Hanover, N.H., U.S.A.
Continuation of tracking and study of drifting ice island WH-5.
Special oceanographic studies in general Baffin Bay area.

Ostenso, Ned A., University of Wisconsin, Madison, Wis., U.S.A.
Geophysical investigations in the Arctic Ocean Basin.
Sub-bottom profiling and gravity measurements in the Chukchi Sea from the USCGC *Northwind*.

Pitelka, Frank A., University of California, Berkeley, Calif., U.S.A.
Ecology of lemmings and other microtines in northern Alaska.

Reeder, William G., University of Wisconsin, Madison, Wis., U.S.A.
Study of the arctic ground squirrel.

Smiley Charles J., University of Idaho, Moscow, Idaho, U.S.A.
Continuation of studies on stratigraphic paleobotany in northern Alaska.

Steere, William C., The New York Botanical Garden, New York, N.Y., U.S.A.
Arctic American mosses — A critical field study and evaluation.

Tedrow, John C. F., Rutgers University, New Brunswick, N.J., U.S.A.
Continue pedologic investigations in the Canadian Arctic Archipelago.

Wilce, Robert T., University of Massachusetts, Amherst, Mass., U.S.A.
Investigations of benthic marine algae of Mould Bay, Prince Patrick Island, N.W.T.

LOGISTICS ACTIVITIES OF THE INSTITUTE IN 1963

Purchase and transportation

In addition to its many other activities the Institute has supported polar exploration through its manifold logistic activities. This work consists mainly in procuring, processing, and shipping material and equipment needed in the field; in providing support for outside projects under contract agreements and for work projects sponsored by the Institute itself; and the development of cold-weather clothing and trail gear.

Under the terms of contracts with the U.S. National Science Foundation and the U.S. Department of Defense, and also for the support of projects sponsored by the Institute a total of 435 purchase orders for supplies were issued during 1963. The items ordered ranged from clothing to major equipment and represented an outlay of $275,000.

In support of the U.S. Antarctic Research Program the Institute processed, packed and shipped through its facilities in Washington, D.C. and Davisville, R.I. 431 containers weighing 118,628 lbs. and occupying 8,724 ft.^{3} of space. The shipments included 55,685 lbs. of cold-weather clothing, 18,700 lbs. of spare parts for vehicles, and 5,534 lbs. of scientific instruments and supplies. The planned schedules for the shipping of these goods were met as required.

For further support of the U.S. Antarctic Research Program an agency for issuing and reclaiming clothing was established at Christchurch, N.Z., where more than 190 sets of clothing were issued to U.S. investigators. It has been estimated that 15 per cent of the principal items of special clothing can be reconditioned and reissued for use during the 1964-5 season.

In connection with the U.S. Antarctic Research Program the Institute conducted an orientation course for the personnel taking part in field work in 1963-4. This gave an opportunity to exchange ideas and information, to outline the details of present and future programs, to discuss previous activities and to provide environmental indoctrination. There were more than 200 participants, including speakers and staff members.

During the summer the Institute supported the Icefield Ranges Research Project, which it sponsors jointly with the American Geographical Society. It provided an Aerocoach bus for transporting ten members of the project and 15,000 lbs. of scientific equipment and personal gear from Washington, D.C. to field headquarters at Kluane Lake Y.T. and back to Washington, a distance of 7,000 miles, at an estimated saving of

$3,600 against the possible commercial charges of $6,000.

At Kluane Lake the Helio Courier aircraft of the Institute was used to fly over 7,000 lbs. of instruments, camp and trail gear, food and fuel supplies to three field camps. The total flying time for the 4-month season was 142 hrs. and the transportation cost per man/day was $10.

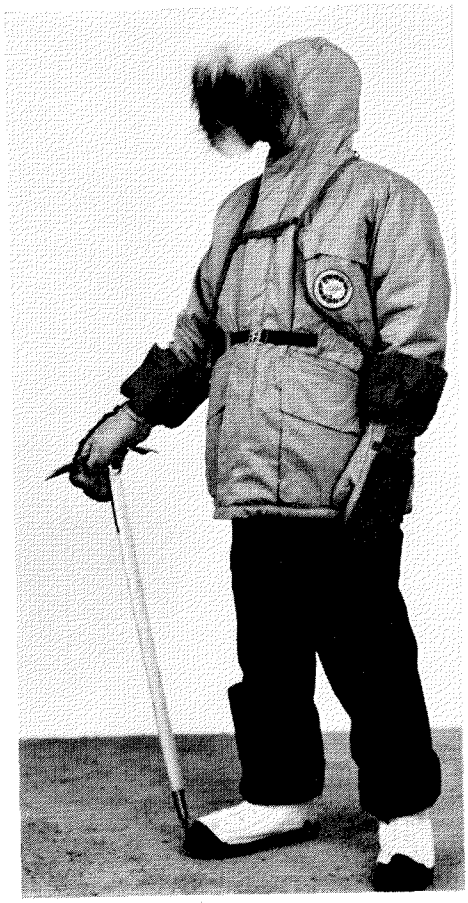

Fig. 1. Parka.

The Devon Island Expedition, which was sponsored entirely by the Institute, terminated in September 1963, but 31,000 lbs. of food, fuel, and general supplies were taken in for maintenance and the future use of the base as a research station. This brought to more than 350,000 lbs. the total of shipments over the beach made during the 3 years of work. All supplies, including two tractors, two weasels, snow toboggans, six temporary buildings, and a sea-going boat, were procured in Montreal and shipped by Canada Department of Transport icebreakers, who delivered the goods to the beach on the island at 75°40′N. The supplies for this year, as those for past years, were moved from the beach overland to warehouses and storage huts by expedition personnel. Early in the spring 15,000 lbs. of supplies were transported to the icecap station 40 miles away. This was accomplished by using weasels and freight sleds to traverse a 1000-foot scarp and to climb to the station at an altitude of 4,500 feet, an operation possible only during a short period in the spring. During this lift the engines and transmissions of both weasels had to be replaced under extremely difficult working conditions.

The aircraft formerly maintained by the expedition was not available in 1963 and personnel were taken in and out by chartered aircraft from and to Resolute, Cornwallis Island. An Otter, a Beaver, and a DC-3, all on skis, were used, and the Beaver also moved men and supplies to remote glacier parties and to the icecap station. The total flying time was 38 hours. Only 8,000 lbs. of goods were removed from the base in September; these were mainly instruments, scientific samples, and personal effects. At present there are supplies at the base sufficient for six men for a full year of operation.

Cold-weather clothing

The cold-weather clothing supplied by the Institute has been well received by government agencies and industry. Among those who have consulted the Institute are: United Air Lines; Military-Apparel-Design and Development Branch, Headquarters Marine Corps; Pacific Naval Laboratory, Esquimault, B.C.; and Mr. Bjørn Staib, leader of the 1964 Norwegian North Pole Expedition. However, although research and development have led to considerable improvements in regard to safety and

simplicity of design during the past 4 years, further improvements are sought through the use of new synthetic fabrics and insulating materials.

Because of its functional design and insulating capabilities the parka coat with liner, Fig. 1, is perhaps the most important garment for polar use. Its time-proven design is based largely on the early explorers' concept of a loose-fitting, windproof, insulated garment that opens in front and has a voluminous hood for head and face protection. The ruff of the hood is provided with a soft copper wire that permits the front part to be shaped into a tunnel-like opening. The wearer breathes and sees through this tunnel. The warm breath keeps the exposed skin warm, but its moisture condenses as frost, forms small icicles on the rim of the hood and in time obstructs the vision. Wolverine fur, the only kind that is easily defrosted by a brush of the hand, is therefore used to trim the hood. The parka is insulated by a layer of non-directional orlon fleece backed by a cotton-nylon lining. It has an elastic waist belt and a drawstring at the bottom edge for ventilation adjustment. It has two side pockets for storage and two hand-warming pockets, and one notebook-size breast pocket with pencil holder. There are inner wristlets in the sleeves. A detachable liner is insulated with 6-ounce fibre-bonded Kodel batting, sandwiched between layers of nylon-cotton fabric and quilted. The seams are safety stitched and overlocked, and all points of stress, for example the corners of the pockets, are reinforced by bar-tacks. A nylon zipper and six snap fasteners form the front closure. Velcro, a fastener made of textile, which employs the locking strength of numerous tiny hooks and loops to create a strong adjustable bond, is used as hood and pocket closure. The Velcro fastener is closed by simple pressure and opened by a peeling motion. It requires no maintenance and is practically indestructible.

The outside shell material is a cotton-warp and nylon-filled oxford, which weighs 4.5 ounces per square yard. It has been treated to make it water repellent and fire resistant. This 5-lb. parka has been very satisfactory even in temperatures as low as −70°F. combined with a high wind. The production price for this garment is $70.

A parka is an important but bulky item of polar clothing. Consequently, when the wearer has to work around vehicles it is subject to frequent tears and burns. To overcome this disadvantage the Institute has developed a new type of parka, the principal characteristic of which is the outer fabric of high tear strength. This parka has no insulation but is lined with 4.5-ounce windproof cotton-warp nylon-filled oxford fabric. The design is similar to that of the usual parka, including the large wolverine-trimmed hood. The insulation takes the form of a separate lined jacket with 12-ounce fibre-bonded Kodel batting sandwiched between two layers of 4-ounce windproof cotton-nylon fabric. The jacket has elastic cuffs and neck band and a Velcro fastener is used for the front closure.

This combination of garments permits the user to wear an insulated lightweight coat as a kind of street jacket. When necessary the outer shell can be worn over the "street jacket" for added protection against cold and mechanical damage. Two of these parkas are now being tested by field personnel. After further evaluation and possible modifications the garment will probably be included in the clothing supplied for limited use by trail personnel.

Because of the need for a boot usable in moderately cold weather, that is, in a temperature range from 32°F. to −20°F., the Institute modified a U. S. Army felt boot. The corrugated rubber sole on the original boot had neither the desired traction nor the necessary durability. The Institute designed therefore a combination rubber heel and sole with cleats 0.25 in. high (Fig. 2). The Goodyear Tire and Rubber Company manufactured this sole from a black, carbon-reinforced rubber that gives maximum abrasion resistance and flexibility at low temperatures. This combination heel and sole is cemented

to the original sole. The felt has been made water repellent by a triple application of silicone and can be kept so by occasional spraying with a silicone during use.

A recent field test of this boot showed that during daily use for 3 months on a temperate glacier in temperatures between −5°F. and 55°F., with rain and snow, the wearer did get neither damp nor cold feet. The cleated heels and soles gave excellent grip on snow and rocks, and at the completion of the test showed little wear. A dozen pairs are now being tested in Antarctica. The price of the modified boot is about $15 per pair.

Camping and trail gear are normally bought from suppliers of hunting, winter sport, mountaineering, and other equipment. However, to provide more suitable equipment for field workers in extreme polar conditions the Institute developed and constructed a "trail-hut", a one-man tent-and-sleeping bag combination for back-packing and a multi-purpose sleeping bag.

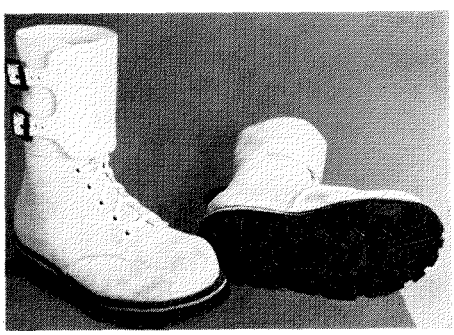

Fig. 2. Modified U.S. Army felt boot.

The basic "trail-hut" structure has a birch-wood frame built in modules 12 ft. by 8 by 7 ft. It has a 10-ounce canvas duck floor and is covered with 8-ounce polyurethane-backed canvas, which is water repellent and fire resistant. Its main advantages are light weight, small shipping volume, *flexibility* and ease of erection. With a screwdriver as the main tool two men can assemble a unit in less than 15 minutes. Two 12- by 8- by 7-foot units (Fig. 3) successfully housed a ten-man arctic expedition during June, July, and August. Plans for further development of this shelter as a semi-permanent one have reached the blue-print stage. Built in quantities of five the estimated cost per unit is $1,200.

Fig. 3. Trail hut.

The one-man combination tent-and-sleeping bag (Fig. 4) is constructed of a cloth weighing 4 ounces per square yard. The fabric is cotton-warp and nylon-filled oxford. The groundsheet is made of 6-ounce duck. The overall dimensions of the tent proper are 40 by 40 in. by 45 in. high. Overall length of the combination is 6 ft. 6 in. Complete with poles the weight is 23 lbs. One end of the tent is triangular and the other has an entrance of generous size, closed by a Velcro fastener. Two sets of adjustable aluminum poles, four guy lines and four tie-downs keep the tent taut. With the help of a 36-inch wide cloth edged with Velcro fasteners two of these tents can be joined together front to front. Tent and sleeping bag can be rolled into a compact bundle with the groundsheet serving as a protective carrying bag. The sleeping bag is insulated with three layers of 6-ounce fibre-bonded Kodel batting and is fitted with a 1-inch foam mattress and a Velcro closure.

The multi-purpose sleeping bag is constructed of the same fabrics as the tent-sleeping bag combination. It is a tapering envelope type, 6 ft. 6 in. long, 30 in. wide at the top and 20 in. at the

Fig. 4. Combination tent-and-sleeping bag.

bottom. It is insulated with a double thickness of 12-ounce fibre-bonded Kodel batting and has a 2-inch thick removable polyurethane mattress, a flannel liner and a detachable head flap. Closure is by Velcro fastener, and it weighs 14 lbs. For ease of carrying it can be rolled up into a protective cover. The envelope type of construction permits using only a single cover indoors. It has a tested comfort range down to −20°F. The cost of one unit is $100.

The Institute is continuing its research and development of cold-weather clothing and field equipment to serve future field workers still better.

PALLE MOGENSEN

Reviews

THE ROUNDLAKE OJIBWA. By EDWARD S. ROGERS. Royal Ontario Museum — University of Toronto, Art and Archaeology Division, Occasional Paper 5. *Toronto: Ontario Department of Lands and Forests. 1962. 9¾ x 6¾ inches. x + 280 pages, 68 tables, 21 figures, 9 maps, 16 plates. Offset, paperbound, n.p.*

This is a careful, descriptive monograph, which is doubly welcome because it deals with an area that has not been described in recent times, except in R. W. Dunning's 1959 work on the Pikangikum Ojibwa. The Round Lake Ojibwa live in Ontario nearly 200 miles north of Sioux Lookout on several of the major southern tributaries of the Severn River. As one of the most recently acculturated groups in the eastern subarctic, the group has added significance. Fieldwork was carried out for 12 months in 1958-9, which constitutes the present time of the book. Data on the natural environment, economics, and material culture were gathered largely in the Ojibwa language (detailed terms are reported in a 15-page glossary and many tables). Data on social organization and religion were gathered by means of interpreters — a procedure made necessary by the limited time available.

The author pays close attention to ecology, natural and human; and his book will be of use to biologists as well as anthropologists. Various features of the natural environment make this area resemble that inhabited by Ojibwa elsewhere to a greater extent than might be supposed. So also do the small number of caribou, the increasing moose population, the importance of beaver and hare, and the reliance upon fishing. The latter has apparently been characteristic since aboriginal times. The author estimates that the group uses 50,000 lbs. of fish a year for subsistence, and shipped about 100,000 lbs. commercially. However, the author's data indicate that more men still trap than fish (Fig. 14), despite a preference for fishing (p. C-15) and overcrowding of trapping lands. This inconsistency