ACADEMIC CREDIT

Participants will be registered in the Michigan State University summer quarter. The basic credit requirement is six points, transferrable to other universities. Registration cost is paid by the Institute for NSF participants. Additional credits can be arranged.

ELIGIBILITY

The NSF Awardees must be enrolled in or accepted for graduate work as candidates for a degree at their respective institutions. Indication of intent to go to graduate school is not sufficient. A generally high academic record is expected. Considerable weight is placed on personal character, demonstrated interest and professional motivation. Several post-doctoral awards are also given each year for qualified senior scientists.

APPLICATION

Application can be made as late as June 15th; however, earlier inquiry is urged. Letters of application should contain information on experience and adaptability to rugged field conditions; transcripts; evidence of graduate school status or acceptance; and letters of recommendation from departmental chairman and two other individuals regarding scholarship and character. Half of the billets will be allocated by May 1st. All other participants will be notified before June 30th.

Make application to:
Director, Glaciological & Arctic Sciences Institute
Michigan State University, East Lansing, Michigan 48823
Field Address: P. O. Box 775 Juneau, Alaska

Glacier table in zone of wastage on lower Gilkey Glacier, near Camp 15.

STAFF

Dr. Maynard M. Miller, Director, Glaciological and Arctic Sciences Institute; Professor of Geology, Michigan State University. (glaciology, glacial geology, photogrammetry, expedition techniques)

Dr. Robert L. Nichols, Chairman, Geology Dept., Tufts University. (periglacial processes, Antarctic geomorphology)

Dr. John F. Nye, H. H. Wills Physics Laboratory, University of Bristol, England. (glacier mechanics, glacier physics)

Dr. Jack Major, Botany Dept., University of California, Davis. (arctic and alpine geobotany and soils)

Dr. Adam Chrzanowski, Surveying Engineering Dept., University of New Brunswick, Canada. (field surveying, geodesy, glacier photogrammetry)

Dr. Kirtley F. Mather, Professor of Geology, Emeritus, Harvard University. (Man and the Pleistocene, geologic methods)

Dr. Robert Ehrlich, Geology Dept., Michigan State University. (glacio-fluvial processes, statistical analyses)

Dr. David K. Davies, Geology Dept., Texas A & M University. (sedimentology, glacial geology)

Dr. Herbert Curl, Jr., Oceanography Dept., Oregon State University. (glacier and snowfield ecology, meteorology, oceanography)

Dr. James Harrington, Jr., Agricultural Engineering, Michigan State University. (glacio and micro-meteorology)

Dr. Hugh F. Bennett, Geology Dept., Michigan State University. (glacier geophysics)

Dr. John D. Naff, Geology and Geography Dept., Oklahoma State University. (administrative assistant, geology research)

Robert D. Miles, Air Photo Interpretation and Photogrammetry Laboratory, Civil Engineering, Purdue University. (terrestrial photogrammetry, photo-interpretation)

Dr. Andy J. Broscoe, Geology Dept., University of Alberta, Canada. (photo-interpretation, glacial geology)

Walter I. Wittman, Head, Sea Ice Branch, U.S. Naval Oceanographic Office, Wn., D. C. (arctic climatology, sea ice)

Dr. Ned A. Ostenso, Office of Naval Research (Chicago Branch) and formerly Geophysical and Polar Research Center, University of Wisconsin (geophysics, polar oceanography)

Academic Assistants: T. F. Kittredge (glaciology, surveying), J. H. Anderson (geobotany), D. A. Leitzke (pedology)

Medical Staff and survival instruction: W. M. Smith, M.D., O. T. Trott, M.D., T. G. Lathrop, M.D., B. K. Simmons, M.D.

Terrain and Safety Instruction: Franz Gabl, Ome Daiber, D. Williams

Camp and Field Operations: B. W. Prather, M. Taylor, I. Herrigstad (equipment, camp management, communications, expedition techniques, logistics); R. Carlson, D. Thomas (mechanics); T. McMullin (dog team); Gen. W. S. Elmore (aerial logistics); J. W. Miller (liaison, administration)

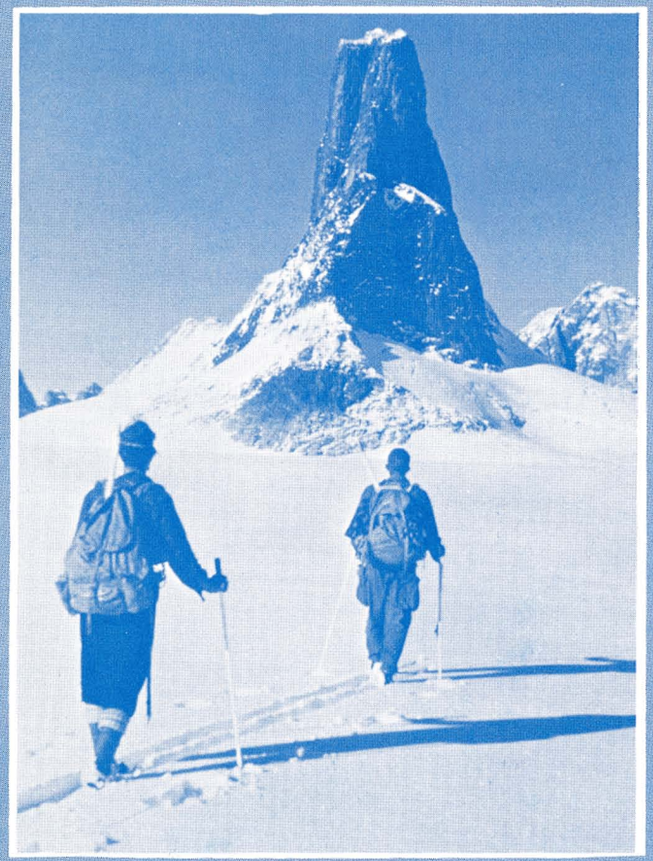
Adjunct lecturers and research affiliates: Dr. D. Hood, Institute of Marine Sciences and Douglas Marine Station, University of Alaska (scientific liaison, sub-arctic oceanography); —— Dr. A. Ford, Dr. D. Brew, Dr. V. Berwick, U.S. Geological Survey (bedrock, structural geology, Alaskan hydrology); M. Alford, Canada Water Resources Branch (Yukon and B.C. hydrology); Dr. Gerald Prescott, Michigan State University (cryovegetation); A. E. Helmers, D. N. Swanston, U.S. Forest Service (glacio-hydrology, mass wastage); J. Bauer, U.S. Weather Bureau (Alaskan climatology); C. Zenone (mass budget), C. Egan (glaciology), L. Onesti (rock glaciers), B. Prather, S. Walasek (seismic traverses), W. I. Dobar (research instruments, radiation studies), P. Welsh (glacial geology), Geology Dept., Michigan State University.

THE GLACIOLOGICAL INSTITUTE
DEPARTMENT OF GEOLOGY
MICHIGAN STATE UNIVERSITY

8TH SUMMER INSTITUTE OF GLACIOLOGICAL AND ARCTIC SCIENCES

JULY 17-SEPTEMBER 3, 1967
JUNEAU ICEFIELD, ALASKA

Sponsored by the NATIONAL SCIENCE FOUNDATION
in cooperation with the Foundation For Glacier
Research and the Juneau Icefield Research Program



PURPOSE

The Summer Institute of Glaciological and Arctic Sciences was organized in 1960 and has been carried through each summer since to provide academic and field training, primarily at the graduate level, for potential polar and mountain scientists. By attendance at lectures held at pertinent field sites, by participation in demonstrations with instruments and materials in the field, and by taking and recording scientific measurements under supervision as part of an actual field research program, the student gains maximum stimulation and appreciation of the significance of the inter-disciplinary investigational approach in glaciology and allied polar disciplines. In this approach, the student obtains a more realistic understanding of glacio-climatological, glacio-geological and glacio-ecological relationships. In addition to the academic offerings, the Institute provides practical training and experience in field work in a variety of sub-Arctic to high-Arctic and mountain expeditionary environments. It is these aspects of the Institute which make its contribution to the learning process especially meaningful.

DATE

The Institute will be held for seven weeks, from July 17 to September 3, 1967. For qualified students interested in participating in the affiliated Juneau Icefield Research Program or desiring field work on thesis problems, up to six weeks additional field time can be arranged.

THE CURRICULUM

Catalogued courses are offered in *Field Glaciology, Periglacial Geomorphology, Glacio-ecology, Glacio-meteorology, Glacio-hydrology, Glacier Geophysics, Glacier Mechanics, Glacier Surveying, Terrestrial and Glacier Photogrammetry* and *Field Problems* in these and related topics. The courses are designed to take full advantage of the glacial, periglacial and mountain environments of the region in terms of field and "laboratory" instruction.

Additionally, special lectures, field studies and problem sessions will be held on adjunct topics such as mapping and surveying, snow physics, glacier physics, lichenology, glacio-oceanography, permafrost, glacio-fluvial processes, mountain geology, and Arctic soil science.

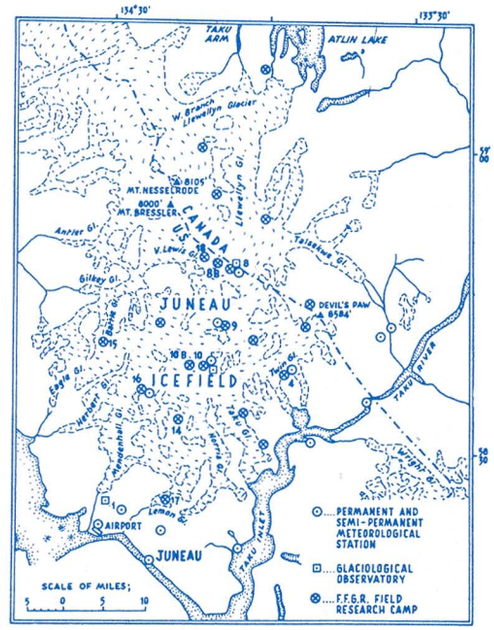
All offerings will be given concurrently during a five-week session on the Juneau Icefield. A sixth week will be used for a specific field problem depending on the student's aims and interests. A seventh week of observation will be conducted in an area of deglaciated terrain. For those wishing to ally the instructional program with specific thesis programs, or equivalent research, including post-doctoral research, field problems may be developed and, where pertinent, variable credit obtained.

PARTICIPANTS

Fourteen National Science Foundation field participantships are available at the graduate and *post-doctoral* levels, plus three University scholarships, two Institute grants, one affiliated NDEA scholarship, and one NSF undergraduate research participant grant for qualified undergraduates. Places for several additional students without Institute support are available. The fee in such cases is $1000 per student. Two graduate teaching assistantships and four graduate research assistantships are also offered each year to outstanding previous participants in the Institute program.

LOCATION

The main field sites lie on or near the Juneau Icefield in the Alaska-B.C., Coast Range near Juneau, Alaska. Field trips are also conducted to observe phenomena in the deglaciated coastal environs, such as Glacier Bay, the Chilkat region, the forest fiords of Lynn Canal, the Taku River Valley or in the Dezadeash and Lake Atlin areas on the continental side of the Alaska-Canada Boundary Range. Interested students may also be included in a short end-of-season field trip to a permafrost area in Arctic Alaska or the Yukon.



Juneau Icefield and vicinity showing meteorological and glacier research stations. Main permanent stations are numbered. Summer Institute headquarters at Camp 8 (elev. 7,200 ft.) and Camp 10 (elev. 4,000 ft.).

FACILITIES AND LOGISTICS

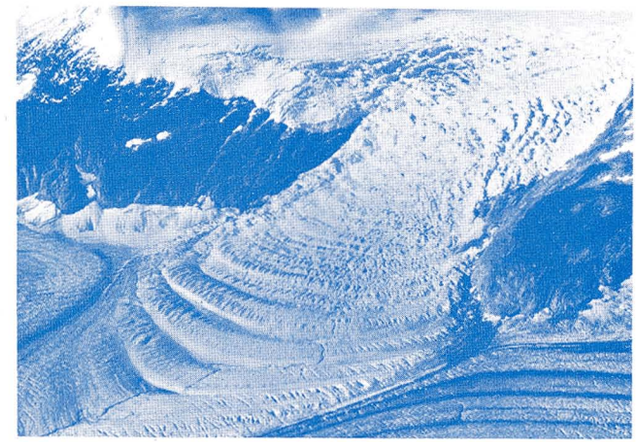
Seven stations and 17 lesser camps and research facilities are located on the icefield. Insulated and aluminum-sheathed buildings exist at the field sites. At trail camps, wooden shelters, metal igloos and tents are used. A 1000-volume library containing pertinent research materials, maps, aerial photos, and basic references is maintained at the two main stations. Field and laboratory equipment for geophysical, glaciological, surveying, photogrammetric, botanical, meteorological and geological work is available for teaching and research.

Communication between camps and with Juneau is handled by radio. Helicopter and ski-plane transport is used, with heavy logistical support provided by the Alaska Air National Guard. For ground transport, oversnow vehicles, a dog team, and skis are used.

Permanent installations are provided by the Juneau Icefield Research Program via its sponsor, the Foundation for Glacier Research, Seattle, Washington.

AWARDS AND ALLOWANCES

The NSF participants receive free tuition and are furnished round-trip air travel expenses, Seattle/Juneau, plus all food, lodging and facilities during the seven-week session. The participants can use the $150 allowance, in lieu of Seattle/Juneau round trip air fare, for their own arrangements to and from Juneau. The Institute can put participants in touch with each other to facilitate combined travel.



Wave-ogives on Vaughan Lewis Icefall near Camp 18.