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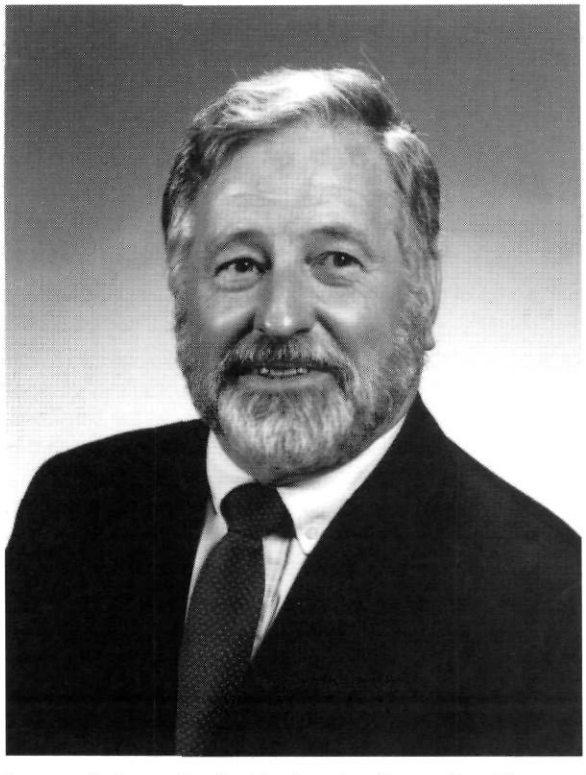
The 1997 W.A. Johnston Medallist Nathaniel W. Rutter

CANQUA's highest award is the W.A. Johnston medal, which is given for professional excellence in Quaternary research. The medal honours Canadian geologist William Albert Johnston who investigated numerous Quaternary research topics, including the surficial geology in the Ottawa-Georgian Bay area, the glacial history of the Great Lakes area, the Champlain Sea transgression, glacial Lake Agassiz, and placer gold deposits in the Fraser River. As a prolific writer, Johnston epitomized the early Quaternary geologists in Canada,

Tonight, I have a very pleasurable task in presenting to the CANQUA membership the 1997 Johnston Medallist, Professor Nathaniel Westlund Rutter. Undoubtedly, Nat fulfills the criteria to be a Johnston medallist well, joining previous winners, Vic Prest, Aleksis Dreimanis, Jaan Terasmae, William Mathews, Ross Mackay, Paul Karrow, and John Clague. To most of you, I am sure, Nat needs no introduction.

He has been CANQUA Vice President, a long time member of CNC-INQUA, member and chairman of CNC-IGCP and member of the Research Committee of the Canadian Global Change Program, an AMQUA Councilor, a Board member with the Geotechnical Society of Edmonton, GSA's Quaternary Geology and Geomorphology Division, the Canadian Circumpolar Institute, the Yoho-Burgess Shale Research Foundation, Scientific Steering Committee on past global changes (IGBP), and the UNESCO-IUGS Scientific Board. He served as President of the Edmonton Geology Society and LOC for the 1987 INQUA Congress in Ottawa, and as Chair of the NSERC EES Committee, the INQUA Committee on Global Change, and ICGP Project 415, as well as the INQUA President. Perhaps there, he made his biggest mark by enabling Canada to show the world its world-class Quaternary scientific research. Partly, he accomplished this through the excellent INQUA congress in Ottawa that included some great fieldtrips and scientific sessions highlighting Canadian research. This is not to say that Nat did everything for the 1987 congress, far from it. One of Nat's gift is the ability to galvanize people to work to accomplish a goal such as that meeting. In his position as chair, he certainly assembled a great group of people, including several of his graduate students who just could not say no to him.



Speaking of graduate students, Nat has seemingly had thousands over the years. I suspect that he has trained more people to work on Quaternary problems than any other person ever in Canada. To date he has trained some 13 Ph.D.'s, 20 M.Sc.'s, with another 8 in the wings, and numerous undergraduates in his various courses. He has had several post-doctoral fellows to work for him over the years, including Julie-Brigham Grette, now a professor at University of Massachusetts in Amherst. His Ph.D. students have or currently are professors in several universities, such as Norm Catto at Memorial University, Brent Ward at Simon Fraser University, Jiri Chlachula in Masaryk University in Brnø (Czech Republic), Doug Schnurrenberger at San Juan College, New Mexico, and myself at Queen's College in New York City. Several more of his students have worked or are currently working in surveys, including Peter Bobrowsky, Vic Levson and Dan Meldrum in British Columbia, Dave Liverman in Newfoundland, the late Dave Proudfoot in Alberta and Newfoundland, Lawrence Andriashek in Alberta, Ken Steele, Dan Kerr and myself in Ontario, Charlotte Mugeot in Alberta and the Yukon. Steve Chatwin and Tim Giles are with BC Forestry. Several others work as consultants, some with their own companies.

In fact, one is hard pressed to find a province in Canada where Nat or one of his students have not worked. Nat also has had or currently has active research programs in China, Argentina, France, and Russia. In the animo acid lab that he founded at University of Alberta with Bob Crawford from the Chemistry Department, he analyzed samples from even more places. In addition to shells and bones, Nat was the first to develop the method for wood and soil analysis, which he then applied to various sites. I remember Nat had a map in his office with all the places that he had visited or from where his lab's samples had come. It was very hard to see the land or the coastal regions on that map for all the spots he had worked. His students and PFD's following in great Rutterian traditions, now work on sites from all over the world, including every continent on the planet, and fast approaching more that 50 nations.

Nat, however, has not just confined himself to teaching geology students. For several years, he ran short courses in Quaternary for the mining industry in Alberta and for the federal government types. His graduate seminar in current "hot" Quaternary topics was always open to anyone interested whether they could register in it or not. In the 70's, he and Charlie Schweger began to jointly offer a geology/anthropology course on the Quaternary. Together they attracted graduate students to a joint archaeology/Quaternary science program. He shared graduate students with the Chemistry and Anthropology departments, and frequently taught students from Geography, Forestry, Civil Engineering, Mining Engineering, and Biology.

More recently, he has been involved in launching and editing the journal *Quaternary International*, and is finally getting out the second edition of the Quaternary dating methods book, now called *Dating Methods for Quaternary Deposits*, GAC's *GEOtext 2*. He also served as an associate editor for Geosience Canada, *Arctic*, GSA's DNAG volume on geomorphology, on the editorial board of *Quaternary Research*, *Quaternary Science Reviews*, and a geological consultant with the *New Canadian Encyclopedia* and the *Edmonton Journal*.

While doing all this, Nat had time to author 239 papers, including more than 20 maps and 12 field trip guidebooks. Reading like a description detailing the breadth of the Quaternary sciences, his work has included papers discussing glacial dynamics, glacial geomorphology, surficial geology, Quaternary paleontology and micropaleontology, pedology, Quaternary palynology, archaeology, amino acid racemization dating and analyses, facies analyses of Quaternary sediment, magnetostratigraphy, till and paleosol geochemistry, bone geochemistry and taphonomy, Quaternary paleoclimates, Canadian and international scientific policy.

Nat began his career as a gleam in his mother's eye in Omaha, Nebraska, then eventually attended Tufts University in Boston for a B.Sc. in Geology (1955). In 1954, he had worked as a summer field assistant on "ice, snow and permafrost", in Greenland presaging things to come. Upon graduation from Tufts, Nat then worked for Venezualian Atlantic refining in Venezuela, Trinidad, Columbia, and Turkey. In 1962, he finished a M.Sc. in Geology, studying the Gulkana Glacier, quickly followed by a Ph.D. at University of Alberta, analyzing glacial history in the Banff area. In good Canadian tradition, Nat then worked for the Geological Survey of Canada, based first in Calgary and later, in Ottawa, where he authored numerous field reports and compiled many maps detailing the surficial geology throughout Canada. In 1975, he joined the University of Alberta as an Associate Professor. In 1977, he became a full Professor, and in 1980, the departmental chair. He holds a Killam Professorship and Senior Fellowship at Wissenschafskolleg zü Berlin. In 1997, Nat was made a University Professor at University of Alberta. He is also fellow of the Royal Society of Canada and a Honourary Professor of the Chinese Academy of Sciences.

CANQUA members, friends, I present you Nat Rutter, CANQUA's 1997 Johnston Medallist.

Bonnie A.B. Blackwell
City University of New York

RESPONSE BY NATHANIEL W. RUTTER

It is indeed a pleasure and honor to be the recipient of the W.A. Johnston Medal. When I consider the past winners, I am all the more gratified. I know them all, and am well aware of the outstanding contributions they have made to our science.

In my response, I would like to trace a little of my history together with some of the major changes or events in Quaternary Science in Canada that paralleled my career.

When I was finishing my Ph.D. thesis in the basement of the Agriculture Building at the University of Alberta, I was visited by John Fyles of the Geological Survey of Canada. He had been visiting Ph.D. students across Canada in view of hiring several new Quaternary scientists. He told one of my fellow students, Murray Roed, that he was looking for someone who had experience in mountain glaciation. Murray said "look in the basement". This was the beginning of my career with the G.S.C. This was the mid-sixties and good time for us — the Survey was expanding and the universities were hiring. But probably the single most important event that took place in Canada during this time as far as Quaternarists were concerned, was the elevation of the Pleistocene Geology Section to divisional status within the Geological Survey. The Pleistocene Geology Section was traditionally relatively small and commonly attached to a Division that needed more bodies in order to have divisions of equal size. It was the vision and persuasiveness of John Fyles that made this change happen. We now had equal footing with the other major geological groups within the Survey. Needless to say, this group (now called the Terrain Sciences Division) has been a major force in many aspects of the development of Quaternary science in Canada ever since.

The expansion in the late sixties set the stage for the largest surficial geology mapping program in the Survey's history. This was brought about by the government's need for in-house terrain evaluation for large parts of northern Canada in conjunction with proposed pipelines. They assigned the lower MacKenzie Valley to Vern Rampton, the middle valley to Owen Hughes, and the upper MacKenzie Valley to me. I was used to working with three or four people in the field; all of a sudden I had twenty-nine! In addition to surficial mapping, various activities such as soil mapping and forest inventory were carried out. We were expected to complete on the order of six 1/250,000 map sheets in a summer (normally, one was completed over three years!). I'll never forget when Owen Hughes asked "Are you sure they want surficial geology maps and not superficial geology maps?"

After this project, I was transferred to Ottawa from Calgary, but soon left the Survey for the National Energy Board as an Environmental Advisor.

In 1975 I returned west to my old school, the University of Alberta, taking the position of John Westgate, who moved on to Toronto. This was my opportunity to stay in Quaternary research, my real interest, having moved away from it when I was at the National Energy Board. I don't mind some administrative duties, but not 100% of the time.

Joining the staff of the Geology Department gave me the opportunity to practise the multidisciplinary approach in solving geological problems, something I have always believed in. One of the first things I did was start an Amino Acid Dating Laboratory. For fieldwork, I joined Charlie Schweger, Owen Hughes, Dick Morlan, Dick Harington and John Matthews on the Old Crow, Yukon project. This was a combined archeology and Quaternary geology program with the objective of establishing when humans occupied this area. My assignment was to test the reliability of amino acid dating of wood, which was abundant in Old Crow sediments. This project was particularly rewarding and enjoyable. We really had a good time — our major trouble was trying to write papers by committee.

One thing I hadn't realized when I joined the University of Alberta was the importance of graduate students in my career. Certainly they may aid in my research and help obtain more funding, but these aspects are really minor. My greatest pleasure has been the interaction, both individually and as a group, watching my grad students enthusiastically conceptualizing, developing, and carrying out their research, finishing their theses (some taking longer than others) and watching their careers develop. They have become colleagues, but more importantly, good friends. I'm not sure whether this is the place or not, but I would like to mention Dave Proudfoot, my first Ph.D. student, who recently passed away at much too young an age. Dave was everything one would want in a graduate student — smart, keen, congenial, possessing unlimited energy and the ability to carry out a research project with little supervision. In the late seventies and early eighties, a great deal of progress was being made in till genesis, largely brought about by the INQUA Commission led by Alexis Dreimanis. This excited Dave, who decided to re-examine the well-known Medicine Hat sections where Archie Stalker had developed a glacial stratigraphy, based mainly on field observations. Dave's idea was to examine till facies and properties in order to decipher the mode of deposition and determine whether till units were deposited by the same glacial event or not. Dave's careful, detailed, innovative work remains a milestone and a legacy to this approach to till genesis ("A Study of Quaternary Sediments, S.E. Alberta", Ph.D. Thesis, University of Alberta). We'll miss Dave very much.

During the late seventies and early eighties, Quaternary science moved forward at a relatively stable pace. People were becoming more and more concerned with protecting the environment which, of course, was right up our alley. At about the same time, The National Research Council was questioning if the Associate Committee for Quaternary Research was still needed to represent Quaternary interests, in view of the interest by some in forming a Canadian Quaternary Association. In fact, the N.R.C. essentially told us to dissolve our Committee, which we did. To fill the void, the formation of a Quaternary association was accelerated. Many questioned if a truly Canadian Quaternary Association was needed, considering that most Canadian Quaternarists were members of the American Quaternary Association. Another question was would a Canadian association be supported. Eventually the nationalists won out, and here we are.

In the late eighties an important event took place that enhanced Quaternary science even further. This was the worldwide effort in understanding global change — a twenty year project sponsored by International Council of Scientific Unions (ICSU) and called the International Geosphere-Biosphere Programme (IGBP). One core project of this program is Past Global Changes. Although dominated by climate modellers, this project has been a windfall for Quaternarists. The modellers are realizing more and more that they need quality climate proxy data, including transfer functions, in order to test their models. This has given us the opportunity to participate and to integrate our work into large scale projects like "Climate System History and Dynamics", a Canadian effort in past global changes.

Although my graduate students continue to work mainly on Canadian problems, the Global Change Program has led me almost totally into the international scene. For the past ten years, I have been investigating Quaternary loess-paleosol sections of north-central China, with my Chinese colleagues Liu Tungsheng and Ding Zhongli. This has turned out to be the most rewarding science that I have ever undertaken. Where else can you experience near complete terrestrial records back to 2.5 Ma, determine the Quaternary environment at resolutions of 200-300 yrs., and identify the causes of climate change?

Now that the Global Change Program is in full swing and the public continues to be concerned with the environment, it is my opinion that the state of Quaternary science has never been better. People who would never give the time of day to our science are now enthusiastically engaged in it. For example, isotope geochemists working on paleoclimates, and economic geologists determining glacial dispersal patterns in diamond exploration. Job markets may shift, say from government to the private sector, but the jobs will be there.

Once again, I thank CANQUA for this important award, but also my wife, Marie, and sons Todd and Chris, for providing an atmosphere that enabled me to pursue, without hindrance, my passion.

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