



# *Cold Trail*

**Newsletter of the Cryosphere Specialty Group  
Association of American Geographers**

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**Issue 6, March 2009**

**Del Levia, Editor**

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## **Officers and Board of Directors**

### **Past Chairs**

Ellen Mosley-Thompson (2001-2003)  
Department of Geography and  
Byrd Polar Research Center  
Ohio State University

Frederick E. Nelson (2003-2005)  
Department of Geography  
University of Delaware

Allan Frei (2005-2007)  
Department of Geography  
Hunter College

### **Current Officers**

Del Levia, Chair  
Department of Geography  
University of Delaware  
Term ends March 2009  
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After Berkeley I went to teach in Atlanta for a few years before going to Baton Rouge to work on a PhD in geography with **Fred Kniffen** and **Richard Russell**. During the first semester Kniffen suggested I apply for the dissertation research award given once a year by the Arctic, Desert, Tropic Information Center. It just so happened that **John Vann** was at LSU as an instructor and he had done some work for the ADTIC in compiling the first glossary of arctic terms. I am sure it was conversations with him that helped me decide to aim at the Arctic rather than the desert or the tropics. Thus I proposed to do a study of the use of snow and ice along the DEW Line which was under construction at the time. So we spent a year in Montgomery, AL with ADTIC working on a dissertation. The project involved not only library research but also allowed for field work. In preparation for the trip I spent two weeks in Hanover, NH with **Vilhjalmur Stefansson** who was, with his library, at Dartmouth College. I had several meetings with him; one of the lengthy sessions was taped. The trip to the DEW Line was in April 1957. The first indication of what it might be like came from the train ride across snow-covered Quebec to Mon Joli, the Air Force's jumping off point for the north. After being issued a set of Air Force arctic gear, I flew to Frobisher Bay (now Iqaluit) where several examples of the use of snow and ice became apparent: e.g., snow blocks around the base of the local hospital and oil drums with icy gravel to hold power poles, and, oh yes, a snow house for tourist picture taking.

The trip across the DEW Line began at DYE overlooking a fjord on Baffin Island and was done mainly by aircraft from one station to the next.

Although I did not stop at all of the stations, the month provided many examples of arctic problems associated with housing, water supply, transportation, communication, and livelihood among not only the DEW Line construction crews but also the Inuit. At Pelly Bay (about half way across), the Jesuit Priest (**Father Van de Velde**) arranged for a dog-sled trip between two of the DEW Line stations. It was with a 17-year old Inuit (named **Iwo**, who spoke no English) and was probably the most intense two days of education (not to mention physical exertion) I have ever had. The DEW Line trip ended in Barrow (BAR) where I met **Max Brewer** who has had a major impact on my career ever since. While flying over the Mackenzie Delta (remembering my Louisiana training under Richard Russell), I thought about the possibility of doing deltaic work there. However, it took so long to fly over the delta that it did not take me long to put that notion out of my mind. Of course, I should add that, at the time I didn't know about **Ross Mackay**. After leaving the Mackenzie delta, we crossed several other rivers and deltas (all small) along the Canadian and Alaskan coastline. And then there was the Colville---half way across it, one could look down and see the whole thing. It was a clear day and the distributaries, bars and mudflats, dunes and lakes were all in plain view, and the thousands of ice-wedge polygons literally sparkled. Anyway, in Barrow I saw **John Reed** and asked him what he thought about taking on the Colville delta as a research project and as I recall he said "go for it." I can almost say "and the rest is history" but that is not quite true for there are 52 additional years involved. Well that year led to my dissertation which was

published by the ADTIC as “Man in the Arctic.”

Some time during 1958, I was asked to join the faculty at LSU and arrangements were made for me to start the next year. However, an opportunity arose for a one-year position with the Geography Branch at ONR and Professor Russell thought it would be a good opportunity for me to become familiar with the organization that founded and supported Coastal Studies Institute and that I should take it. So, as I like to say, “I had a leave of absence for my first year as a faculty member at LSU”, of course, then I hasten to add that, unfortunately, it did not count toward my retirement. The Academic year of 1959-60 was spent in Washington D.C. with ONR. As luck would have it, **Evelyn Pruitt** who was in charge of the Geography Program, assigned me to **Max Britton** who ran the Arctic portion of the Branch. That year gave me the opportunity to work with Max Britton and **Louis Quam** in Washington D.C. and with Max Brewer at The Arctic Research Laboratory (later the Naval Arctic Research Laboratory or NARL) as well as **Ronald McGregor**, **John Schindler** and **Kenneth Toovak**. Some of the activities included the establishment of the Arctic Research Laboratory Ice Stations (ARLIS), monitoring research proposals, being involved in arctic logistics, and even acquiring an airplane to be used for air drops.

In July, before taking up the position at LSU, ONR paid my way to the International Geographical Congress in Sweden. At that meeting I met **Åke Sundborg** and **Lennart Arnborg**, hydrologists and geomorphologists at the University of Uppsala, Sweden. Arnborg joined me two years later for field work

as described below and Sundborg visited our department at LSU four times during the next 20 years.

At LSU, it was arranged that I would alternate semesters with **Wm. G. McIntire** between teaching and research, an ideal situation for both of us. During the first year I began preparations for field work on the Colville and in the summer of 1961 went to Barrow and then the Colville delta with **Morris Morgan**, who was working on an advanced degree. We were outfitted at NARL and flown over to the delta where we spent the summer in a tent at Niglik (The Wood's Camp) with **George, Nannie, Abe** and **Job Woods** all of whom were involved with our research in one way or another. Indeed, Job, who is now in his mid-70s, has worked with me for nearly 50 years, the last time in the summer of 2008. The summer was mainly one of reconnaissance with an emphasis on riverbank erosion and determining where to establish a permanent camp on the delta. We selected an area of dunes near the head of the delta called ‘Putu’ in Inupiat so we could have easy access to the main channels. During early spring of 1962 NARL cat-trained two cabins across the tundra to the dune site along with a Boston Whaler and other equipment. The rest of the equipment was brought from ARL by R4D (DC3) which landed on the river ice near what is now Nuiqsut. Then in late March, Morgan, Arnborg, Job Woods, **Johan Peippo** (a hydrologic technician from Uppsala) and I began a 7- month period of research. During that season we made river-ice surveys before breakup and collected stage, discharge, suspended load, and water chemistry data through the hydrologic year. A major achievement was the mapping of the river channels

which was done by taking more than 300 river-cross sections of the various distributaries of the delta. Subsequent to the Prudhoe Bay oil discovery in 1969, those surveys were used by the oil companies in their work in the delta over the years.

We established several locations to be used in future riverbank erosion studies, one of which happens to be the Gubik bluff area where the present-day Nuiqsut is located. The data collected during the first two seasons led to the paper that was presented at the First International Permafrost Conference at Purdue University (and published in the Proceedings). I think the main highlight of that paper is the introduction into English of the Russian concept of the thermo-erosional niche (termoerozionja niza)—as I do not read Russian I have to thank **Bohdan Plaskacz** who was teaching Russian at the time at LSU for assistance. A half-dozen other publications came from the first two seasons of field work in the Colville. It might be added that prior to the 1960s the longest item dealing with the Colville delta may well have been the few paragraphs published by Stefansson as a result of his early 20th century “wanderings” in the area.

During the rest of the 1960s several other fieldtrips were made to the delta with small groups and in 1967 a research project on the Blow River delta just to the west of McKenzie was done for The Arctic Institute of North America. Because I was leaving for a year and a half for London it fell to one of my doctoral students (the late **James McCloy**) to do the bulk of the field work which he used for his dissertation.

The Office of Naval Research has an Office in London, England where scientists are selected to spend some

time (usually 1 to 2 years) in order to Liaison with their European counterparts. I was fortunate to spend 15 months with the task of visiting and reporting on those groups around Europe doing research on coasts and on the Arctic. With virtually unlimited travel funds, I was able to visit universities, research institutes and governmental groups ranging from Norway to the Soviet Union in the north, from Morocco to Israel in the south and many of the countries in-between. Although the bulk of visits had more to do with coasts than the Arctic, there were a number of visits such as with **Alfred Jahn** in Poland, the Scott Polar Research Institute at Cambridge, the Arktisk Institut in Denmark, and the Archipelago Research Institute at Turku, Finland that were relevant. During the course of the liaison duty I wrote some 40 Scientific Notes at least eight of which directly related to things polar. Many of the contacts made around Europe have continued to be quite close down to the present time.

Upon returning to Baton Rouge in 1969, I began planning for major field seasons in 1971 and 1973. These involved 10 to 13 people and the use of helicopters. A number of graduate students received advanced degrees and at least 15 publications stemmed directly from those field seasons. Four of them were presented at the Beaufort Sea Symposium in San Francisco. Although several major projects were undertaken in those two seasons, the major one involved the determination of the discharge of the Colville River by examining the flow of fresh water beneath the sea ice at the front of the delta. By establishing sequential monitoring stations by helicopter on the sea ice, the fresh-water wedge could be

tracked by calculating variations in salinity, temperature and suspended load with depth. Another major contribution was a detailed study of the riverbank forms mainly with **William Ritchie** from Scotland.

The Naval Arctic Research Laboratory reached its 25th year in 1972 at which time an Anniversary Symposium was held in Fairbanks. I was fortunate enough to have been asked to talk about the “Morphology of the North Slope”, a paper published by the Arctic Institute of North America. Interestingly, the 50<sup>th</sup> anniversary, which was held in 1997, was attended by many of those arctic specialists who participated in 1972. As a good summary of the importance of NARL to arctic research, one should consult the volume *Fifty More Years Below Zero* edited by **David Norton** (2001).

It was 10 years between the first International Conference on Permafrost and the second which was held in Yakutsk in 1973. A large contingent of North Americans participated and for many of them it provided a first view of Siberia. Permafrost conferences have now been held ever since on a five-year basis with the latest (the 9<sup>th</sup>) being in Fairbanks in 2008. I have been fortunate to be able to participate in all nine conferences an attendance record held by only two others: Jerry Brown and **Oscar Ferrians, Jr.** Fairbanks has now hosted two of the conferences and during both, field trips included the Colville River delta. The first field guide was limited to the delta whereas the 2008 guide, edited by **Torre Jorgenson**, includes it as a major section within a coastal traverse. Incidentally, it is dedicated to **Ernest Leffingwell** to whom I owe a great debt because of his

seminal field work in the permafrost-laden coastal zone.

Although I continued to publish deltaic papers during the last half of the 1970s, there was a lull in field work. However, because of the rapid growth in the petroleum industry, gravel, which is in short supply, became all important for further development. A source previously untapped was thought to be in the talik beneath the thalweg portion of many arctic rivers. I was asked to join an endeavor to tap that source in the Colville River. The objective was to get enough gravel for building a runway and for road and foundation construction at Nuiqsut. The dredge was specially constructed so that it could be flown to the site. In 1981, I began what turned out to be a decade of work with the North Slope Borough (especially with the late **Len Nelson and Edward Itta**, the current mayor of the NSB) and with the dredge crews. We not only monitored dredge channel changes but also surveyed the tundra surface for ice wedges and active layer conditions for the areas to be impacted. The project was so successful that the same procedures were used at Wainwright, Point Lay and Atkasuk during the next several years.

Although there have been no major field seasons since the late 1980s, I have frequently made it to the North Slope and the Colville for meetings and some monitoring of my bank-erosion stations. These have resulted in a number of publications some as recent as 2008, bringing my total arctic-related publications to more than 90. I have also been fortunate in the past decade to have been asked to write some less restrictive pieces such as one about the Arctic Ocean and some on permafrost and periglacial geomorphology for engineers.



more graduate students to join the CrSG? How can we make Group membership more meaningful for graduate students? These questions are of critical importance for the future of the CrSG.

### 3. New Business

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### Treasurer's Report

As last year, I have tallied our annual budget summaries as dues, donations\* and balance going forward for the past five fiscal years (AAG fiscal year ends 31 August). Our balance on 31 August 2008 was about same as 2007 at just over \$1300, and spot on the average for the past five years. As of 09 March 2009, our current balance was \$1486, accounting for additional dues and donations received Aug 07 – Feb 09, which will be accrued to next budget year (plotted below as *Mar-09*). Some summary points:

- Our average annual income from membership dues is about \$485, and

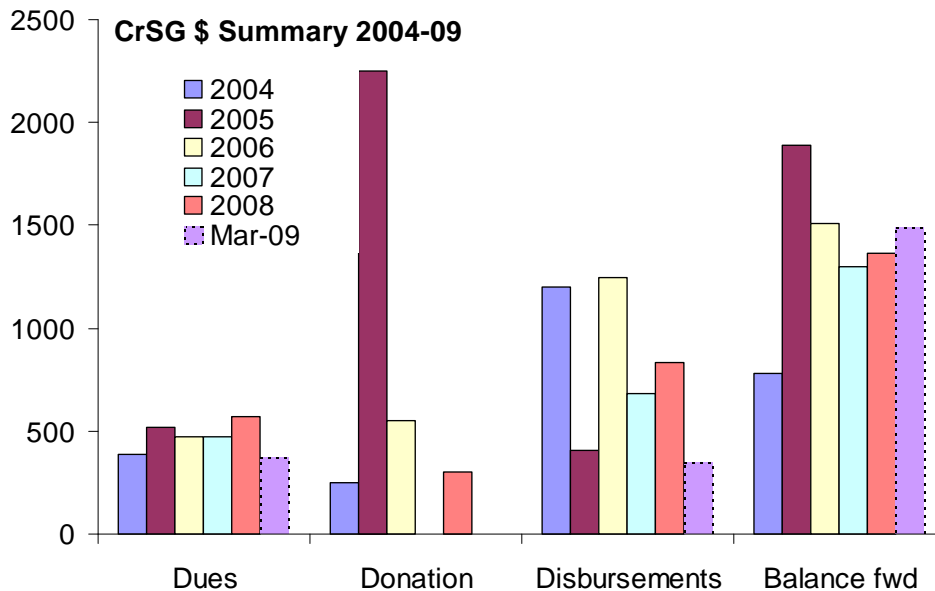
we closed 2008 with \$586, the highest annual take in 5 years.

- Income from donations has totaled \$3350 over the five years, including the \$2250 take in 2005. Actual donations received are mostly limited to a single gift per year. As always, donations are tax deductible and gladly accepted; send me an email if you wish to give ([mark.9@osu.edu](mailto:mark.9@osu.edu)). We sent out a letter of solicitation reminding folks of the opportunity to give before the end of the tax year.

- Our annual expenses are not large. We reduced our donation to the 2009 Phys Geog Reception to \$350 from our high of \$500 in 2008.

- Whether we need to continue carrying over a rather steady \$1300 balance or if we can spend it more wisely still seems an important consideration.

\*These exclude the "donations" from other groups dedicated to the annual Phys Geog reception at AAGs.



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**Graduate Student Participation in the CrSG**

To increase our numbers significantly we need involvement by more AAG members, particularly graduate students. **Please encourage your students to join CrSG (membership is free for them), to attend our sessions and business meetings, and to become involved in our activities. This is critically important as it pertains to the Tarr Session.**

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**CrSG Activities: 2009 Las Vegas Meeting**

**The CrSG Business Meeting will be held on Thursday, March 26, 2009 at 11:55am. Please plan to attend!**

*Sponsored and CoSponsored CrSG Sessions*

Details about speakers, their affiliations, paper abstracts, and non sponsored talks with cryospheric content may be accessed via the CrSG website at [www.cryoaaag.org](http://www.cryoaaag.org).

**2516 R.S. Tarr Student Illustrated Paper Competition** is scheduled on Monday, 3/23/09, from 3:10 PM - 4:50 PM

**3154 Arctic Hydroclimatology I: Characterization of Spatial and Temporal Variability and Recent Change** is scheduled on Tuesday, 3/24/09, from 8:00 AM - 9:40 AM

**3254 Arctic Hydroclimatology II: Characterization of Spatial and Temporal Variability and Recent**

**Change** is scheduled on Tuesday, 3/24/09, from 10:10 AM - 11:50 AM

**3454 Hydroclimatology I** is scheduled on Tuesday, 3/24/09, from 1:00 PM - 2:40 PM

**3554 Hydroclimatology II** is scheduled on Tuesday, 3/24/09, from 3:10 PM - 4:50 PM

**3654 Hydroclimatology III** is scheduled on Tuesday, 3/24/09, from 5:20 PM - 7:00 PM

**4154 Past, Present, and Future of Frozen Ground Environments I** is scheduled on Wednesday, 3/25/09, from 8:00 AM - 9:40 AM

**4254 Past, Present, and Future of Frozen Ground Environments II** is scheduled on Wednesday, 3/25/09, from 10:10 AM - 11:50 AM

**4426 The Changing Geographies of the Arctic and Northern Regions: I** is scheduled on Wednesday, 3/25/09, from 1:00 PM - 2:40 PM

**4454 Mountain Ice and Snow 1: Glaciers and Water Resources** is scheduled on Wednesday, 3/25/09, from 1:00 PM - 2:40 PM

**4526 The Changing Geographies of the Arctic and Northern Regions: II** is scheduled on Wednesday, 3/25/09, from 3:10 PM - 4:50 PM

**4554 Mountain Ice and Snow 2: Glaciers and Water Resources** is scheduled on Wednesday, 3/25/09, from 3:10 PM - 4:50 PM

**4626 The Changing Geographies of the Arctic and Northern Regions: III**

is scheduled on Wednesday, 3/25/09, from 5:20 PM - 7:00 PM

**4654 Mountain Ice and Snow 3: Glaciers and Water Resources** is scheduled on Wednesday, 3/25/09, from 5:20 PM - 7:00 PM

**5254 The Use of Repeat Photography to Document Glacier and Landscape Change** is scheduled on Thursday, 3/26/09, from 10:10 AM - 11:50 AM

**5354 Cryosphere Specialty Group Business Meeting** is scheduled on Thursday, 3/26/09, from 11:55 AM - 12:55 PM

**5454 International Polar Year: Integrating Geographical Perspectives** is scheduled on Thursday, 3/26/09, from 1:00 PM - 2:40 PM

**5554 Remote Sensing of the Cryosphere** is scheduled on Thursday, 3/26/09, from 3:10 PM - 4:50 PM

*Physical Geography Reception*

The Physical Geography Reception will occur on Wednesday, March 25 from 9:00-11:00 pm in Royale Pavilion 1 at the Riviera Hotel.

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**News Items**

- IGU-Commission on Cold Region Environments

Report from the International Geographical Union Commission (IGU) on Cold Region Environments (CRE)

This International Polar Year has been eventful for all cryospheric researchers (polar, high mountain) and also for the

International Geographical Union Commission (IGU) on Cold Region Environments (CRE). The Commission met with both outgoing and incoming Councils of the International Permafrost Association in Fairbanks, Alaska during the 9<sup>th</sup> International Conference on Permafrost (NICOP). In addition, CRE held two formal meetings and several working sessions, leading to production of a detailed work plan for the next 4 years.

The IGU works through its commissions, and CRE members were very pleased when the IGU Council voted at the Tunis meeting in August 2008 to re-new CRE for a further 4-year term. As part of achieving this work plan, the Cryosphere Specialty Group of the Association of American Geographers (AAG) and CRE have co-sponsored a session at AAG 2009, organized by Frederick Nelson (USA) and Nancy Doubleday (Canada), titled “International Polar Year: Geographical Perspectives”, to be held on Thursday, 3/26/09, from 1:00 PM – 2:40 PM in North Hall N115, Las Vegas Convention Center. This session is also sponsored by the Canadian Polar Commission, and additional expressions of support are welcome. For further information about the activities of the Cold Region Environments Commission, please contact: Chair Nancy Doubleday [mailto:Nancy\\_Doubleday@carleton.ca](mailto:Nancy_Doubleday@carleton.ca) or Co-Chair, Dario Trombotto at [dtrombot@lab.cricyt.edu.ar](mailto:dtrombot@lab.cricyt.edu.ar) .

- Permafrost titles available

Proceedings, Ninth International Conference on Permafrost. 2008. Institute of Northern Engineering, University of Alaska Fairbanks (2 Vols.) D.L. Kane and K.M. Hinkel (eds.) 2140 p., 2 v.: ill.,

maps; cm. Includes bibliographical references and index. 1. Permafrost–Congresses. 2. Frozen ground–Congresses. The proceedings of the NICOP include a two-volume set of 358 papers (2140 pages) dealing with all aspects of permafrost research, which can now be purchased online on the site of the conference: <http://www.nicop.org/>. In addition, the proceedings from all nine of the International Conferences on Permafrost that have been convened (1963 Purdue University, USA; 1973 Yakutsk, Russia; 1978 Edmonton, Canada; 1983 Fairbanks, USA; 1988, Trondheim, Norway; 1993 Beijing, China; 1998 Yellowknife, Canada; 2003 Zurich, Switzerland; and now 2008 Fairbanks, USA) are available for downloading at the same web site. ISBN 978-0-9800179-2-2 (v.1)  
ISBN 978-0-9800179-3-9 (v.2)

Frozen in Time: Permafrost and Engineering Problems. 2008. H.M. French and F.E. Nelson (eds.). New York: American Society of Civil Engineers Technical Committee on Cold Regions Engineering, 280 + xxxvix pp. Available at the following website: <http://cedb.asce.org/cgi/WWWdisplay.cgi?0880106>.

Frozen in Time: Permafrost and Engineering Problems is a previously unpublished work by Siemon W. Muller (1900-1970), author of the first English-language book about perennially frozen ground. The book serves as a valuable historical document, and will also be useful for those seeking basic knowledge about permafrost and approximate methods for coping with associated engineering problems.

- University of Delaware offers new Ph.D. in Geography

The University of Delaware Geography Department is pleased to announce a new Ph.D. program that began last fall. The Ph.D. program has two options: climatology and land surface processes. The Ph.D. program builds on the Department's traditional strengths in climatology and the cryosphere. We encourage interested parties to consult the following website for further information, including entrance requirements and faculty expertise. The URL for the website is:

<http://www.udel.edu/Geography/PhDgeog.html>