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Memorial of Cecil Edgar Tilley
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With the death on 24 January 1973 of C. E. Tilley, Petrology lost one of its foremost proponents, and an Augustan Era in the history of our Science was brought to a close.

Cecil Edgar Tilley was born in Adelaide, South Australia, on May 14, 1894, the son of a Civil Engineer in the South Australian State Service. One of Tilley's earliest memories, of a time at the turn of the century when his family was living in Darwin during harbor-construction there, was of his father projecting an ill-baked pudding at the cook. If in the future the son was to show a comparable intolerance of incompetence, it is improbable that his displeasure was ever so forcibly expressed.

Of how Tilley first became enthralled by Geology and Petrology we have no record. His family was intensely musical and Tilley himself as a boy was keenly interested in the piano and was a proficient organ-player. In later years he expressed regret that in his first enthusiasm for Science he had allowed this interest to lapse. However, the Adelaide of his day, with its native scrub and the beautifully displayed sections of the Adelaide System—the unconformities, tillites, metamorphic rocks and granitic intrusives—within easy street-car or train ride certainly offered ample incentive for the young Natural Historian. By his second year at Adelaide University he had accepted a post in the Geology Department as Cadet, whereby in exchange for making thin-sections and performing other small services, he was granted remission of fees. The Geological Staff in Adelaide comprised Walter Howchin, one of that doughty band of stratigrapher-adventurers who had deciphered the Geology of a Continent by footwork, flair, and good fortune; and Douglas Mawson, petrologist, then absent on his Antarctic Epic. Mawson's *locum tenens* in 1912 was W. R. Browne. The petrology class was small and the only outstanding student in it was Tilley, who reinforced his native acumen with avid reading of the latest journals, devouring them with his lunch-time sandwiches in the adjacent Public Library.

Browne's appointment in Adelaide terminated at the end of 1912, but he spent some time in early 1913 collecting from the Palaeozoic granitic intrusives exposed at Victor Harbor on the coast south of Adelaide; Tilley was a natural field-assistant. During this trip the two discovered a newly-exposed Permian glacial pavement, now known as "Selwyn's Rock." This appears to have been Tilley's first experience of what he was later to call the "supreme exhilaration of the chase"; as in many a subsequent

[1] For their assistance in the preparation of this memorial, I am indebted to many of Professor Tilley's friends and associates, in particular to Dr. W. R. Browne and Professor T. G. Vallance who made the early correspondence available to me.

pursuit, he followed hard on the scent, crossing the appropriately named Investigator Strait to examine the related granites of Cape Willoughby on Kangaroo Island. The descriptions of Cape Willoughby (1919) comprise his first published petrological work.

After Browne's return to Sydney, pupil and teacher began a correspondence which lasted for more than a decade; fragments, now in the possession of T. G. Vallance, survive. It is clear that the attractions of stratigraphy were still strong for Tilley; he wrote lamenting the lack of fossils in the Adelaide Hills, and had to be cautioned by Browne against the workings of the "Stratigraphical Microbe." However, by the time in November 1914 that he had completed the four-year B.Sc. Honors course, his mind was clear; in the subsequent year he followed Browne to Sydney University where he again became an Undergraduate, completing the final-year B.Sc. course and being awarded medals in both of his subjects, Chemistry and Geology. Both Departments eagerly sought his services as junior demonstrator; he chose Geology. In mid-1916 Australia had been at war for nearly two years, and Tilley had completed his annual obligation of military training. But he had no heart for the clarions of war; on the parades of his Regiment he cut an unsoldierly figure, itching and bored in his coarse khaki. Characteristically, however, he utilized every possible opportunity; when set to guard enemy internees, he spent the time improving his knowledge of German. In the event he was spared the ordeal of the trenches. The British armament industry, strained by the insatiable demands of the Ypres barrages, called for competent chemists, and at the end of the year Tilley made his first voyage to Britain to work at a munitions factory at Queensferry near Edinburgh. Here he soon established a reputation for being the man-on-the-job, available at any hour of day or night; and here in charge of a chemical plant he had his first experience of the responsibility he was later to exercise so well.

With the Armistice in 1918 Tilley returned to Australia, but the resumption of his post was brief. He was awarded an 1851 Scholarship (from a fund set up in Britain from the profits of the great Industrial Exhibition of 1851) and so after the lapse of barely a year was again on the high seas, bearing an extensive collection of metamorphic rocks from the Archean complex of Eyre's Peninsula of South Australia. Tilley first set foot in Cambridge, England, on Thursday, 5 February 1920. He was taken into the "august presence of Harker" who, as he wrote, "had none of the severity with which I had associated the name." At that time the petrological interest of Cambridge University was divided between the Sedgwick Museum of Geology, with Alfred Harker as Lecturer in Petrology, and the Mineralogy Department. Tilley's first impression of the Sedgwick Museum was hardly favorable. "It is about as good as the Lab in Adelaide University, only Mammalian skeletons and Tertiary invertebrates surround you in and out of cabinets." His impression of Cambridge University was hardly better. The discipline of Cap and Gown, of the keeping of Term, Hall, and Gate-hours, was to him irrelevant and sat but awkwardly on his broad shoulders. A shy young man, he made friends with difficulty, and immersed himself the more single-mindedly in his work. Within two years he had published five papers of quality, his treatment of the Australian granite-gneiss assemblages in particular giving an early example of his analytical power. He had come to Europe at a petrologically exciting time. Alfred Harker had but lately transferred his interest from igneous petrology, and the field of metamorphism was feeling the impact of his original and rigorous mind. Goldschmidt's Stavanger memoir, Eskola's essay on the mineral facies of metamorphic rocks, and Brøgger's account of the Fen District were shortly to appear. Tilley's first excursion to continental Europe was in 1921 when he visited the classic Norwegian localities; here he gained a lasting impression of the quality of the Oslo Department's facilities and research which seems to have influenced the character of the Department he was later to create. For some six years he divided the summer vacation between field-work in Scotland and excursions to Scandinavia, Germany, and Switzerland. Barrow's pioneer mapping of the metamorphic zones of the South-Eastern Highlands had remained neglected if not unnoticed, and several geologists, lacking Barrow's insight, had proposed unsound extensions of his scheme based on such curious criteria as the existence of garnet with or without albite. Into these Augean stables of incomprehension swept Tilley. In a series of classic papers he expanded the knowledge of both field and petrological relations of the chlorite, garnet, and staurolite zones to the limit then possible; indeed the subject remained as he left it for 30 years until the advent of the electron probe permitted the advance to resume. During this period he toyed with many other topics; he defended Eskola's new mineral facies

scheme against influential but incomprehending criticism, and utilized the experimental data then available in an analysis of the phase relations of contact-metamorphic assemblages which in its context remains as a standard treatment. More particularly and perhaps less successfully, he attempted a synthesis of the metamorphic and tectonic characteristics of the Dalradian; convinced that he could prove that the metamorphic zonation was inverted (*i.e.,* garnet grade overlay biotite grade) he spent several summers with G. L. Elles on a program of detailed mapping in an attempt to show that the inversion was of tectonic origin. If the resulting paper (1930) finds little favor today, many of the concepts advanced have never been refuted. With changing notions on the cause of Dalradian metamorphism, we may yet see many of the ideas of Elles and Tilley resumed in more sophisticated guise.

During this period Tilley remained in the limbo of the post-graduate student. His 1851 exhibition was converted to a senior award in 1922, and he was appointed to the temporary position of Demonstrator in 1923, but he remained unsettled and uncertain. He first met Norman L. Bowen on a field trip with Harker in Skye (1923), but a projected position at the Geophysical Laboratory did not eventuate and a visit to Australia during the southern winter of 1924 produced no firm offers of employment. Staying with his parents in Adelaide, he wrote to Browne in a state of despondence, "My own think-box is still in a state of topsy-turveydom so that I occasionally get a wild idea to chuck petrology. . . ." That this could be written by a man who had accomplished—and was to accomplish —so much must be a profound comfort to us lesser men. The doyen of the Australian geological world, and head of the Sydney Geology Department in Tilley's student days, was T. W. E. (Sir Edgworth) David. In 1926 David came to London to complete his monumental *Geology of the Commonwealth of Australia.* Tilley undertook to prepare accounts of the Australian Igneous Rocks for inclusion in this work. An exhaustive search over 70 to 80 years of English, German, and Australian literature certainly distracted from the main-stream of the chase, and provided some choice comments. "Of all states Queensland is the most horrid—where granites are not intrusive but metamorphosed sediments, and where any dark rock is a diorite." This work was never published, although W. R. Browne's (1950) later compilation and revision of David's notes drew considerably upon it. However, this experience of distractive labor, absorbing second-hand the ideas and observations of others, must surely have contributed to his final decision never to write a book: "Books? They aren't worth the candle!"

During the late twenties Tilley first met Irene Marshall. Their marriage in 1928, starting a partnership of 45 years, certainly settled him in the Cambridge which was henceforward to be his home. The same year saw Tilley's appointment as Lecturer in Petrology, but greater things were in store.

Although most of the early occupants of the Woodwardian Chair of Geology in Cambridge were mineralogists, the separation of Mineralogy from Geology came with the establishment in 1808 of a chair for Edward Daniel Clarke, whose public lectures on "Mineralogy as Illustrative of the History of the Sacred and Profane Arts" had raised the enthusiasm of the University. Clarke was followed by a sequence of distinguished men—J. S. Henslow (1822–1827), later Professor of Botany and the teacher of Charles Darwin; William Whewell (1828–1832), the deviser of the *hkl* system of crystal notation now named after his successor; and the great W. H. Miller (1832–1881). By the late 19th century the Department of Mineralogy was essentially a crystallographic department; the last Professor, Arthur Hutchinson, had early recognized the importance of the new tool of X-ray analysis and had built up a thriving school including J. D. Bernal as Reader (≡ full Professor) in Structural Crystallography. Under the long reign of Adam Sedgwick (1818–1873) the Geology Department had suffered a comparable polarization, towards palaeontology. When Tilley arrived in Cambridge, Petrology, still the province of the Sedgwick Museum, found much of its interest in the Mineralogy Department.

The simultaneous retirement in 1931 of Alfred Harker and Arthur Hutchinson thus naturally suggested the fusion of their posts. A committee including Sir Ernest Rutherford, W. H. Bragg, and L. J. Spencer recommended the establishment of a Department of Mineralogy and Petrology and the separation of Crystallography to form a new department. (The latter recommendation was never carried out, the Crystallographic Laboratory in Cambridge being a later sub-department of the Cavendish Laboratory).

Although Tilley was clearly heir presumptive to the headship of the Mineralogy/Petrology Department, the system of Cambridge University ensures

that no heritage is apparent; he was advised that his absence during the final process of approving the proposals might be wise. Thus he took his long-accrued academic leave, spending nine months at the Geophysical Laboratory in Washington, D.C. Here with J. F. Schairer he received his baptism in experimental petrology, completing the ternary system Na_2SiO_3–$Na_2Si_2O_5$–$NaAlSiO_4$—not a system of great complexity, but rather more difficult in those pre-regulator days when the passage of a street-car laboring up the Connecticut Avenue incline could send the galvanometer-light into a frenzy. Clearly he learned quickly from Schairer, with whom he also accomplished a formidable program of travel and fieldwork by railroad and model-A Ford. Many a subsequent evening has been enlivened by Frank's accounts of those excursions: how the two young men, cooling in the lake after a hot day examining the Wausau nepheline syenite of Wisconsin, emerged some distance from their clothes, disturbing a courting couple who reported to the local gendarmerie the presence of exhibitionists. Only in the nick of time were they able to retrieve the garments of decency and, as the police arrived, to point "They went thataway." Again, how Frank's scheme for a brief respite from an America dessicated by the Volstead Act was nearly ruined when Tilley (who was present on a single-entry visa and must needs pose as an American citizen to return from Canada) insisted on pronouncing "Connecticut" with three C's. The scheme, however, succeeded and on the banks of Niagara Tilley and Schairer took their glasses of Sauternes—a drink, in Frank's opinion, much inferior to beer.

The appointment as Professor of Mineralogy and Petrology was announced, and in late 1931 Tilley returned to Cambridge to take up his new duties. He carried with him a lasting love of America. Perhaps because this had been his last youthful exercise, America remained for him the land of promise; here he was always stimulated, relaxed, and happy.

Back in England was the task of welding a new Department from the disparate elements of the old order. That his relentless energy succeeded so well is shown by the opening in 1933 of the new building to his design, and the almost simultaneous release in the literature of a flood of papers from himself and students utilizing what can only be termed the "Tilley method." The exhaustive collection in the field, the painstaking petrographic prognosis, the literature search, the separation of minerals for analysis—all this had been done before, but never before, perhaps, had there been a dictator with such an overall grasp and interest, seldom had such an array of investigative facilities been assembled for concentration on a particular object. His aim was to produce a laboratory of the top rank both in teaching and in research, and produce one he did, with absolute dedication and not a little ruthlessness. It was made quite clear to students that the facilities he had provided were to be used to the full and that no time was to be wasted—"The hours of this Department, Mr. A, are 9 till 6 Monday to Saturday," one student was told on returning from a mid-week excursion to London. Another student kept a spare jacket in his room, to be negligently draped over his chair when he wished to conceal his protracted absence from the Department. But after 7 p.m. the laboratory was Tilley's own. Then he would work far into the night, or prowl the darkened corridors and rooms checking that all was well with his creation. Only the occasional touch of cigarette ash would next morning betray to the occupant of a room that he had been visited, or perhaps a letter, addressed in Tilley's formal but gracious style, containing some comment on the student's work. For Tilley was a shy man, and preferred the epistolary mode of communication with all but his closest friends. Significantly, however, few students found this regime oppressive; and one soon accommodated oneself to Tilley's language. "Most improbable" or "You can do better than this" meant what it said; the student himself was expected to find the flaw in his own argument, or to devise a circuitous way of eliciting it from the Professor. "You'd better make some more analyses" meant that the proposal was approved, but was not yet watertight. "Carry on with this" was the *summa cum laude* which sent the student rejoicing away.

Tilley was a man who taught by example. He stood so high that his approbation was sufficient reward, with the excitement of working in a field selected by Tilley as significant. If he did not welcome intimate discussions, he did not reject them when he felt them appropriate; and he always made it quite clear when he could be disturbed. It was a fool or a neophyte who knocked a second time on his closed door; but when the door was ajar, the brim of his hat just visible above the top, one could enter without hesitation. Then the interview would not be prolonged; with his instant recall he could answer the question in a trice, and so incisive was the razor that discussion was normally inappropriate. His immense reprint collection (of some 14,000 titles at the time of his retirement in 1961) was kept in boxes garnishing the walls, and although each was

numbered serially by accession, he filed them alphabetically, and as one's eye roved the walls it gained the impression of a Pantheon—the names of the great and half great in bold scrawl adorning the box-ends in strict rotation of the alphabet. But this itself was a facade; many of the boxes had long ceased to hold what they purported. I remember well asking for the loan of a reprint by Burri, and, seeing the Professor's great fist enveloping the file marked "Osann" said "No, sir, not Osann,—*Burri.*" The file continued to descend, and, as the other hand deftly extracted two papers—the required reprint and another, he replied "And here's a paper by Osann which you ought to read." There was perhaps just a twinkle of amused triumph in those faraway blue eyes, for while Tilley perhaps could never understand the slowness of many petrologists' thought processes, he was well aware that his filing system was far more efficient than many more sophisticated.

A glass-fronted bookcase occupied one wall of this room; the shelves of reprint-boxes reached to the ceiling of two more sides. On a desk in the center he did his writing, and on the fourth wall, beneath the south facing windows, was his work bench. A clutter of rocks, thin-sections, cabinets, and reprints gave a spurious air of disorder. The centerpiece was an old brass microscope manufactured by Messrs Swift. It was rumored to contain cobwebs, but if such were present it was not from disuse; the stage, worn irregular by the passage of countless slides, had been replaced at least once. "It's not the microscope, it's the man," he would say, and it was not until with failing eyesight in his latter years that he welcomed a superior instrument. The secret of his extraordinary facility with the microscope lay in patient application; he always acknowledged the necessity of "getting one's eye in" for a rock-type, and for him this involved thorough determination of optic orientation, frequent extraction of minerals from uncovered thin-sections and their R.I. determination, and isolation in acid. When one reads that the sillimanite recorded by Williams from the Kimberley eclogites is not sillimanite but kyanite, one has no hint of the tedious isolation with HF of minute fibers which this determination involved. But he was a man who derived great aesthetic pleasure from thin sections; he loved the beauty of rocks as much as he was fascinated by their meaning. So he sat for hours into the night, cigarette in mouth, with a towel over his left shoulder to wipe the dust and ash from his slides. His preoccupation with rocks was such that when, during the austere war years, a parcel arrived from Bowen, he expressed keen disappointment that it contained not promised specimens, but mere butter and canned meat! This must surely rank as a unique inversion of the Gospel plaint: "If the son ask for bread, will the father give him a stone?"

Tilley at this time was a big man, physically splendid, huge of shoulder, and with great hands curiously delicate when he came to handle the mineral aggregates that he loved. His far-away blue eyes looked through one and often gave no hint of the kind, simple man which lay beneath. He recognized that sound administration was necessary to continue the Department he had created, and that administration he provided, although it is a reasonable supposition that he found the task an irksome diversion from the chase. Relaxation he sought with his family; a familiar Cambridge figure cycling sedately home through the streets in hat and raincoat, he regularly took afternoon tea with Mrs. T. and daughter Anne, returning to the Department for further work, a brief dinner in College, and then long hours of application at his desk.

In many ways Tilley's published researches during the first two decades of the Department represent "mopping up" operations. In his wide reading he encountered many problems for which he could sense answers, or could see the way to resolution. In this he made extensive use of the superb collection of rock sections originated by T. G. Bonney and continued by Alfred Harker after whom it is now named; at this stage the Harker Collection was growing at the rate of some thousand slides a year, largely from the fieldwork of Tilley himself. So he wrote on the phase relations of kyanite-amphibolites, two-amphibole parageneses, eulysites, and on cordierite-anthophyllite rocks. A study in which he first demonstrated the mylonitic character of the St. Paul's Rocks was carried out on the material collected during the "Beagle" expedition and bequeathed by Darwin to Cambridge University. His abiding interest during these years was, however, in the pyrometamorphism of calcareous rocks and in calcareous contamination of magmas, a subject leading inevitably into the broader field of alkali-rock genesis.

With the passing of the years and the increase in pressure of work, Tilley's admirably elegant early style of writing became compacted, almost terse; his later papers were seldom long, being precis of his own rapid thought processes. He assumed the reader to have knowledge of the literature equal to his own, and also that arguments trivial to him were equally trivial to others. Thus corners were cut to produce

publications of almost Latin compactness. Works difficult enough, if taken step by step, became in Tilley's shorthand documents of obscurity to the less intelligent or well-informed. As with his writing was his lecturing—but what a joy it was to hear him on his latest enthusiasm! Then with his blue eyes searching a horizon far beyond the narrow confines of the room and his spirit seemingly disembodied from his massive frame, the ideas would eagerly emerge in those unforgettable softly-booming tones.

By the end of the 1940's Tilley, an acknowledged leader of his profession, had amassed a considerable record of service to professional societies. From 1924 he had served the Mineralogical Society of Great Britain as councillor, Vice-President, and as Managing Trustee; election as President had come in 1948. He had served at regular intervals on the Council of the Geological Society of London, to the presidency of which he was elected in 1949. Election as Fellow of the prestigious Royal Society of London had come in 1938; two terms on its Council had introduced him to the higher echelons of the British scientific world and had ensured his election in 1949 as Vice-President. Thus it was that in 1950 Tilley found himself presiding regularly over the general and council meetings of three London Societies, with the necessity of making intelligent contribution to many topics far from his own particular interest. In this he certainly succeeded, although we may sympathize with speakers such as the palaeontologist who, after reading a paper on the stratigraphical significance of a certain fossil tooth, was asked by the President whether his tooth consisted of fluorapatite or of hydroxyapatite!

The duties of his Presidencies, as all others he undertook, he regarded seriously, and there is no doubt that at this time he had undertaken too much. The preparation of a fitting address to the Geological Society worried him greatly, and seems to have been the final factor in the nervous breakdown which he then suffered. A brief convalescence, spent characteristically in fieldwork in the Haliburton-Bancroft alkaline gneisses, soon restored his health, and the significance of his address was never in doubt.

"Some Aspects of Magmatic Evolution" summarized in masterly fashion what was then known of basalt chemistry and distribution and, in its reasoned prediction of tholeiitic compositions as the likely candidates for a primitive magma, set the scene for the further advances which followed closely. In looking at Tilley's bibliography, it is hard to resist the feeling that in this master-stroke he was springing *de novo* from a field of metamorphic studies; but Tilley had never been a narrow specialist, and his early continuing interest in basalt is testified by one of his earliest papers—one on a basalt from Kangaroo Island, in which, recording the existence of an "enstatite augite of uniaxial character" he must have been one of the first petrologists to use the term "tholeiite" in its modern context. Nonetheless "Some Aspects" came as revelation to a petrological world conditioned for a decade to the diffuseness of the granitization "debate." In this debate itself he had taken no formal part, but there can be no doubt of where his sympathies lay. An extended field excursion to the Pyrenees in 1951 had provided abundant material for a study of the enclaves of the Querigut granite. Although this reached manuscript stage, it was never published. Working, however, in the parallel field of alkaline rocks, he attempted to differentiate between similar rocks of igneous or of metamorphic origin, and showed by studying nepheline-orthoclase tielines how at least some high-temperature igneous types could be separated from lower temperature, metamorphic parageneses. His fascination at this time with nepheline was legendary, and the story is told of how one evening in a Pyrenean Inn as the wine flowed and the songs became more boisterous, his great voice could be heard above the din: "Well now, R ____: What about these nephelines?"

With his Department running smoothly and efficiently, Tilley began a closer involvement in the more general administration of the University, serving on the General Board of the Faculties (the effective ruling committee of Cambridge University) and as Chairman of the Board of Research Studies. His Cambridge College, Emmanuel, had elected him a Fellow in 1931 and now in 1952 appointed him Vice-Master. Tilley seems to have enjoyed the exercise of the power which these positions afforded him, and he developed a reputation as a formidable enforcer of soundness and common-sense. A man with no hobbies other than his work, he was interested in politics and the "art of the possible," and his committee-work certainly gave him abundant opportunity to observe the manifold aspects of the interaction of human beings.

In 1955 Tilley spent a year in a global circumnavigation, visiting his old friends and students in the United States, New Zealand, Australia, and India. Our Society had honored him with the award

of the Roebling Medal, an honor received with his characteristic self-effacing modesty, and the Geophysical Laboratory had appointed him a Research Associate. Thus started the pattern of yearly visits to America which he was to maintain for 12 years and which, in bringing him once more into intimate contact with experimental petrology, was to stimulate the last great flowering of his genius.

Tilley's final service to the Department he had created and nourished came when he, with several members of his staff, recognized the significance of the experiments on "X-ray Microanalysis" then being undertaken in France and in the Cavendish Laboratory. Although to his death he retained a slight suspicion of the electron-probe, much preferring analyses whose derivation he thoroughly understood, yet it was his farsighted provision of a grant and a position which initiated the research laboratory of J. V. P. Long which now flourishes in Cambridge.

Retirement came in 1961. For him it must have been a terrible break; but at the retirement dinner he made his farewell speech warning his staff of the dangers of the future, and then cut himself off completely from Departmental affairs. But in many ways the divorce from his creation cannot have been too unwelcome; he was now free to work unfettered on the research that he loved, and he was freed from his perfectionist anxieties. He retained a room in the Department but came unobtrusively, even humbly, not wishing to disturb or be disturbed by the undergraduate tumult about him. But retaining his Fellowship of Emmanuel College, he preserved his links with the University, and soon was known to his former staff as the genial and entertaining host familiar to his friends in the United States.

For the next five years, however, the focus of his research interest was the Geophysical Laboratory, and the long series of collaborative papers and reports on basalt character and genesis testify to the stimulation he both received and gave during those winter sojourns in Washington. It was no small satisfaction to him to be able to ride with so many of his old friends and students, so close to the head of the chase which in so many ways he had started. But age was beginning to tell; each year he returned to Washington more stooped, more shrunken. In 1967 he came to the Geophysical Laboratory for the last time, but on deciding not to leave Britain again, he immediately commenced an association with the Laboratory in Manchester of his old pupil W. S. Mackenzie, which lasted till his death.

During these years of "retirement" Tilley had kept his connections with the scientific societies and took particular interest in the infant I.M.A. During his second term as President of the British Mineralogical Society (1957–60) he had been the British delegate to the founding meeting in Madrid (1958); he served as Chairman of the Program Committee for the New Delhi meeting in December 1964, at the end of which he became doyen of the Mineralogical world as I.M.A. President. The abandonment of the 1968 meeting, however, meant that he presided over only two sessions of the I.M.A., at his own Department in Cambridge (1966) and in Tokyo-Kyoto (1970).

Shortly before the Tokyo meeting he had suffered a mild thrombosis; such attacks were to occur more frequently in the last three years of his life, and were to terminate it. He began to walk with a stick, but still rode his bicycle, seemingly the same massive figure, with unhurried purpose through the increasingly congested streets of Cambridge. He confessed, half-humorously, half-wryly to "slowing down," although he was still working with the energy of a man ten years his junior. He attended the dinners of his College, and was agreeably surprised at his lionization by the younger fellows, and the evident enjoyment they took in his reminiscences of life in the Cambridge of J. J. Thomson and Ernest Rutherford. On Friday, 19 January 1973 a dinner was held by Cambridge geologists to mark the centenary of the death of Adam Sedgwick. Tilley was an invited guest; at the last moment he felt weary and would not come. He died on the following Wednesday, gently, at his fireside.

With his long list of publications an enduring testimony of his industry and intellect, Tilley's place in scientific history is secure and will remain after the glory of the tangible symbols of contemporary recognition—the Roebling Medal (1954), the Wollaston Medal of the Geological Society of London (1960), the Royal Medal of the Royal Society (1967), and the numerous Honorary Degrees and Foreign Memberships of Scientific Societies—have faded. More significant perhaps is the heritage he leaves in the changed style of our Science. To his tenacity and brilliant exponence, the final translation of the old Geophysical Laboratory doctrine into universally accepted terms must in great measure be due. To him as much as to any other man must be attributed the eventual readiness of Petrology to meet the challenge of the New Geology.

Publications of C. E. Tilley

1919

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1920

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1921

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1922

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1923

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1924

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1925

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1926

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1927

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