Councilor Rip Van Dam for half the salary Van Dam had received as interim chief executive during the previous year. Alexander and his legal partner, William Smith (1697–1769), defended Van Dam. Cosby not only blocked Van Dam's right to a jury trial, but he also took revenge on Alexander and Smith by challenging their claims to the valuable Oblong Tract in upstate New York. Cosby's vindictiveness also cost Alexander his seat on the council.

Alexander took a leading role in fomenting opposition to the governor, arguing that Cosby's arbitrary actions threatened New Yorkers' civil liberties and property rights. He and others hired printer John Peter Zenger to attack the governor in the *New York Weekly Journal*, which began publication on 5 November 1733. Alexander, not Zenger, was the paper's actual editor; he heaped scathing criticism and searing ridicule upon the governor and published essays outlining Whig political theories on the dangers of unchecked executive power.

When Cosby had Zenger prosecuted for seditious libel, Alexander and Smith served as Zenger's attorneys. They tried to use Zenger's defense as a way to indict Cosby's administration but were overruled, dismissed from the case, and ultimately barred from practicing law for two years. Alexander nevertheless assisted behind the scenes in the trial's later stages, resulting in Zenger's acquittal in 1735. Alexander's legal skills and political courage were critical in frustrating Cosby's partisan use of seditious-libel prosecutions against the press.

After Cosby's death in 1736, Alexander continued his involvement in governmental affairs but increasingly pursued cultural and scientific interests. He corresponded with members of England's Royal Society and with the Royal Observatory at Greenwich on his astronomical observations. He became one of the early supporters of the American Philosophical Society organized in Philadelphia by Benjamin Franklin (1706–1790) in 1743. In 1754 he helped found the New York Library Society, that city's earliest public book-lending service.

Alexander served as a founding trustee of King's College (now Columbia University) in New York. He objected strongly when his fellow Anglicans, who were a majority of the school's board, tried to transform King's into a denominational school affiliated with the Church of England. His opposition was instrumental in persuading the assembly to write a charter that established King's as a nonsectarian college in 1754.

With a fortune estimated at £100,000 in 1745, Alexander ranked among New York's wealthiest men. He died in New York from complications of an illness contracted while attending sessions of that colony's royal council. His only son William Alexander (1726–1783) succeeded him on the councils of both New York and New Jersey and later served as a major general in the Continental army.

• Personal manuscripts are in the James Alexander Papers at the New-York Historical Society. Alexander's letters appear in volumes 4–6 of Edmund B. O'Callaghan and Berthold Fernow, eds., *Documents Relative to the Colonial History of the State of New York* (1853–1887), and in volumes 5–7 of William A. Whitehead et al., eds., *Archives of the State of New Jersey*, 1st ser., (43 vols., 1880–1949). See also Alan Valentine, *Lord Stirling* (1969), and the collaborative entry "James Alexander," *Genealogical Magazine of New Jersey* 14 (1939): 27–29.

THOMAS L. PURVIS

ALEXANDER, James Waddell (19 Sept. 1888–23 Sept. 1971), mathematician, was born in Sea Bright, New Jersey, the son of John White Alexander, a noted artist and mural painter, and Elizabeth Alexander, the daughter of John Waddell Alexander, a president of the Equitable Life Assurance Society. Alexander received his B.S. in mathematics and physics from Princeton University in 1910 and his A.M. in 1911. He then served as an instructor at Princeton from 1911 to 1912 before continuing his studies abroad at the universities of Paris and Bologna. Upon returning to Princeton he received his Ph.D. in 1915 with a dissertation titled "Functions Which Map the Interior of the Unit Circle upon Simple Regions" and written under the direction of Thomas H. Gronwall. He remained at Princeton as an instructor (1915–1916) and a lecturer (1916–1917) before serving as a lieutenant (later as a captain) in the U.S. Army Ordnance Office at Aberdeen Proving Ground from 1917 to 1918. On 15 January 1917 Alexander married Natalia Levitzkaja; they had one son and one daughter.

After the war ended, Alexander rejoined the Princeton faculty as, successively, an assistant professor (1920–1926), an associate professor (1926–1928), and a professor (1928–1933). In 1933 he joined the Institute for Advanced Study as an original member (with Albert Einstein, John von Neumann, Oswald Veblen, and Hermann Weyl), and he remained there as a professor until his retirement in 1951. During World War II, he was a civilian with the Office of Scientific Research and Development for the U.S. Army Air Force.

Alexander's major mathematical work can be grouped into four general periods. The first period, from 1913 to 1919, included his collaboration with Oswald Veblen (1913), which showed that the topology of manifolds could be extended to polyhedra. He also established the topological invariance of the Betti numbers and torsion coefficients that had been introduced by Henri Poincaré in his early papers on algebraic topology (1915). In effect Alexander and Veblen were responsible for helping put the Poincaré theory on a firm foundation. This period also includes his work on algebraic geometry, particularly his topological derivation of the Zeuthen-Segre invariant for an algebraic surface (1914), and his proof of the Nöther theorem for Cremona transformations (1915–1916). His dissertation on univalent functions also contained results that were quoted throughout the twentieth century.

The second period of Alexander's research, from 1920 to 1926, marked his exclusive interest in topological problems. It began with an elegant proof of the Jordan curve theorem (1920), followed by a major paper on the proof and extension of the Jordan-Brouwer separation theorem, which included the celebrated Alexander Duality Theorem, and the Alexander Lemma, which addressed the topology of the n-sphere (1922). Byproducts of this work included the Alexander horned sphere (1924) and a fundamental memoir on combinatorial analysis situs (1926), which was explicitly cited in his receipt of the Bôcher Prize in 1928. The latter included a rigorous proof of the independence of homology theory from the triangulation of the simplicial complex, and homology with integer coefficients modulo m, where m is an integer. The third period, from 1927 to 1933, was largely devoted to knot theory and the combinatorial theory of complexes. Alexander was not the first to attempt to formulate a topological theory of knots, but he made fundamental contributions to the theory which include the Alexander polynomials, ideals, and invariants (1928).

Alexander's final period of work, from 1934 to 1947, began with a series of papers concerning the group-theoretic aspects of duality. It included a theory (1935), which, when subsequently generalized by Edwin H. Spanier in 1948, became known as the Alexander-Spanier cohomology theory. This also led to his simultaneous discovery (with the Russian mathematician Andrei N. Kolmogorov) of the more general notion of a cohomology theory, which was announced at the Moscow conference and published in 1936. The remainder of Alexander's mathematical papers concern various attempts to obtain more general homology theories, by generalizing the notion of a topological space, or more general systems such as lattices. His only postwar paper (1947) dealt with this question and became known as the Alexander-Cech cohomology theory.

A mathematician of unusual depth and power, Alexander was a principal figure in the American development of algebraic/combinatorial topology. In particular, with Veblen and Lefschetz, he played a major role in the founding of the Princeton school of topology. His papers were very carefully written and were very influential in the United States and abroad. Much of his work was of such a basic character that it became common knowledge in topology, with its discoverer being forgotten as a result; it was Alexander who (in his great memoir of 1926), introduced the name p-chain for the previously employed notion of a linear combination of p-cells. In person, he was an imposing figure who possessed great charm and a very "youthful" view of mathematics, being one of the first American mathematicians to fully appreciate the use of modern algebraic methods in topology. Colleagues remembered his great fondness for limericks and his passion for mountain climbing.

During his prime Alexander was a very prominent and respected member of the American mathematical community. He was a member of the council of the American Mathematical Society (1923–1925), the winner of the Bôcher Prize (1928), and its vice president (1933–1934). He addressed the International Congress of Mathematicians in Zürich (1933) and the First International Topological Congress in Moscow (1935), and during 1936 he was the Rouse Ball Lecturer at Cambridge University. He was elected a member of the National Academy of Sciences in 1930.

After World War II Alexander became more and more reclusive; following his retirement from the institute, he virtually disappeared from the American mathematical scene. He had inherited great wealth (a millionaire, he accepted no salary for his institute professorship) and held left-wing political views, which made him suspect during the McCarthy era of the 1950s. His last public appearance was his signing of a statement on 1 July 1954, along with twenty-six other prominent members of the Institute for Advanced Study, expressing his confidence in the loyalty and patriotism of J. Robert Oppenheimer upon the suspension of Oppenheimer's security clearance. Alexander died of pneumonia in the Princeton Hospital.

• Jean Dieudonné, *A History of Algebraic and Differential Topology: 1900–1960* (1989), makes extensive reference to Alexander's contributions and their subsequent influence on the development of modern algebraic topology. An obituary containing a complete list of publications is in the *Bulletin of the American Mathematical Society* 79 (Sept. 1973): 900–903. An obituary is also in the *New York Times*, 24 Sept. 1971.

JOSEPH D. ZUND

ALEXANDER, Jeff (2 July 1910–23 Dec. 1989), composer and conductor, was born Myer Alexander in Seattle, Washington, the son of Max Alexander, Jr., a salesman, and Della Goodhue, a pianist. His musical education was initiated by his mother and continued at Becker Institute of Music in Portland, Oregon, as well as under private tutors Edmund Ross in Los Angeles and Joseph Schillinger in New York. In his early teens Alexander was singing and dancing on the vaudeville circuit. By his late teens he was playing piano and writing musical arrangements for his own trio and, later, for several big bands, including that of Horace Heidt. In 1937 in Los Angeles he was creating musical arrangements for "The Hit Parade" and "The Camel Hour" radio series when he met a model, Constance Frost. The couple were married the same year and were divorced in 1967; they had one daughter.

Alexander moved to New York in 1939 and began writing musical arrangements and directing choral groups for radio shows, including "The Lucky Strike Show," often collaborating with André Kostelanetz and Leopold Stokowski at CBS radio. During World War II he wrote music for shows presented to returning soldiers. Also during the war, in 1943, he changed his name to Jeff. He moved back to Los Angeles in 1947 and that year wrote his first film arrangement. He continued to arrange and compose for films in Hollywood while also serving as musical director for the radio series "Amos 'n' Andy" and "Hollywood Star Playhouse." Some of the original film scores he com-

BIOGRAPHICAL MEMOIRS

JAMES WADDELL ALEXANDER

(1888–1971)

James W. Alexander was born in Seabright, New Jersey, September 19, 1888. His father, John W. Alexander, was a noted American painter of the last century and his mother was an active patron of the arts and lecturer. Alexander received his early education in France and at the Browning School in New York. After a distinguished undergraduate career at Princeton University he was graduated with the B.S. degree in 1910, and received his doctorate in 1915. Having become an assistant in mathematics in 1913, he remained at Princeton until in 1917 he volunteered for service in World War I. Attached to the technical staff of the Ordnance Department, he was stationed in Washington and later in France. In 1917 he married Natalie Levitzkaya, a Russian lady whom he had met in Italy. They had a son and a daughter, both of whom survive him.

After the war Alexander returned to Princeton and spent his entire professional career there, attaining a full professorship in 1928. In 1933 he was appointed to a chair in the Institute for Advanced Studies. He was elected a member of the American Philosophical Society in 1928.

Alexander was fortunate in his scientific progress in that he came under the guidance of Oswald Veblen and, no doubt under Veblen's influence, directed practically all his own scientific endeavors towards the still young science of algebraic topology, very recently created by Henri Poincaré.

What Poincaré contributed to the subject is immense but not always supported by a strong logical base. The first contribution of Alexander (co-authored with Veblen) was to provide the subject with a reasonable element of logic—which later developed into the Colloquium Lectures (1916), *Analysis Situs* (the early name of topology) of Oswald Veblen. In the joint paper with Veblen (1913) chain, cycles, etc. were considered modulo 2. This idea had already surfaced (Heinrich Tietze, 1910), but imperfectly.

In 1914 he used a higher dimensional analogue of a Riemann surface to show that the well-known algebraic invariant Z of Zeuthen-Segre for a complex algebraic nonsingular variety of M^{2n}

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is in fact always just 1 less than the topological invariant $X(M^{2n})$, the *characteristic* of Euler and Poincaré.

Alexander's first striking independent contribution dates from 1915. This is a famous paper in which the topological invariance of the Betti numbers was actually proved. This was done for dimension 3, although the proof is valid for any dimension. The paper contains also an indirect indication of what later developed into the *singular* homology theory. Briefly, a *singular* cell in a polyhedron P is a *map* into P of an ordinary rectilinear cell. One shows that these cells of various dimensions p may serve to define singular Betti numbers $Rp^\bullet$ of P.

When Poincaré introduced the homology groups Hp of a manifold M^n he thought that possibly they would suffice to characterize them, and indeed this is true for surfaces (manifolds of dimension $n = 2$). Then he discovered that there are 3-dimensional manifolds that have the same homology group as the 3-sphere but having different fundamental group π. The question thus became: Are two manifolds M^n, $n \geq 3$, with the same groups Hp and π topologically the same? Alexander's brilliant discovery, published in 1919, of what are now called lens spaces showed that the answer is *No*. But Alexander went further. The lens spaces (p, q) and (p', q') have identical groups Hp and π whenever $p = p'$, and he showed that in fact they are different. The means of showing this is an invariant that is now called the *self-linking*. Pursuit of this idea led Alexander in later years successively to study *intersection numbers* and *cycles* (1924–1925), *duality* (1922) (about which more later), *character groups* (1932–1935) and *cohomology* (1935–1936).

Another theme that winds through Alexander's work in counterpoint with the above has its origin in the Jordan curve theorem, which says that every planar simple closed curve divides the plane into exactly two regions and is the boundary of each of them. In a paper of 1920 Alexander used the newly developed Modulo 2 homology theory to give a very simple proof of this often badly proved theorem. This sets the stage for the question, Does a 2-sphere embedded in the 3-sphere S^3 divide S^3 into two regions? This is the Jordan-Brouwer separation theorem. Using the developing theory of linking numbers Alexander proved a far-reaching generalization of this: If a k-dimensional manifold M^k is embedded in S^n then the Betti numbers of S^n-M^k are determined by those

of M^k. (The connection with the Jordan-Brouwer theorem is that the 0-dimensional Betti number of S^m-M^k is the number of components of S^n-M^k.) This is the famous *Alexander duality theorem*, later extended in various directions, notably into the *Pontrjagin duality theorem*. It is of very great importance, not only for itself but also because there are contained within it certain anomalies whose resolutions were major influences in developing homology theories with different coefficients and also the cohomology theories.

The Jordan curve theorem is only a weak version of the Schönflies theorem which asserts that the closure of each of the domains into which the plane is divided by a simple closed curve is a 2-cell. Is there an analogous theorem strengthening the Jordan-Brouwer separation theorem? That is, if a 2-sphere S^2 is embedded in the 3-sphere S^3 are the closures of the complementary domains 3-cells? In one of Alexander's best-known contributions the answer is shown to be *Yes* and *No*. *No* in general, but *Yes* if the embedding of the 2-sphere is polyhedral or differential. The counterexample that Alexander gives to a general affirmative answer, the so-called *horned sphere*, has the property that the fundamental group of its interior is not trivial. In 1924 he displayed also a 2-cell C whose boundary ∂C is knotted (the complement of ∂C has a non-abelian fundamental group); thus another conceivable generalization of the Schönflies theorem is not generally true. These examples, together with the already famous Antoine example, showed clearly that, in contrast to the situation in the plane, in 3-space topology is vastly more complicated than semi-linear topology is. On the *Yes* side, Alexander showed that if a torus is semilinearly embedded in S^3 then the closure of at least one of the complementary domains must be a solid torus, implications not fully utilized even to this day.

In papers of 1914 and 1920 Alexander had made use of generalized Riemann surfaces, or what are now called branched covering spaces. In the latter he gave a simple and elegant proof that every n-dimensional closed orientable manifold can be represented as a branched covering of the n-sphere. In connection with the results (1923) that every link can be represented as a closed braid, Alexander hoped to introduce a methodology into the study of 3-dimensional manifolds, but no one has yet succeeded in carrying out this interesting program. In 1923–1924 he investigated the homology of branched coverings; this line has been further developed by several mathematicians.

As we have seen, in the 1920's Alexander had been becoming increasingly interested in the problem of knots, and in 1925 he tackled the problem head-on. To a knot diagram he associated a matrix $M(x)$ of polynomials and showed that the equivalence class of this matrix (equivalence having a slightly more extended meaning than the classical one) is an invariant of the knot type. From this matrix equivalence class he extracted by essentially classical means a sequence of polynomials, in particular one that is now called the Alexander polynomial, which is such a sensitive invariant that it readily distinguishes most of the knots found in the knot tables compiled in the last century.

In the middle thirties Alexander played an important role in the development of the idea of the cohomology ring of a space. Although he continued to pioneer new concepts for another decade, his great work was complete, and he left the field to the suddenly numerous rising generation.

Throughout his lifetime, Alexander was intensely interested in physics as well as mathematics. The building of radio receivers fascinated him, and the design of a noteworthy circuit has been attributed to him. He was also devoted to music and, in connection with Alpinism, to photography.

In his younger days, Alexander was well known as a mountain climber. Sent to Colorado in 1921 for relief of an allergic condition, he made an ascent of Long's Peak (the first of twenty of that mountain) because, as he said, he was "afraid of heights." He was the first to climb the east face of the mountain, pioneering the route now known as Alexander's chimney. He began mountaineering in the Alps in 1923, and in 1923–1928, often accompanied by Mrs. Alexander, made two hundred climbs in the Pennine Alps and the Bernese Oberland, including three of the Matterhorn and two of Mont Blanc. A list of his climbs is preserved in a biographical sketch by J. Monroe Thorington, in the archives of Princeton University.

Professor Alexander retired in 1951. He died at Princeton, September 23, 1971.

SOLOMON LEFSCHETZ

[Editorial Note: Professor Lefschetz submitted the draft of this memoir only a few weeks before his death. In a footnote, he credited Dr. Ralph H. Fox for assistance, with particular regard to Alexander's work on the topological theory of knots. The editor,

in making some slight revisions, is indebted to Dr. Thorington's article, mentioned in the text. A complete bibliography of Alexander's scientific papers is on file in the Library of the American Philosophical Society.]

DONALD HATCH ANDREWS

(1898–1973)

Donald Hatch Andrews was born on June 11, 1898, in Southington, Connecticut. He came from a family of farmers who had lived in the area for nine generations. Perhaps because of this background, he brought to every enterprise the fresh, contagious enthusiasm associated with a farm boy's visit to the big city even though he was a cultured gentleman with considerable poise. An interest in chemistry was stimulated by his grandfather, who, in true country-gentleman style, fashioned a barn into a laboratory for studies in botany, chemistry, and mineralogy. Young Don Andrews, after a stay in nearby Massachusetts, where he graduated from Phillips Academy, returned to his native Connecticut and obtained his B.A. and Ph.D. degrees in physical chemistry at Yale University. In 1924, upon completion of a year's appointment as a research assistant at Yale, this self-styled "Connecticut Yankee" won a coveted National Research Fellowship and journeyed afar to the University of California at Berkeley. After a year, his promise now established, he received, in successive years, an International Research Fellowship to study in the Leiden laboratories established by the great Kammerlingh Onnes and returned to the United States as holder of the Bartol Research Fellowship at the Franklin Institute of Philadelphia. Then, in 1927, he joined the faculty of the Chemistry Department at the Johns Hopkins University, where he was to remain for thirty-six years.

At Johns Hopkins, his rise was rapid. In three years, he was full professor and, in six more years, he was chairman of the department. Shortly after arriving at Johns Hopkins, he became a consultant to General Motors, specifically to work with "Boss Ket" on a number of problems of common interest. Although he held numerous consulting appointments, this is the one he relished most. Kettering and Andrews mixed well, and the affection of the

latter for the former gleamed through a host of stories that conveyed the excitement of their working together on all sorts of scientific and engineering problems. Activities in the early thirties were not restricted to Johns Hopkins alone. He served as vice-president of the American Chemical Society (1934), as associate editor of the *Journal of Chemical Physics* (1933–1934), and as chairman of the Maryland Section of the American Chemical Society (1936). He was elected a Fellow of the American Physical Society (1932) and, in 1933, was made a member of the American Philosophical Society. He was also active in a multitude of other organizations. The department chairmanship during the depression and war years (1936–1944) was an arduous job. Yet he found time to pursue his interest in music, both performing and composing. When the American Chemical Society met in Baltimore in 1939, he wrote and staged at the Lyric Theater a chemical ballet entitled "Symphony of the Atoms" based on vibrations of molecules. The ballet was choreographed by Carol Lynn, then dance director of the Peabody Conservatory. In 1943 he founded and, for eight years, directed the Cryogeny Laboratory at Johns Hopkins. He represented the United States at the dedication of the new Cavendish Laboratory at Cambridge (1948), served as chairman of the Calorimetry Conference (1956–1957) which sponsored an international meeting, and served on the Board of Directors (1955–1959). In the nineteen-fifties, his mounting concern for the state of chemical education led him to organize and direct a meeting of about fifty teachers at Johns Hopkins in order to discuss problems and solutions associated with chemical education. This conference resulted in a book, *Educating a Chemist*, which signaled a shift in his interests from research and graduate education to instruction of undergraduates. From 1958 until his retirement from Johns Hopkins in 1963, he taught the introductory course. This course represented a creative departure from traditions. The resulting text, *Fundamental Chemistry*, was adopted by over two hundred institutions and was translated into Spanish, Portuguese, and French.

In 1963 he moved to Florida and was appointed distinguished professor of chemistry at Florida Atlantic University. Upon his retirement there (1966), he made his home in Boca Raton, Florida, and pursued his ever-present interest in the interrelations of arts, science, and religion. With the help of a grant from the Harkness

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JAMES WADDELL ALEXANDER
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BY LEON W. COHEN

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JAMES WADDELL ALEXANDER
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In 1922 there appeared *A proof and extension of the Jordan-Brouwer separation theorem* by J. W. Alexander. This work was a major influence in the flowering of algebraic topology which occurred in the ensuing fifty years. It contained a duality theorem algebraically similar to, but geometrically different from, the classical Poincaré duality theorem. In establishing the equality of the ith Betti number of a complex embedded topologically in an n-sphere and the $(n-i-1)$st Betti number of its complement, Alexander indicated in this paper how homology theory could arise in open and closed sets. This set the stage for algebraic topology in metric space, a line of investigation vigorously pursued by Alexandroff, Čech, Vietoris, and Wilder.

There were far reaching algebraic consequences. The theorems of Alexander and Poincaré essentially asserted the isomorphism of pairs of finitely generated abelian groups, the groups in each pair reflecting geometric properties in dual dimensions. This started a search for a purely algebraic theorem which embodied the group theoretic relations inherent in the geometrical settings of the two duality theorems. The relevant result was found by Pontrjagin (cf. L. Pontrjagin, *Über den algebraischen Inhalt topologischer Dualitätssätze*, Math. Ann. **105** (1931).) The association of Betti groups with open and closed sets leads to the problem of classifying abelian groups with countably many generators. Alexander dealt with this problem during 1931–1935, and found an appropriate decomposition of such groups into direct summands. In this investigation Alexander initiated the application of topological groups to algebraic topology (cf. L. Pontrjagin, *The general topological theorem of duality for closed sets*, Ann. of Math. **35** (1934).)

Alexander went on to find a role for ring theory in topology. Earlier Lefschetz had studied intersections of geometrical i-chains and $(n-i)$-chains on n-manifolds, exploiting Poincaré's theorem. Alexander considered the linking of geometrical i-cycles on a complex in an n-sphere with $(n-i-1)$-cycles in its complement. It turned out that in both cases multiplication of the algebraic counterparts of these geometrical entities was the appropriate technique, and that the homology groups could be embedded in rings which yielded new invariants. This work of Alexander was simultaneous with the same results obtained by Kolmogorov, both men reporting their results at the First International Topological Conference in Moscow, 1935. These beginnings were further developed by

Whitney (cf. Hassler Whitney, *On products in a complex*, Ann. of Math. **39** (1938). It contains an illuminating historical note on p. 398), and pointed the way to cohomology theory which is algebraically dual to the theory of homology.

Alexander extended his duality theorem to a class of sets in Hilbert space. His last works included the application of his connectivity ring to abstract spaces and to topology in a lattice. Besides work on his major themes Alexander produced a fixed point theorem, a topological 2-sphere whose complement in 3-space is not simply connected, contributions to the theory of knots, and, in an early paper (1915), a theorem on univalent functions which is still being quoted.

Alexander's mathematical life was lived in Princeton where he carried on the topological tradition established by Veblen. He was a student at the university, receiving its B.S. (1910), A.M. (1911), and Ph.D. (1915). From 1911 to 1933 Alexander was a member of the Princeton faculty, resigning to accept a professorship in The Institute for Advanced Study. He was elected to the National Academy of Sciences, Washington, in 1930. In 1947 the universities in Bologna and Paris honored him with their D.Sc.

In an expository style which is lucid, spare and comfortable, Alexander left a work marked by ideas and methods which have borne rich mathematical fruit.

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39. ———, *Topological invariants of knots and links*, Trans. Amer. Math. Soc. **30** (1928), 275–306.

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42. ———, *A classification of the homology groups of compact spaces*, Ann. of Math. (2) **33** (1932), 538–566.

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51. J. W. Alexander and L. Zippin, *Discrete abelian groups and their character groups*, Ann. of Math. (2) **36** (1935), 71–85.

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53. ———, *On the connectivity ring of a bicompact space*. I, II, Proc. Nat. Acad. Sci. U.S.A. **22** (1936), 300–303, 381–384.

54. ———, *A theory of connectivity in terms of gratings*, Ann. of Math. (2) **39** (1938), 883–912.

55. ———, *On the concept of a topological space*, Proc. Nat. Acad. Sci. U.S.A. **25** (1939), 52–54.

56. ———, *On the connectivity ring of a lattice*, Proc. Nat. Acad. Sci. U.S.A. **25** (1939), 208–209.

57. ———, *Ordered sets, complexes and the problems of compactification*, Proc. Nat. Acad. Sci. U.S.A. **25** (1939), 296–298.

58. ———, *Gratings and homology theory*, Bull. Amer. Math. Soc. **53** (1947), 201–233. MR **8**, 480.

59. ———, *The connectivity ring of an abstract space*, Uspehi Mat. Nauk **2** (1947), no. 1(17), 156–165. (Russian) MR **10**, 317.

Mrs. Alexander called Caroline Underwood
this morning and said that in connection
with a trip she is planning to Venezuela
she needs letters of reference. She
would like to have somebody here write
her a letter saying that she is Prof.
Alexander's wife, and a respectable person.

Prof. von Neumann

May 29, 1973

Mr. Richard W. Bruner
172 Highland Avenue
Ridgewood, New Jersey 07450

Dear Mr. Bruner:

    Your letter of 24 May asks where
Professor J. W. Alexander can be reached.

    Unfortunately, Dr. Alexander died
in September, 1971. Perhaps, his daughter,
Mrs. Irina Reed, can help you. Her address
is:

        55 East 76th Street
        New York, New York 10021

        Sincerely,

        Lynne N. Lambert
        Secretary to the Director

RICHARD W. BRUNER
172 HIGHLAND AVENUE
RIDGEWOOD, N. J. 07450

May 24, 1973

Public Relations Director
Institute for Advanced Study
Princeton, N. J.

Dear Sir:

    I am writing a biography of Ralph Bunche.

    J. W. Alexander, who was once at your Institute,
knew Dr. Bunche. I'd like to find Mr. Alexander and
interview him. Can you tell me where I might find him?

                Very truly yours,

                Richard W. Bruner

RWB:mo'k

Prof. Alexander's daughter -

Mrs. Irina Reed - now in Princeton at
29 Cleveland Lane

Home address - 55 East 76th St., NYC
212-RH 4-4836   /0021

J. W. ALEXANDER 2D, MATHEMATICIAN, 83

Special to The New York Times

PRINCETON, N. J., Sept. 23 —Dr. James W. Alexander 2d, a mathematician and a creator of modern topology, a branch of higher mathematics, died today of pneumonia in Princeton Hospital. He was 83 years old and lived at 29 Cleveland Lane.

Dr. Alexander, a Phi Beta Kappa graduate of Princeton, received his B. S. in 1910 in mathematics and physics, his M. S. in 1911 and his Ph.D. in 1950. Princeton gave him an honorary D. Sc. in 1947.

He taught mathematics at Princeton from 1912 until 1933, when he joined the Institute for Advanced Study in Princeton. He reitred from the institute in 1951.

His father, John Alexander, was a noted painter who created the murals for the Library of Congress.

Dr. Alexander's wife died in 1967. He leaves a son, John, of San Diego, Calif.; a daughter, Mrs. Irena A. Reed of New York, and six grandchildren.

THE INSTITUTE FOR ADVANCED STUDY

PRINCETON, NEW JERSEY 08540

THE DIRECTOR

TO THE INSTITUTE FOR ADVANCED STUDY

It is with great regret that I
inform you of the death of James W. Alexander
in Princeton on Thursday, September 23.

Professor Alexander was a member
of the Faculty of the School of Mathematics
from 1933 to 1948 and has maintained a continuing
relationship with the Institute as Professor
Emeritus.

Carl Kaysen

September 24, 1971

September 29, 1971

Dr. Carl Kaysen, Director
The Institute for Advanced Study
Princeton, N.J.

Dear Dr. Kaysen,

Thank you so very much for your kind message concerning my father. He always thought with deep affection of the Institute and of his active years there.

I appreciate your expression of sympathy

Sincerely,

Irina Reed

September 27, 1971

Dear Mrs. Reed:

I write to express my sympathy and
convey that of the Institute to you on the loss
of your father. Although his health made im-
possible any active association in recent years,
we still value his past relationship.

With deepest sympathy,

Sincerely,

Carl Kaysen

Mrs. Irina Reed
55 East 76th Street
New York, New York

September 16, 1971

Dear Professor Alexander:

Although I know that you no longer find
it easy to be in active touch with the Institute,
I take the liberty of sending you the attached
calendar. The photographs have all been taken
in the woods and around the buildings of the In-
stitute, and we have produced it as a souvenir
for the members of their Institute year. I
thought you would enjoy having one.

Sincerely,

Carl Kaysen

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey 08540

Attachment

Alexander, Jas.

29 Cleveland Lane

Princeton N. J.

March 5th, 1967

Director Karl Kaysen.

Institute for Advanced Study

Princeton, N. J.

Dear Dr. Kaysen:

I am writing to tell you how much I appreciated your kind note. May I also take this opportunity to apologize for my failure to keep in closer touch with the Institute during the past year and a half. My wife was so helpless during her long illness that most of my time was consumed in looking after her personal needs. I was so tied down to the house that I never even had the chance to make a courtesy call on our new Director.

I have had a long and pleasant association with the Institute and am looking forward to the continued growth and influence of this organization under your directorship.

Sincerely yours,

James W. Alexander

THE INSTITUTE FOR ADVANCED STUDY

PRINCETON, NEW JERSEY 08540

SCHOOL OF MATHEMATICS

Dear Carl,   Mar 1, 1967

Thank for your note to Alexander. It was a nice gesture to make. He is a remarkable and rather unusual man. His wife was Russian. Some time I'll tell you a bit about him.

Deane

February 28, 1967

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Professor Alexander:

      I was informed by Professor Montgomery
of the death of your wife after a long illness.
Please accept my condolences and sympathy on behalf
of the Institute with which you have been so long
associated.

          Sincerely yours,

          Carl Kaysen
          Director

bcc: Professor Montgomery

THE INSTITUTE FOR ADVANCED STUDY

OFFICE OF THE DIRECTOR

PRINCETON, NEW JERSEY

February 6, 1951

Memorandum to Miss Trinterud:

This will authorize you in accordance
with Professor Alexander's request to stop
payments of his grant-in-aid as of January 31,
1951.

Robert Oppenheimer

THE INSTITUTE FOR ADVANCED STUDY

PRINCETON, NEW JERSEY

February 5, 1951

Memorandum to Dr. Oppenheimer

From L. Trinterud

Professor Alexander told me on January
22nd that he was retiring from the Institute on
January 31 and requested me to so inform TIAA.
I, therefore, wrote them that day requesting
forms for him to complete in order to begin
drawing his pension. He received his January
check and from that final contribution to the
TIAA policy was made.

I would be glad to have instruction
from your office to stop payments on his grant.

*A. Faculty –
Alexander*

August 23, 1950

Dear Mr. Levy:

It has been suggested to Professor Alexander that he telephone you tomorrow, Thursday, to arrange an appointment; and he has said he would do so. We do not know what tax office over-ruled his first ruling from the Trenton office.

In talking to you yesterday, it did not occur to me to say that Professor Alexander is on a different basis of membership from other permanent members with untaxed grants. He was a Professor on the Faculty, with administrative duties and a taxed salary, from 1933 to the time of his leave of absence from these duties, effective February 2, 1948. I am enclosing a copy of the summary of his position here which was prepared for you when you took over the tax study. I presume his change of status may have brought attention to his case.

In answer to your question about Professor Alexander's point of view in these matters, my judgment would be that he is extremely conscientious and that he might not wish to delay his answer to the tax people.

Yours sincerely,

(Mrs. John D. Leary)

David J. Levy, Esq.
20 Exchange Place
New York 5, New York

Alexander, James Waddell

B.S. 1910 Princeton
A.M. 1911   "
Ph.D. 1915   "
Studied Univs. of Paris and Bologna
Hon.D.Sc. 1947 Princeton

Born Sep. 19, 1888
Citizenship - U.S.
Nationality - U.S.
Married
Princeton home address - 29 Cleveland Lane   Telephone 32
Honors and societies: Bocher Prize(AMS) 1929, Phi Beta Kappa, NAS 1930;
                       Am.Philos.Soc.1928; AMS, Math.Asso.Amer., Amer.Asso.Adv.Sci.

Positions held:
  Princeton Univ. - Instr. 1911-12, 1915-16; Asst.Prof. 1920-26; Asso.Prof. 1926-28;
                    Prof. 1928-33 ~~(On leave spring term/47, spring term/48 - Permanent Member)~~
  U.S.Army Ordnance - Capt.,Techn.Staff 1917-8
  IAS - Prof. 1933-   (On leave spring term/47; spring term/48 - Permanent
  U.S.Navy 1942-   Member)

February 20, 1947

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Alexander:

It gives me great pleasure to inform you that
the Executive Committee of the Board of Trustees
at their meeting on February 18, 1947 approved my
recommendation that you should be granted leave of
absence on half salary for six months beginning
February 1, 1947 to enable you to give your full
time to scholarly writing and to settling your
mother's estate. We are sorry not to have you
taking more active part in the affairs of the
Institute during this period and I hasten to say
that, without any obligation to you, the more
frequently you are seen around Fuld Hall the better
we shall always like it.

Yours sincerely,

Frank Aydelotte

FA:jer

Copy to Miss Miller
Miss Blake

January 29, 1948

To: Miss Trinterud

From: Robert Oppenheimer

     Professor Alexander has been granted a leave of absence during which leave he is appointed a Member with a stipend of $7,500. The Institute will continue to match Professor Alexander's TIAA contribution of 5% of his present $15,000 salary.

     This change is effective with the beginning of the new Term, February 2, 1948.

                             Robert Oppenheimer
                             Director

Reference: Minutes of Board of Trustees
12/16/'49 — p. 4

Mrs. John W. Alexander Dies; Patron of Arts in Paris and Here

PRINCETON, N. J., Jan. 15.— Mrs. Elizabeth Alexander Alexander, eighty, patron of the arts and mistress of salons in the Paris of the 1890s and the New York of the 1930s, died here late Tuesday at the home of her son, Dr. James W. Alexander, internationally known physicist. Mrs. Alexander had been ill for a long time.

Mrs. Alexander was born in New York City, the daughter of James W. Alexander, once president of the Equitable Life Assurance Society.

She was married to the late John W. Alexander, portrait and mural painter, and former president of the National Academy of Design. Shortly after her marriage she moved with her husband to Paris, and there, for ten years before the turn of the century, their home entertained the great of the world.

Hostess to the Czar

John Singer Sargent was a frequent visitor, as were James McNeil Whistler, Claude Debussy and Mrs. Jack Gardner. Mrs. Alexander acted as an official hostess of the American Embassy in Paris in 1896 when Czar Nicholas II visited the city.

The Alexanders returned to America shortly after the turn of the century, and Mr. Alexander became famous for his murals in the Library of Congress, and for his portraits. He died in 1914.

Mr. and Mrs. Alexander were responsible for the staging of a number of Maude Adams's plays, and Mrs. Alexander herself designed the costumes for "Peter Pan." It was Mrs. Alexander who made the Peter Pan costume, green, with a little red feather, which later became famous.

After the death of her husband, Mrs. Alexander continued her work in the arts. She was one of the founders of the School Art League, which sponsored the idea of taking talented children to museums, and she was a founder and partner of the Arden Galleries, which attempted to integrate the fields of the theater, the arts, furniture designing and others.

Mrs. Alexander was one of the guiding spirits in the founding of the "Theater Arts" magazine. She was very much interested in the MacDowell Colony at Peterborough, N. H., and there she gave encouragement—intellectual, moral, financial—to young artists, composers, writers, poets.

Helped Study of Arts

There, she established a studio in memory of her husband; she was a friend to Thornton Wilder, Aaron Copland, Roy Harris, Stephen and William Rose Benet, and Willa Cather.

She helped establish study of the arts in New York City public schools; she was a member of the Town Hall Club; she was known for her work with youth in New York; she made a number of gifts of works of art to museums in the city.

In the 1930's, Mrs. Alexander's apartment on Seventy-eighth Street, between Lexington and Third Avenues, was known as a meeting place for every one in the art world in New York. Gradually, her health began to fail, and several years ago she went to live with her son.

Dr. Alexander is an associate of Dr. Albert Einstein, and is a member of the school of mathematics at the Institute for Advanced Study. Surviving, besides Dr. Alexander, are two brothers, Henry M. Alexander, a New York lawyer, and Fred B. Alexander, of Los Angeles, an old-time Davis Cup tennis player.

Mrs. Alexander, Art Patron, Dies

Mrs. Elizabeth Alexander, patron of the arts and widow of John W. Alexander, internationally known portrait and mural painter, died late Tuesday at Princeton, N. J.

She succumbed at the home of her son, James W. Alexander, who is associated with Albert Einstein in the Princeton University Institute for Advanced Study.

A founder and partner of the Arden Galleries, in New York City, Mrs. Alexander was well known for her aid to young artists.

Her husband, who died in 1914, painted several murals in the Library of Congress, Washington, D. C. He was once president of the National Academy of Design in New York.

WESTERN UNION

1201

A. N. WILLIAMS
PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

WU1 DL PD=PRINCETON NJER 20 1003A

FRANK AYDELOTTE=

HIGHLANDPARK FLORIDA CLUB=

JUST LEARNED PROFESSOR ALEXANDER'S MOTHER DEAD JANUARY 14TH
FUNERAL WASS PRIVATE NO FLOWERS SEE ARTICLE NEW YORK TIMES
JANUARY 16TH=

JA E S RICHARDSON

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

January 6, 1947

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Professor Alexander:

Thank you for your letter of January 4th
requesting leave of absence for the second term
of the present academic year. I am forwarding
your letter to Dr. Aydelotte in Florida today.

Yours sincerely,

Jane S. Richardson
Secretary to Dr. Aydelotte

I have kept copies
of this letter here.

January 4, 1947

Dear Dr. Aydelotte.

If the matter can be arranged

without undue complication, I would

very much appreciate being allowed

to start my leave of absence with the

beginning of the second term of this aca-

demic year. The reason why it is

rather urgent for me to get away now,

2

rather than next fall, is that my mother _

who is very old and has been quite ill _

has allowed her affairs to get in a

completely chaotic condition and needs

someone to take charge for her as soon

as possible. If I could be away for

this coming term, it would give me a

chance to straighten out the family

affairs and to organize my own work

properly. A leave for a full year,

3.

as I originally requested, would be

quite unnecessary.

Sincerely, yours

James W. Alexander.

29 Cleveland Lane
Princeton, New Jersey

P. S. I always seem to be

breaking in on your vacation. Golf

heil!

J. W. A.

C O P Y

January 4, 1946

Dear Dr. Aydelotte:

If the matter can be arranged without undue complication, I would very much appreciate being allowed to start my leave of absence with the beginning of the second term of this academic year. The reason why it is rather urgent for me to get away now, rather than next fall, is that my mother, who is very old and has been quite ill, has allowed her affairs to get in a completely chaotic condition and needs someone to take charge for her as soon as possible. If I could be away for this coming term, it would give me a chance to straighten out the family affairs and to organize my own work properly. A leave for a full year, as I originally requested, would be quite unnecessary.

Sincerely yours,

JAMES W. ALEXANDER

P. S. I always seem to be breaking in on your vacation. Golf heil!

J.W.A.

29 Cleveland Lane
Princeton, New Jersey

December 20, 1946.

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Alexander:

At the last moment it proved impossible to have
a meeting of the Executive Committee on December 17th
and consequently I could get no action on the question
of your leave of absence. The matter seems to me,
however, perfectly clear and if you very much want
your leave to begin as of January 1st, I will try to
arrange an informal agreement with members of the
Committee and let you know. If it would suit you
just as well to have your leave begin July 1st, as
we first considered, there will be, of course, plenty
of time to get it passed. I think, however, you can
let your own convenience decide the matter.

Yours sincerely,

Frank Aydelotte

FA:jer

Copy to Miss Miller

4

THE INSTITUTE FOR ADVANCED STUDY

SCHOOL OF MATHEMATICS

PRINCETON, NEW JERSEY

December 12, 1946

Dear Doctor Aydelotte:

As a follow-up to our conversation of yesterday, I am making a formal request for a one year leave of absence, at half salary, beginning with the second term of the present academic year. My plan would be to concentrate on the organization of material which I have been accumulating over a long period of time. I would expect to remain in Princeton during the greater part of my leave.

Sincerely yours,

James W. Alexander

Dr. Frank Aydelotte, Director
Institute for Advanced Study
JWA:GB

THE INSTITUTE FOR ADVANCED STUDY

SCHOOL OF MATHEMATICS

PRINCETON, NEW JERSEY

October 13, 1945

Report on War Activities

I worked for the Bureau of Ordnance of the U.S. Navy from June 1942 to late January 1943. The group to which I was attached was called an Operational Research unit. We were organized to study the best tactical and strategic use of under-sea mines and to help develop adequate defenses against enemy mining operations. The problem was considered of importance at the time because of the crisis caused by the rapid development of magnetic, acoustic, and other proximity mines. In August 1942 I helped to conduct some experiments in the Bay of Fundy on the laying of mines from aeroplanes. In early October 1942, while still officially a civilian employee of the Navy, I was detached to work with an Operational Research unit stationed at the headquarters of the Bomber Command of the 8th Air Force, U.S. Army, in England. The problem on which I was specifically engaged was that of improving the bombing accuracy of our planes over Germany. Professor Robertson, of Princeton, and I published several joint reports on this subject.

James W. Alexander

JWA:GB

James W. Alexander

June 28, 1945

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Alexander:

I have received legal advice to the effect that it will
be necessary for the Institute to obtain the approval of the
National War Labor Board for increases of salary for members
of our staff before these increases can be legally put into
effect. I had assumed that this would not be the case since
the regulations specifically exempt "organizations operated
without profit and exclusively for religious, charitable,
scientific, literary or educational purposes." It appears,
however, that the War Labor Board in making this exception
in one paragraph has practically withdrawn it in the next
and that specific permission will be necessary for any
increase which we may desire to make.

I am taking urgent measures to get a ruling from the
War Labor Board but if it proves impossible to get them to
act before the middle of July, your check for that month
will be kept at the old rate until such time as we receive
permission to make the increase voted by the Board of Trustees.
If and when permission is granted by the War Labor Board for
this increase, I shall ask to be allowed to make it retroactive
as from July 1, 1945.

Miss Miller will be glad to give you at any time such
news as there is concerning the progress of our negotiations.

Yours sincerely,

Frank Aydelotte

FA:jsr

Copy to Mr. Maass
Miss Miller

January 20, 1945

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

Dear Alexander:

It gives me great pleasure to inform you that the
Board of Trustees of the Institute for Advanced Study
at their meeting on January 19th approved my recommen-
dation that your salary should be fixed at $15,000 per
year beginning July 1, 1945. Annuity payments from you
and from the Institute will continue on the same scale
as formerly agreed upon.

I appreciate very warmly the unselfish attitude
which you adopted in regard to your salary and can only
say that it is a great satisfaction to me that the
Institute should be in a position to take this action.

With warmest good wishes, I am

Yours sincerely,

Frank Aydelotte

FA:jsr

Copy to Miss Miller

November 25, 1940

TO WHOM IT MAY CONCERN:

This is to certify that Professor James Waddell Alexander holds a permanent professorship in the Institute for Advanced Study, located at Princeton, New Jersey, at a salary of $12,500.00 a year, and that said professorship began on October 1, 1933. Upon retirement from the Institute for Advanced Study Professor Alexander will receive a substantial retiring allowance.

(signed)   Esther S. Bailey
                     Secretary

Subscribed and sworn to before me
this 25th day of November, 1940

(signed)   Marion G. Hartz
                     Notary Public of the
                     State of New Jersey
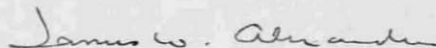
THE INSTITUTE FOR ADVANCED STUDY

SCHOOL OF MATHEMATICS

PRINCETON, NEW JERSEY

April 20, 1940

Dear Doctor Aydelotte:

Dr. Wallman, who was to have continued
as my assistant, has just accepted a teaching posi-
tion at the University of North Carolina. I am,
therefore, requesting that the funds to cover his
salary be kept on the budget pending the choice of
his successor. If there is no objection, I should
like to delay for a few weeks before selecting a
new assistant as I shall not know until then whether
the man I now have in mind will be available.

Sincerely yours,

James W. Alexander

Dr. Frank Aydelotte
Institute for Advanced Study
JWA:GB

1207-A

CHARGE INSTITUTE FOR ADVANCED STUDY, 20 NASSAU STREET

WESTERN UNION

CHECK

ACCT'G INFMN.

TIME FILED

Send the following message, subject to the terms on back hereof, which are hereby agreed to

JANUARY 13, 1939   19____

To PROFESSOR E. B. WILSON EDITOR

Street and No. HARVARD SCHOOL OF PUBLIC HEALTH

Place 55 VAN DYKE STREET, BOSTON 17, MASS.

PROOF RECEIVED TODAY AND FORWARDED WITH SLIGHT CORRECTIONS TO MACK COMPANY

JAMES W. ALEXANDER

52¢

Sender's address
for reference

Sender's telephone
number

February 12, 1937

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

My dear Professor Alexander:

Thank you very much for calling my attention to the error which I made in reporting your salary. I have made the correction, and an amended statement will be sent to the Collector of Internal Revenue showing your salary for 1936 to have been $11,250.00. I am so sorry for the slip.

Very sincerely yours,

ESTHER S. BAILEY

ESB

November 4, 1936

Professor James W. Alexander
Fine Hall
Princeton, New Jersey

My dear Professor Alexander:

This is to notify you that Dr. Flexner approves of the Christmas vacation of the Institute being changed as follows: four weeks beginning December 19, 1936.   Won't you please see to it that the members of the School of Mathematics are so informed?

Very truly yours,

ESTHER S. BAILEY

April 15, 1936

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

My dear Professor Alexander:

I have pleasure in informing you
that at a meeting of the Trustees of the Institute
for Advanced Study held on April 13, 1936, your
salary was increased to $12,500 per annum beginning
July 1, 1936. Mr. Flexner asks me to say that he
would be pleased if this fact were regarded as
confidential.

Very truly yours,

ESTHER S. BAILEY
Secretary

depend more or less on the congeniality of the group.   A certain number of

strangers can of course always be absorbed, but as far as possible it seems to

me wiser from the standpoint of the Institute to draw on the University group

rather than on the town group.   I hope you will therefore permit me, feeling

as I do a sense of great responsibility for the relationship of the two institutions,

to make a few substitutions and a few additions to the list which you have all so

carefully and conscientiously brought together.   In so doing I have not consulted

Mrs. Flexner because she told me that she did not feel that she had a right to change

any action taken by the committee.

        With deep appreciation of all that you are doing,

                            Sincerely yours,

                            ABRAHAM FLEXNER

P. S.
    I am sending a copy of this letter to each of the ladies who are assisting.
                                            A. F.

Mrs. James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

AF:ESB

January 25, 1935

Dear Professor Alexander:

In Bulletin No. 3 of the Institute,
issued in February 1936, the enclosed statement
was made in reference to what you and your associ-
ates proposed to do this year. I wonder if you
would be good enough to read this passage and, in
case you wish the statement changed, let me have
a revision for the next bulletin.

Sincerely yours,

ABRAHAM FLEXNER

Professor James W. Alexander
Fine Hall
Princeton, New Jersey

AF:ESB

February 23, 1934

My dear Professor Alexander:

      The Treasurer of the Institute for Advanced Study has just informed me that he has reported to the Collector of Internal Revenue at Trenton, New Jersey, your salary for the year 1933 as $2,500.

              Very truly yours,

                    ESTHER S. BAILEY
                    Assistant Secretary

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

ESB/MCE

February 26, 1934

Dear Professor Alexander:

I thought you and your associates would
be interested in reading the minute which was prepared
for the records of the Rockefeller Institute on the
occasion of Dr. Welch's retirement last Autumn; so I
have asked my brother to send me a few copies in order
that I may send you one. It would, I think, be
difficult to find in the annals of education another
person who has been so wise, so useful, and so sound.

Ever sincerely,

ABRAHAM FLEXNER

Professor James W. Alexander
Fine Hall
Princeton, New Jersey

1 Encl.
AF/MCE

January 22, 1934

Dear Professor Alexander:

In Bulletin No. 2 of the Institute,
issued some months ago, the enclosed statement was
made in reference to what you and your associates
proposed to do this year. I wonder if you would be
good enough to read this passage and send me a state-
ment regarding the work which you contemplate in
1934-1935, which can be included in Bulletin No. 3,
which I am now preparing.

Sincerely yours,

ABRAHAM FLEXNER

Professor James W. Alexander
Fine Hall
Princeton, New Jersey

AF/MCE

J. W. Alexander 1.

THE INSTITUTE FOR ADVANCED STUDY

(FOUNDED BY LOUIS BAMBERGER AND MRS. FELIX FULD, 1930)

TEMPORARY OFFICES

100 EAST 42ND STREET

NEW YORK, N. Y.

CABLE ADDRESS: VANSTITUTE NEW YORK

Dear Dr. Flexner.

I have tried to catch you at your office several times recently, without realizing that you have been away because of illness. By the time this reaches you I hope you will be entirely on your feet again .

There are one or two semi-routine matters I really ought to bother you about . When Mr. Veblen left for Maine he passed on to me for final action the cases of several applicants for grants-in-aid . I have notified two of these applicants, (Peterson & Loran, — full names &

3.

did. The one thing that worries me about the appointment of these men is that both are married and very low in funds. If they can get paying jobs for next year, which is not at all probable. I should recommend their postponing their studies with the Institute.

Another matter is about the confirmation of the appointment of Dr. Leo Zippin as my assistant. When we discussed the matter in Fine Hall some months ago I understood you to say that I could go ahead and make arrangements with him on the same basis as the arrangement made with Vandiver & the other assistant. My opinion of Dr. Zippin goes up steadily. He has helped me very much this winter on a very difficult job, especially during the last couple of months.

I was disgusted to hear that you got so little

Records of the Office of the Director : Faculty Files : Box 1 : Alexander, James W. 1932-1999
From the Shelby White and Leon Levy Archives Center, Institute for Advanced Study, Princeton, NJ, USA

2.

address at end of letter), that I am recommending them to you for grants of $750 each. As you have been away, and as negotiations have been going on with these men for some time, I have done this without waiting to consult with you on your return. Of course, I have told the applicants that the final decision rests with you, so that if you approve of the grants they will probably ex- pect formal notification from your office. I know Mr Veblen approves of the grant to Peterson. He asked me to make the final decision on Lowan after a personal interview, which I

(continued on back of p. 1)

4

cooperation from the Princeton Physics Department
in the matter of Franck, — not surprised, however,
in view of similar experiences that have arisen in
the past.

Very sincerely yours,

James W. Alexander

Address.

Dr. Leo Zippin
c/o J. W. Alexander
29 Cleveland Lane
Princeton, N. J.

Dr. Arnold N. Lowan
312 Schenectady Ave
Brooklyn N. Y.

Dr. T. S. Peterson
2125 Venice Blvd.
Los Angeles, Cal.

January 26, 1933

Dear Professor Alexander:

My attention has been called to the fact that I have overlooked sending you formal notice that the Trustees of the Institute for Advanced Study at their meeting on January 9, 1933, ratified your appointment as Professor in the School of Mathematics on the terms of my letter to you, dated December 22, 1932.

I have not yet received from you the blanks regarding the insurance. Would you please fill them out at your convenience?

With all good wishes,

Sincerely yours,

ABRAHAM FLEXNER

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

AF:HSB

January 5, 1933

Dear Professor Alexander:

Thank you for yours of the third enclosing a brief statement of your proposed activities next year, which I shall incorporate in the next bulletin.

I am sending you two annuity applications to be filled out and returned to me.

I shall be seeing you, however, before this reaches you.

With all good wishes,

Sincerely yours,

Professor James W. Alexander
Fine Hall
Princeton University
Princeton, N. J.

ABRAHAM FLEXNER

AF:ESB

Jan 3, 1933

Dear Dr. Flexner,

Just a line to say that I should definitely like to take advantage of the retirement insurance plan which you proposed in your letter of December 22nd.

So sorry about Weyl! Has the Eternal Feminine been up to mischief again? Perhaps the ancient Turks had a good case in their favor after all.

Will the enclosed blurb be enough

for Bulletin #2?

Sincerely yours,

James W. Alexander

December 30, 1932

Dear Professor Alexander:

  I do not know whether you have seen the first bulletin issued by the Institute. In any event, I am sending you one under separate cover. I am now engaged in preparing Bulletin No. 2, for which Professor Veblen has drafted a brief paragraph outlining the kind of thing that he probably intends to do next year. I wonder if you would be good enough to make a similar draft. I am asking Professor Weyl and Professor Einstein to do the same. None of you will be held rigidly to it, but I have so many inquiries as to the kind of thing that the Institute may offer that something like this will have to be issued.

  With all good wishes for the New Year,

    Sincerely yours,

    ABRAHAM FLEXNER

Professor James W. Alexander
29 Cleveland Lane
Princeton, N. J.

AF:ESB

November 27, 1933

Professor James W. Alexander
29 Cleveland Lane
Princeton, New Jersey

My dear Professor Alexander:

I am sending you herewith the check
of the Institute for Advanced Study for $791.67,
which represents your salary for the month of
November, 1933, after deducting your payment
of $41.66 to the Teachers Insurance and Annuity
Association of America towards your pension.

Very truly yours,

ESTHER S. BAILEY

Assistant Secretary

October 31, 1933

Professor James W. Alexander
29 Cleveland Lane
Princeton, N. J.

My dear Professor Alexander:

I am sending you herewith the check of
the Institute for Advanced Study for $791.67, which
represents your salary for the month of October, 1933,
after deducting your payment of $41.66 to the Teachers
Insurance and Annuity Association of America towards
your pension.

Very truly yours,
ESTHER S. BAILEY

Assistant Secretary

December 28, 1932

Dear Professor Alexander:

I am deeply gratified to receive your note
of December 26, and I feel sure that the Board will ratify
the selection with great pleasure.

There is no reason why you should hasten your
decision regarding the retiring allowance.   The Board does
not meet until January 9.   If not inconvenient, I should be
glad to know before that date whether you desire to join the
Board in taking out the insurance.   As to the various options
mentioned, you need make no choice until the date of your retire-
ment approaches.

With all good wishes for the new year for you, Mrs.
Alexander, and the children,

Very sincerely yours,

Professor James W. Alexander   ABRAHAM FLEXNER
29 Cleveland Lane
Princeton, N. J.

AF:ESB

Dec. 26, '32

29 Cleveland Lane

THE NASSAU CLUB
PRINCETON, N.J.

Dear Dr. Flexner,

Thank you very much for your letter confirming your proposal of the other day. I should, of course, be delighted to receive a professorship in the Institute for Advanced Study, as the terms you outline seem to be ideal in every way.

May I postpone my decision about

taking out insurance in the Teachers' Insurance and Annuity Association? In the general confusion of X mas week I have not had a chance to read over the pamphlets describing the various types of policies.

Very sincerely yours.

James W. Alexander

December 22, 1932

Dear Professor Alexander:

Subject to your approval, I am prepared to recommend to the Trustees
of the Institute for Advanced Study at a meeting to be held January 9, 1933, your
appointment as a Professor in the School of Mathematics to begin October 1, 1933.
The initial salary will be $10,000 a year.   In addition, if you so desire, the
Institute will pay to the Teachers Insurance and Annuity Association of America
five per cent of your monthly salary from its own funds, you contributing an
equal sum yourself.   This sum will be compounded and will be yours whether you
remain with the Institute or not.   The regular retiring age is 65 and may be
extended by mutual consent.   The Teachers Insurance and Annuity Association of
America offers several alternatives as to the use to be made of the sum which
has accumulated in your name. I am sending you herewith an explanatory pamphlet.
At the time of your retirement you are free to choose any of the alternatives
offered.

In the conduct of your work you are free to follow any method or
procedure which you prefer - personal contact, seminars, lecture courses, or
other methods.   Organization will be kept down to the minimum, and students will
be admitted only in so far as they are desired by the individual members of the
teaching staff.   In other words, the Institute is seeking to advance the science

of mathematics without any preconceived notion as to the best way in which this can

be done.

The year will ordinarily run from the beginning of October to the beginning

of May with an ample vacation at Christmas.

If there are any questions, regarding which you desire information, please

do not hesitate to ask me.

I shall be very happy indeed to receive from you a formal acceptance of

this offer.   Now that we have brought together the initial nucleus of the School

of Mathematics, I am hopeful that the enterprise is on the way to successful fruition.

With all good wishes and very profound appreciation of the coöperation

which I have received from all the members of the Princeton group, I am

Very sincerely yours,

ABRAHAM FLEXNER

Professor James W. Alexander
Princeton University
Princeton, New Jersey

AF:ESB