. Condon, Paul Dirac, and, at some length, John von Neumann.

The Princeton Mathematics Community in the 1930s
Transcript Number 45 (PMC45)

SHAUN WYLIE

This is an interview of Shaun Wylie on 21 June 1985 at his home in Cambridge, England. The interviewer is Frederik Nebeker.

Wylie describes his background (his father was an Oxford don) and his education (Winchester, Oxford, and Princeton). He tells of the graduate program in mathematics at Princeton, and he talks about many of the faculty members, including Tracy Thomas, J.H.M. Wedderburn, Solomon Lefschetz, James Alexander, and especially Albert Tucker. Wylie tells of some things that went on at the Graduate College and in the common room of Fine Hall.

INDEX OF NAMES

The number of the transcript is given first, followed by the page number for that transcript. Thus 16—23 is a reference to page 23 of transcript 16. (The designation (PMC16) 23 appears at the bottom of that page.) The transcript number is not repeated when, for a given name, there are references to several pages of the same transcript. The transcripts are in numerical order. (The name of the person being interviewed is not indexed for that interview. The occurrences of Albert Tucker's name are indexed only for those interviews in which he did not take part.)