Memorial to Harold Rollin Wanless
1898–1970

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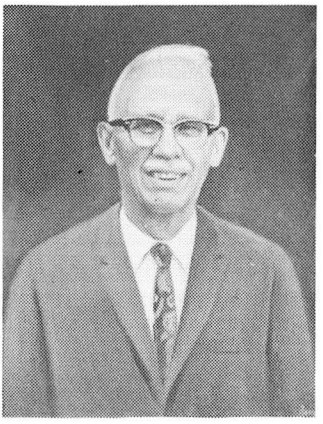

Harold Rollin Wanless was born December 5, 1898, in Chicago, Illinois. He died in Champaign, Illinois, June 3, 1970. He was the son of William and Rhoda Tanner Wanless. The father, a promising young lawyer, was in San Francisco at the time of the 1906 earthquake, and he lost his life in that disaster. His mother taught nature study in the Chicago schools and Harold, from his earliest days, learned to recognize birds, flowers, and rocks, and was practically brought up with a binocular in his hand. He learned photographic methods early and experimented with and improved upon various kinds of cameras; he was one of the first to use color photography.

After graduation from Waller High School, in 1916, he was awarded the Princeton Club of Chicago Fellowship. He was an undergraduate at Princeton from 1916 to 1920, when he received the B.Sc. in geology with high honors. During World War I he was a member of the Princeton detachment of the Student Army Training Corps from September to December, 1918, and rose to the rank of sergeant. Since he came to Princeton with professional qualifications as a photographer he soon became a staff member of the *Princeton Photographic Magazine* and the *Princeton Pictorial.* Harold was often assigned to record some of the activities of distinguished visitors and thus met many very famous people.

Following graduation, he remained at Princeton where he was appointed University Fellow in 1920-1921, Reader in Geology in 1921-1922, and Warfield Scholar in 1922-1923. His master's thesis, *Geology of the Rosendale Cement District, Ulster County, New York*, was presented in 1921. It is an example of his meticulous attention to detail and of his use of all these details in analyzing the geology of a region, in extracting general principles, and in determining geological history. The report consists of two large volumes; the first of 279 typed pages includes a detailed description of scores of sections and deals in great detail with the stratigraphy, paleontology, mineralogy, economic geology, tectonic history, historical geology, and paleogeography of the region. The illustrations are assembled in a second large volume of 123 superb photographic plates, many of them folding, mainly of strata and of tectonic and sedimentary structures, but some of topography and some of portraits of the Princeton staff and students of historical importance. The labeled stratigraphic outcrop plates show many classic exposures which probably no longer exist.

Beginning with the field season of 1920, Wanless worked in the Big Badlands of South Dakota with Professor W. J. Sinclair. This field work continued in the summers of 1921 and 1922, under the direction of Professor Sinclair, and provided the material for his doctor's thesis presented in 1923. The thesis, which dealt with the lithology and stratigraphy of the White River Beds of South Dakota, was published in two long papers in the *Proceedings of the American Philosophical Society*. He was able to determine that the sediments, with their rich fossil content, were not lacustrine deposits, but were "river-channel, freshwater, pond, sheet flood, and eolian elements," and from these drew conclusions about the source of the material and its method of transportation, and about the conditions under which the White River faunas lived and evolved. This relation of sedimentary character to the lateral and vertical changes of the deposits was to be found again and again as he studied Pennsylvania deposits in Illinois and throughout the United States, and indeed the world.

In addition to the scientific reports presented in his thesis, and the two long journal articles, he prepared for his own personal records an elaborate account of his experiences, illustrated with drawings and photographs. His field assistant was J. B. Mawdsley and, in addition to Professor Sinclair, he was associated in his field and laboratory work from time to time with Professors A. H. Phillips, R. W. Chaney, A. H. Pillsbury, and W. B. Scott. His personal account, preserved in a large, handsomely bound volume, provides interesting biographical material on these men.

Upon the completion of the Ph.D. in 1923, the new Dr. Wanless was invited to join the staff of the University of Illinois Department of Geology as Instructor, at a salary of $1800. He was promoted to the rank of Associate in 1925, a rank that existed at that time between Instructor and Assistant Professor. He became Assistant Professor in 1929, Associate Professor in 1937, and Professor in 1945. He was Acting Head of the Department in the academic year 1946-1947. He became Professor Emeritus in 1967, after 44 years of active service.

When Dr. Wanless came to Illinois, he participated in the large beginning courses in physical geology and historical geology, and for many years taught the course in geology for students in the College of Agriculture, with great success. He also taught vertebrate paleontology in the early years. Soon after he came to Illinois, he began to teach a course in field geology and in geological maps, and was very successful in imparting his own meticulous field methods to many generations of students. When air photos became generally available in the 1930s, Professor Wanless was in the forefront in developing the use of these for geological purposes. As an expert photographer himself, he understood not only the benefits, but the limitations of the method.

As his earlier interests were in sedimentation and sedimentology, it was natural that he began to teach courses in sedimentation and sedimentary petrology and continued the sedimentation part throughout most of his academic career. He divided the work between the theoretical classroom instruction in sedimentation and the laboratory work in sedimentary petrology. Many field trips to local and distant localities were included, and his students learned from actual experience to collect material for analysis in the laboratory.

Graduate students soon sought to work under his direction and, especially after World War II, his office, library, and laboratories always had several students working throughout the day and far into the night. More than 128 students were awarded master's and doctor's degrees under his direction. Many of these men are now in positions of importance in industry, government, and universities, both on this continent and in Europe and Asia.

Soon after he came to Illinois he began work with the Illinois State Geological Survey. His work was first that of quadrangle mapping, but he soon found in the Pennsylvanian rocks variations of the same kinds with which he was so familiar in the Oligocene beds of South Dakota, and he was to become the leading authority on conditions of Pennsylvanian sedimentation in the Illinois Basin. He and J. Marvin Weller, then paleontologist on the Illinois Survey, collaborated on the classic 1932 paper on cyclic sedimentation which established the term "cyclothem" in geological literature. The importance of his work in cyclic sedimentation is well expressed in a letter from Dr. K. C. Dunham, F.R.S., Director of the Institute of Geological Sciences:

> I first met Harold at the International Congress in London in 1948, where we were both taking part in a symposium on Rhythm in Sedimentation. It was thrilling to do so, for he was joint author, with J. M. Weller, of the term *cyclothem*, so aptly descriptive of the rhythmic unit characteristic of Pennsylvanian sediments from West Virginia through Illinois to Kansas. The term could equally be applied, it seemed to me, to the Visean and Namurian sediments first described by Westgarth Forster as the Lead Measures in northern England; and it has become an accepted part of descriptive terminology in this country also. His brilliant studies of the varying emphasis and nature of the cyclothems when viewed on a continent-wide basis have greatly illuminated an important branch of sedimentology, giving perspective to processes which were of great extent in late Paleozoic times throughout much of what is now the northern hemisphere. They also served to provoke and crystallise thought about the factors controlling this widespread and remarkable form of accumulation.
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> Then later, as a visiting professor at the University of Illinois, I had the great pleasure of being for a short spell his colleague. I pay tribute to his mastery as a teacher, both in his quiet talks with his students in his office, and with a small party of graduates in the field, when he would pursue with untiring zeal the Carboniferous beds from Champaign to the Mississippi itself.

Professor Wanless found in work in western Illinois that the Paleozoic sedimentary rocks were overlain by varying thicknesses of Pleistocene deposits. He soon began to sort these out, as well as to work on the bedrock geology. He was able to establish the existence of Nebraskan deposits in Illinois and to differentiate western Kansan from eastern Illinoian drift. He also contributed to establishing a stratigraphic sequence of Kansan, Illinoian, and Wisconsinan deposits. This work was a distinct contribution to Pleistocene stratigraphy, history, and sedimentation. As a stratigrapher he was keenly aware of the differences in lithologic units and if he had concentrated in this field he would soon have become known as an outstanding authority on Pleistocene stratigraphy, sedimentation, and sedimentary petrology.

He was able to demonstrate to those graduate students fortunate enough to be admitted to his field course, Geology of the Upper Mississippi Valley, the whole sequence from the Precambrian rocks of southern Wisconsin to the Mesozoic and Tertiary rocks in extreme southern Illinois. The Pleistocene material covering the bedrock was also demonstrated, not as an annoying concealment of the bedrock, but as a very important entity of its own and its morphology and stratigraphy were carefully pointed out.

Professor Wanless's knowledge of areal geology came from his many travels through the United States. His spring field course in southern Illinois and northern Kentucky demonstrated the relations of rocks and the structures there to the topography. His field course for beginning students to Tennessee and North Carolina was based on his intimate knowledge of all the rocks which were seen along the route to the Great Smoky Mountain National Park and the return by a different route.

In the summers of 1945 and 1947 he held an appointment as Professor at the University of Michigan and took part in the Summer Field Camp of that university in Wyoming. Some of the Illinois students who accompanied him to this camp collected material for graduate theses under his direction. He was very anxious to see a University of Illinois field camp established and was the first director of the Illinois Field Camp at Fort Lewis, Colorado, near Durango, in 1949, and continued in this capacity through 1950 and 1951.

Professor Wanless used sabbatical leaves in 1938-1939, 1948-1949, 1958-1959, and 1965 to enlarge his studies of Pennsylvanian strata and of cyclic sediments throughout North America, in Australia, South Africa, and Europe (especially Holland and Great Britain). His work was supported by a succession of grants from The Geological Society of America, the National Science Foundation and the University of Illinois Research Board. (His original requests were usually so modest and the proposed budgets so frugal that it was generally necessary to revise them in the department office before final transmittal, in order to bring them in line with the probable real cost of the project!) His reports to the University on his activities during a leave were fully documented and detailed meticulously the successful accomplishment of his plans.

As Professor Wanless's work in the Pennsylvanian rocks developed over a wider and wider area, and as more and more subsurface information, as well as outcrop information, became available, he and his students were able to show the wide extent of many of the members of the various formations and to trace them through alluvial, paludal, and marine facies. They began construction of a series, eventually to include scores, of paleogeographic maps of almost separate instants in Pennsylvanian time. These maps depict surfaces, channels, and materials, and show why swamp deposits, which became coal, were localized in the places where they were found. It was possible to show why the coal occurred where it did and why certain filled channels existed which contained fluids, some of which were hydrocarbons. Some of the maps were precise enough to show pointbars and even natural levees along channels. The relation of this work to the beginning paleotectonic map program of the U.S. Geological Survey, and ultimate connection of Wanless with that work, is described in the following communication from E. D. McKee:

In the early 1950s the U. S. Geological Survey was developing plans for a new project to be known as the Paleotectonic Map program. This program involved the systematic gathering and recording of all available data on the history of each geologic system and the preparation of a series of isopach, lithofacies, environmental, and other maps to portray these data. It constituted a synthesis for the entire United States and for each of the principal subdivisions of geologic time. Also in the early 1950's, but quite independently, Harold Wanless, of the University of Illinois, had become deeply engrossed in the study of environmental and tectonic features of the Pennsylvanian System of the United States and was actively engaged in the preparation of a series of maps illustrating results of his investigations.

At the annual meeting of the Geological Society of America in 1953, I had the privilege of seeing some of Harold Wanless' newly prepared maps of the Pennsylvanian and of hearing him discuss his plans and progress in developing others. The maps were novel and stimulating and indicated many new and little-recognized features. As I was at that time about to accept a post in Denver with the U. S. Geological Survey to develop the newly established Paleotectonic Map program, I lost no time in arranging a meeting with Wanless in order to discuss problems of mutual interest and benefit in the field of paleotectonics.

During our conference at the Geological Society meeting, it soon became apparent that because of similar and overlapping interests in programs, it would be desirable to combine forces on the Pennsylvanian part of the Geological Survey project. Harold Wanless therefore became a part-time geologist of the Survey and began a work program that was to last until his death in 1970 and that was to constitute a major job in the compilation of data and in analyzing the history of the Pennsylvanian System. By 1970 he had virtually completed his part of the study - covering all rocks of this age east of the Mississippi, plus Iowa and Missouri - and had prepared 6 isopach maps, 5 lithofacies maps, a paleogeologic map, a suprageologic map, numerous cross-sections, and interpretive maps. The amount of detailed work and painstaking analysis that went into the study of this vast region during those 17 years was tremendous but is a real monument and tribute to the man who followed it through to completion.

In later years Professor Wanless's interest in photo-geology turned to the study of changes in coastlines, as shown by airphotos taken over a period of years. These changes of coastal, deltaic, and lagoonal features helped explain some of the features revealed by his outcrop and subsurface studies of Pennsylvanian rocks. The study of modern shorelines led to cooperation with Dr. Francis Shepard, his former associate at the University of Illinois. During 1968, Professor Wanless spent six months at the Scripps Institution of Oceanography working with Dr. Shepard on a book describing the coasts of the United States, including Alaska and Hawaii. He was in California again from February to October, 1969, during which time the book, *Our Changing Coastlines*, was completed and sent to the publishers, McGraw-Hill. The book which appeared in May, 1971, deals with coastal descriptions, origin of features, and particularly the changes in the evolving coastlines.

Dr. Wanless was elected to Fellowship in The Geological Society of America in 1931. He was also a member of American Association of Petroleum Geologists, Paleontological Society, American Geophysical Union, American Society of Photogrammetry, Association of Geology Teachers, American Association for the Advancement of Science, Illinois State Academy of Science (President 1937-1938), Illinois Geological Society, American Ornithological Society, Wilson Ornithological Club, Sigma Xi (President, Illinois Chapter, 1964-1965), Champaign County Audubon Club (President, 1942), Urbana Exchange Club (President, 1953), and Princeton Club of Chicago. He was a long-time member of the Society of Economic Paleontologists and Mineralogists and was elected to honorary membership in 1970. The award was presented posthumously to his son at the Calgary meeting on June 23, 1970. However, as the officers knew of his serious illness, the Certificate of Award was sent to him early in May and was proudly displayed by him to the many visitors to his hospital room.

Professor Wanless was often invited to give lectures at universities and before professional groups, not only in the United States and Canada, but also overseas in Australia, South Africa, Holland, Great Britain, and elsewhere. He was American Association of Petroleum Geologists Distinguished Lecturer in 1958, and American Geological Institute Visiting Scientist in 1959, 1961, and 1966. His lectures were models of organization and were accompanied by expertly prepared illustrations. He was one of the very early users of color photographs to record and illustrate features he was discussing.

Professor Wanless's personal library, which filled two large rooms, included bound volumes of the standard journals, usually from the first volume. Government survey publications and monographs on coal-containing strata came to him from all over the world. Because of his world-wide correspondence, his reprint collection, meticulously catalogued and cross-indexed, was truly enormous. He encouraged his students, both undergraduate as well as graduate, to use his library and reference cards freely, which contributed to a continuously close association with his students. Rarely has a man been so loved by his students and associates. He was utterly selfless in his consideration for others and in sometimes going not only the "second mile," but the third and fourth for a student with some personal or scientific problem. His faith and confidence almost always paid off and more than one "problem-child" is now a successful geologist, who may not fully realize how he was snatched from the brink of disaster by Professor Wanless. Some of his students knew of his international reputation and to them, especially foreign students, it was almost shocking to find that the famous man was so considerate. Others less experienced geologically, who knew him first as a kind and helpful man, were hardput to realize, and realize they did eventually, that he was also a great scholar.

It is pleasing to record that some feeling of this admiration and affection was exhibited to Harold Wanless in his lifetime. In 1949, in honor of his 25th anniversary as a member of the Department of Geology at Illinois, he was presented with a purse and a volume of letters and greetings from 153 of his former students. At the 40th

anniversary of his service at Illinois in 1963, alumni, students and staff joined in a quiet, intimate dinner to celebrate this anniversary. At this time so many letters were received from former students that it required two bound volumes to contain them when they were presented to him. At the dinner he was presented with a beautifully engrossed scroll which included this statement:

> Geologists will be forever indebted to you for your eminent and voluminous contribution to your science. These intellectual benefactions are epitomized for us by your original and provocative investigation of cyclothemic sedimentation and by your enormous labor of love in unraveling the incredibly complex mysteries of the paleogeography and paleocology of the Pennsylvanian System. Your close associates remember with gratitude your boundless friendship, benevolent counsel, unpretentious humanity, and selfless service to the University and community. They are grateful and proud for having had an opportunity to have had some share in the life of you and your devoted wife, Grace.

At his retirement in 1967, the alumni presented him with a bronze plaque of appreciation and told him that funds had been collected for a "Wanless Room" and for a portrait. In the remodeling of the Natural History Building for the Geology Department a large room was to be especially fitted and furnished in a very "non-classroom" style, with kitchen attached, as a lounge and conference room for students and staff. Although he was not able to attend the dedication on November 8, 1969, and the unveiling of the portrait (reproduced here), it is a matter of comfort that he was able to see the completed room a few months before he died.

Scores of alumni have written of their personal experience with Professor Wanless in the field, in the laboratory, and elsewhere. Many speak of the part-time student jobs he secured for them and for his concern, which extended to providing personal financial assistance. His associates realized he was a very generous man, but the full extent of his generosity only has become apparent after his death, as many former students have commented upon it with personal examples. Brief excerpts from only a few of the letters are given to show the differing aspects of his association with students and former colleagues and to contribute a picture of this many-sided teacher, scholar, and citizen:

> He talked to students as if the student was contributing something to the conversation that was worth hearing . . . . Down inside he was a very tough and strong man I think, but his manners were so considerate and gracious that one seldom realized the extent of that part of his nature.

> He always had time to discuss personal or geological matters with students and to give his suggestions and criticisms, no matter how busy he was . . . . He was one of the most unselfish individuals I have ever known.

The association with Dr. Wanless was responsible for many of the students choosing to major in geology. There are many geologists in this country today who were committed to the profession by their early association with Dr. Wanless. It will be a long time before another of his equal will pass this way again.

Just after the War, as a student who arrived at midyear I felt I faced a huge and impersonal new world . . . . Dr. Wanless's first few statements [that year he was acting head of the Geology Department] put me completely at ease, and from his memory, not from the files, he discussed an orderly summary of my background, a list of the geology courses I had completed, and gave a straightforward recommendation as to the work I should plan to take . . . . I sensed right then a man who would have time for me no matter what other pressures were on his mind.

As a new student in a different country, he immediately proceeded to make me feel at home by personally introducing me to other students and other members of the department. He made sure also, that my wife and I met people outside the university, many of whom we still count as friends.

I was met at the Champaign airport by Professor Wanless who drove me to my lodgings and helped me with my baggage. This was quite unexpected because in my own country the student is supposed to serve his teacher in all possible ways . . . . I can hardly believe it if any professor in a Chinese university would do the same to a student as Dr. Wanless did for me. This is what I came to admire in American education and in the great personality of Dr. Wanless . . . . He was a friendly, generous, and kind scholar.

By 1937, Section E of the American Association for the Advancement of Science had been languishing with very low attendance. At the request of the officers Wanless organized a Symposium for the 1937 Indianapolis meeting on "Oil in the Pennsylvanian of the Eastern Interior Basin." The papers offered a sweep of Pennsylvanian stratigraphy, structure, and paleontology that attracted the largest audience section we had known in years . . . . That Symposium started the Section on Geology on the upgrade. It was a notable contribution, not only to the subject matter, but also to an organization that needed help.

His most impressive traits were his boundless energy and enthusiasm and his desire to have his students see as clearly as he himself saw . . . . He was a master of field work and his powers of observation and deduction were legendary . . . . When I last saw him in 1968, as a speaker before a large group of Illinois graduates in Louisiana, although he was under medical care for the malignancy which later claimed his life, he was the very picture of silver-haired vigor and pink-cheeked enthusiasm.

Harold Wanless's dedication to geology was considered by many to make him a driving hazard—especially in the day of superhighways. Anyone who had ridden

with him knows that he enjoyed pointing out geologic features, including details of an outcrop, even though he was driving past them at 60 mph. Graduate students and associates used a variety of strategems to supply Dr. Wanless with such a mass of maps to follow that it became necessary for someone else to drive . . . . In order to conserve student resources he picked low-priced hotels, the quality of which became legendary throughout the years and provided memories and anecdotes still shared by many students.

Dr. Wanless was at his best as a teacher in the field . . . . His field course, "The Geology of Upper Mississippi Valley" was his best. He literally knew every outcrop in the Upper Mississippi Valley from personal experience. He challenged the students in the field . . . to make their own interpretation from their own observations . . . . Of my courses in geology this was undoubtedly one of the most rewarding.

The impact of the Wanless method of teaching flowed from making lucid the well-established subject matter, but the varied views of the major workers in each field were cited and expounded so that a balanced feel for the unresolved was imparted. His illustrative materials must represent the best in existence.

Many students and associates have commented on his prodigious memory:

He had total recall and did not have to refer to notes to recall the smallest detail of field sections, which he had seen at any place in the world.

His memory was probably photographic and he could reproduce from memory whole pages of text and of notes, and even reproduce large portions of topographic maps from memory.

He remembered the names of all of his students from the earliest years–their names, families, and interests. He was most helpful in finding jobs for the students.

For many years, at the annual meeting of The Geological Society and of the American Association of Petroleum Geologists, Illinois alumni met for a luncheon, sometimes with attendance of as many as 100 people. Harold would ask each graduate to stand and would promptly mention his business affiliation, where he was located, and make a few pertinent remarks about his family. We marveled at his tremendous memory and naturally it enhanced our affection for him.

I remember him particularly for his tremendous ability to recall information in journals, seeming to be able to cite author, title, page number, and paragraph at a moment's notice . . . . He somehow found time to go through in detail each manuscript submitted by a student, making constructive suggestions and comments which materially improved his presentation . . . . His method of teaching was to pose a question that made you think, rather than asking

> questions which required parroting back answers . . . . His interests were much broader than geology, for one 6 a.m. I met him unexpectedly on a woodland trail bird-watching. He knew his birds and flora nearly as well as he knew rocks . . . .
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> From my experience in the field course "Geology of the Upper Mississippi Valley," I began to appreciate the man behind the fine reputation . . . . He had almost total recall of detailed geologic characteristics of the various outcrops visited throughout the entire upper Mississippi Valley. In spite of the whirlwind of activities, there was always time to answer over again the many questions posed by his sometimes not-so-apt students.

While a student at Princeton, Harold Wanless was a member of the Gateway Club, where the Rogers brothers of Philadelphia were fellow members. Through them he met their sister, Miss Grace Rogers. This acquaintanceship eventually resulted in their marriage on August 7, 1926. Mrs. Wanless accompanied her husband on many of his travels and participated in some of his field work. Later, their son, Harold Rogers Wanless, who was born in 1942, accompanied his parents on their travels and to the Illinois Summer Field Station; he learned to recognize rocks, minerals, and fossils along with the letters of the alphabet. It was only natural for their son to engage in geology from his earliest years, and later to apply his great ability as a swimmer and diver to research in marine geology.

A slowly developing malignancy, first discovered in 1964, was kept under control by medication and a series of operations so that Professor Wanless continued his teaching until retirement in 1967; he then continued his research and writing at an even increased pace until early 1970. Even after he entered the hospital, he continued to revise manuscripts and correct proofs until a few days before his death on June 3, 1970.

Thousands of students knew Professor Wanless as an outstanding teacher and hundreds of "his own" students in geology testify to his influence on their personal lives and professional careers. His scholarship was recognized in North America and overseas through honors and appointments. Above all he was a man who was gentle, modest, infinitely patient, scrupulously honest, a man of dedication and transparent integrity. His scientific and personal influence will persist through many generations, as his students in turn pass on these attitudes to their students and associates.

In preparing this memorial I have been aided by information from Mrs. Wanless and from many alumni who are former students of Professor Wanless. H. B. Willman and C. A. Chapman were helpful in providing data and in suggesting certain improvements in organization and expression. Harold Rogers Wanless has helped in the preparation of the Bibliography. A great deal of material which could only be summarized here, including scores of letters from alumni, will be deposited in the University of Illinois Archives.

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