

ABSTRACTS

BLACK, ROBERT F. and BARKSDALE, WILLIAM L. Oriented lakes of northern Alaska. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 105-18.

Description of the oriented lakes in the Arctic Coastal Plain province of northern Alaska. The topography, drainage vegetation, climate, geology and permafrost of the area are briefly described. The range of orientation of the lakes only varies from N. 9° W. to N. 21° W. In any locality the deviation from the average is commonly less than 3° and rarely over 5°. The lakes range in size from small ponds, a few tens of feet in length, to large lakes more than nine miles long and three miles wide. One group of lakes has a shallow shelf or underwater bench surrounding a deeper central portion. The rest are shallow throughout, and the underwater profile is commonly concave. No lacustrine beach ridges were recognized. Former lake basins, now drained, and extensions of the present lakes are evidenced by shore features, lacustrine deposits, the character of polygonal ground and vegetation. The lakes are compared with the Carolina Bays and with rectangular lakes in eastern U.S.S.R. Many of the lakes are believed to be the result of thawing of permafrost; others may be produced by the segmentation of uplifted lagoons. The origin of some is not known.

[From author's abstract.]

CROCE, KARL. Schneeräumung durch Werfen oder Verschieben? *Strassen- und Tiefbau* (Berlin), Bd. 3, Ht. 5, 1949, p. vii.

Comparisons are made between "throwing" and "pushing" in the removal of snow. The author shows that under similar conditions pushing only expends one-fifth of the work entailed in throwing, while the work done in consolidation is the same. The best solution lies in a combination of both methods.

[G. S.]

DOBSON, G. M. B. Ice in the atmosphere. *Quarterly Journal of the Royal Meteorological Society*, Vol. 75, No. 324, 1949, p. 117-30.

In his presidential address to the Royal Meteorological Society the author reviews present knowledge of the condensation and sublimation of water vapour in the atmosphere at low temperatures and the action of different kinds of nuclei in these processes. The work of Aitken and Wilson, Cwilong, Fournier d'Albe, Findeisen and Schulz, Weickmann, Palmer, Regener, Langmuir, Schaefer and Vonnegut, is described and discussed. The author concludes with his own review of the subject based on his work and that of others.

[G. S.]

FIELD, W. O., Jr. Glacier observations in the Canadian Rockies. *Canadian Alpine Journal*, Vol. 32, 1949, p. 99-114.

Evidence that the Saskatchewan Glacier reached its maximum about 1893 and that the Columbia and Athabaska Glaciers probably reached their maxima about the same time. The Columbia Glacier has receded an average of about 100 ft. a year since 1919 and the Athabaska and Saskatchewan Glaciers an average of 67-100 ft. a year respectively since 1922. Previous to this the rate of observed recession was at one-half this speed or less. It is believed that if the present rate of loss continues the Columbia Icefield may break into separate ice fields and some of the smaller glaciers disappear entirely. A plea is made for further detailed study and for correlation with other ice fields.

[G. S.]

GREENWOOD, J. N. Recrystallization of metals under stress. *Nature*, Vol. 163, No. 4137, 1949, p. 248.

Rate of strain has a fundamental effect on the mechanism of creep. The author considers that the transition from constant creep rate to accelerating creep rate in uniform load tests is not necessarily due either to the increased stress or to recrystallization at this stage except in the case of single crystals. Various detailed conclusions relating to the behaviour of lead and its dilute alloys under stress are given.

[E.W. J.M., *British Rheologists' Club Bulletin*, No. 22.]

HELTZEN, ANDERS M. Lauparenområdet i den siste istiden. *Norsk Geografisk Tidsskrift*, Bind 12, Hefte 1, 1948, p. 32-40.

Studies of the extent and thickness of the last Pleistocene ice sheet in the Lauparen group (mountains of Sunnmøre, Norway) indicate that parts of the Norwegian coast land were ice-free even during the glaciation maximum. Some peaks of the mountains in Møre og Romsdal may have protruded as nunataks through the ice sheet even at its maximum, as is shown by the sharp contrast between rugged and rounded profiles. The highest upper limit of the glacier surface in this district during the last ice age cannot have exceeded some 1250 m. Observations farther to the west appear to indicate that the east-west inclination of this mountain ice sheet must have been about one in a hundred.

[From author's abstract.]

HOPKINS, DAVID M. Thaw lakes and thaw sinks in the Imuruk Lake area, Seward Peninsula, Alaska. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 119-31.

Certain lakes and depressions in the Imuruk Lake area, Alaska, are ascribed to subsidence following the thawing of perennially frozen ground. The frozen, silty soils of the region contain large quantities of clear ice, which in volume greatly exceed the natural porosity of the unfrozen material. Melting of the clear ice results in surface subsidence; water accumulates in the resulting depressions.

Thaw lakes are described, and mechanisms of enlargement and eventual drainage are discussed. The origins of drained thaw lakes and of thaw sinks are compared.

Evidence is presented to show that the present climate in the Imuruk Lake area is sufficiently cold to form a small thickness of perennially frozen ground in previously unfrozen deposits but that the present large thickness of frozen ground probably is unstable under existing climatic conditions.

[Author's abstract.]

HORBERG, LELAND. A possible fossil ice wedge in Bureau County, Illinois. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 132-36.

A wedge-shaped projection of early Wisconsin till into underlying Farmdale loess indicates that the ice advanced over periglacial frozen ground and that a crack, possibly formed by melting of a ground-ice wedge, became filled with till. [Author's abstract.]

JUDSON, SHELDON. Rock-fragment slopes caused by past frost action in the Jura Mountains (Ain), France. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 137-42.

Partially cemented slopes composed of coarse angular limestone fragments and exhibiting a loose "open-work" texture are described from a portion of the valley of the Ain River in the southern Jura Mountains of France. These slopes are no longer forming but are undergoing erosion by slope wash, creep and minor sliding. Intense frost action during one or more substages of the last or Würm glaciation is considered to have been the dominant process in their development. [Author's abstract.]

LAWRENCE, DONALD B. Estimating dates of recent glacier advances and recession rates by studying tree growth layers. Advance publication. (University of Minnesota) *Committee on Glaciers, Section of Hydrology, American Geophysical Union*, 1949, 11 p., illus.

Study of the growth layers of trees growing along the margins and the terminus of a present-day receding glacier reveals the minimum lapse of time in years since the glacier advanced beyond a given point, and the approximate rates at which recession has occurred. Study of cross sections of trees pushed part way over by ice pressure at the time of maximum glacier advance and left in a tilted position to continue growth until the present, discloses the exact year of the maximum advance. This is detected through a change in form of growth layers in the trunk cross section. Growth while the tree is erect is concentric about the growth centre; that after trunk tilting is asymmetric, wide growth layers being formed below the growth centre in conifers and usually above the growth centre in broadleaf trees. The non-conformity between concentric central growth and eccentric outer growth marks the year of the tilting. [From author's abstract.]

OULIANOFF, N. Une contribution à l'histoire du Glacier du Trient. *Bulletin des Laboratoires de Géologie, Minéralogie, Géophysique et du Musée Géologique de l'Université de Lausanne*. No. 82, 1945, 6 pages.

The author traces the history of the Trient Glacier. The evolution of the hydrographic system in the Trient massif provides evidence that the morphology of the Alps has been strongly influenced by the existence of faults crossing the axes of the major alpine folds. [G. S.]

QUERVAIN, M. DE. Korngrößenanalyse von Altschnee durch Sedimentation. *Schweizerische Bauzeitung*, Jahrg. 66, Nr. 9, 1948, 8 pages. [Reprint.]

Various methods of estimating grain sizes in settled snow are considered and criticized. The author proposes a new apparatus by which analysis can be made of the various sizes of grains by weighing the fractions which successively come to rest by sedimentation in a mineral spirit. The results of measurement of a typical sample are shown. [G. S.]

QUERVAIN, M. DE. Das Korngefüge von Schnee. *Schweizerische Mineralogische und Petrographische Mitteilungen*, Band 27, Heft 1, 1948, 12 pages. [Reprint.]

The grain structure of certain snow types is described and illustrated by photomicrographs, taken in various planes. The samples mentioned were: 1. Fine-grained old snow under normal conditions. 2. Fine-grained old snow after being subjected to shear for fourteen days. 3. Coarse-grained old snow. 4. Wind-packed snow eight days old.

The sheared samples showed a definite texture following the direction of stress, and tabular crystals appeared to turn their main crystallographic axes perpendicular to the plane of shear. [G. S.]

SHARP, ROBERT P. Studies of superglacial debris on valley glaciers. *American Journal of Science*, Vol. 247, No. 5, 1949, p. 289-315.

On the stagnant ice of Wolf Creek Glacier, in Yukon Territory, fully ninety per cent of the superglacial debris is derived from an englacial source. Possible sources of superglacial debris are (1) material from extra-glacial areas dumped directly on to the ice below the firm line, and (2) englacial material brought to a superglacial position through lowering of the ice surface by melting. This englacial material, in turn, may be (a) extra-glacial debris dumped on to the ice above the firm line, (b) subglacial material brought to an englacial position by movement along shear planes or (c) the ground moraine of inset and superimposed ice streams. On areas of ice long stagnant, fifty to sixty per cent of the superglacial debris has been reworked by running water.

A heterogeneous and irregularly distributed superglacial mantle promotes differential ablation which is a major factor in producing and maintaining the irregular topography of stagnant ice. Layers of fine debris, even though moist, provide insulation equivalent to a foot or two of coarse debris owing to the ease with which air and water circulate through the larger openings of the latter. Ice well insulated by superglacial detritus forms irregular mounds and ridges which increase in size until progressive thinning of the debris mantle, or its removal by some independent agent, permits more rapid ablation, eventually resulting in a complete inversion of topographic relief. Glacial tables, moraines, mud ridges and other features of the superglacial mantle are also described briefly.

The complete wasting of stagnant ice leaves an accumulation of debris reproducing on reduced scale the irregular topography of the stagnant ice and having the constitution of the superglacial mantle. [From author's abstract.]