

SHARP, ROBERT P. Pleistocene ventifacts east of the Big Horn Mountains, Wyoming. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 175-95.

Pleistocene wind directions have been measured at twenty-nine separate localities by careful reference to wind-cut faces on large, presumably stable, boulders. The mean Pleistocene wind direction so determined is N. 29° W. Modern winds are also consistently from the north-west, and it appears that local orographic control was supreme in the Pleistocene as now. Neither glaciers in the Big Horn Mountains nor the continental ice sheet, 250 miles north, exerted much influence on local wind directions. [From author's abstract.]

STREIFF-BECKER, RUDOLF. Beitrag zur Glazialmorphologie. *Geographica Helvetica*, Band 4, Heft 2, 1949, p. 106-11.

After a brief historical outline the author describes his views of the internal movement of glaciers. He discusses the effect of glacial erosion on ground which, since A.D. 1600-20 (the time of maximum extension and thickness of glaciers), has been laid bare by reason of glacial recession. He accepts the fact that for the greater part changes in the courses of rivers result from the bursting of embankments or from the rapid advance of glaciers at times of glacial maxima. [G. S.]

TURNER, FRANCIS J. Preferred orientation of calcite in Yule marble. *American Journal of Science*, Vol. 247, No. 9, 1949, p. 593-621.

A detailed account of the fabric of Yule marble is given for later comparison with the fabric of the same rock artificially deformed. Preferred orientation of certain crystal directions is described. It is shown that certain lamellae are probably due to translation rather than to twin gliding. [From author's abstract.]

URRY, WILLIAM D. Radioactivity of ocean sediments. VI. Concentrations of the radio-elements in marine sediments of the southern hemisphere. *American Journal of Science*, Vol. 247, No. 4, 1949, p. 257-75.

It has been reported in previous publications of this series that the mode of variation of the radium concentration below the ocean bottom affords a method of determining time in ocean sediments. Hitherto, these researches were confined to the northern hemisphere. Similar studies in the southern hemisphere, combined with the necessary geological and biological investigations, should provide an answer to the question of the contemporaneity of glaciation in the northern and southern hemispheres. Measurements of the radium content as a function of depth in the sediment are presented here for ocean-bottom cores secured by the U.S. Navy Antarctic Expedition of 1946-47. [Author's abstract.]

WAHRHAFTIG, CLYDE. The frost-moved rubbles of Jumbo Dome and their significance in the Pleistocene chronology of Alaska. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 216-31.

Jumbo Dome, a prominent landmark on the north side of the Alaska Range, is a small body of intrusive andesite surrounded by schist and by poorly consolidated sediments of Tertiary age. Frost-moved rubbles, consisting of coarse andesite blocks, almost completely mantle the dome and have advanced outward from it across a gently sloping terrain for distances as much as one and a quarter miles. Several different periods of rubble development are recognized, based on the amount of vegetal covering of the deposits, the preservation of their surface forms, and their degree of erosion by fluvial processes. The rubbles are not now moving and are believed to have originated under the influence of an Arctic climate in a manner analogous to rock glaciers. The difference in altitude between presently moving rock glaciers in this region and the rubble deposits of Jumbo Dome corresponds to the difference in altitude between present ice-filled cirques and the lowest cirques of the Wisconsin stage of glaciation. Reasons are given for believing that fluvial weathering and destruction of rock glaciers represent climates at least as mild as the present. On this basis five separate glacial episodes, separated by interglacial and interstadial epochs, are recognized. [Author's abstract.]

WALKER, EUGENE H. Andean uplift and erosion surfaces near Uncia, Bolivia. *American Journal of Science*, Vol. 247, No. 9, 1949, p. 646-63.

Physiographic and paleontological evidence lead to the conclusion that the area was relatively low-lying toward the end of the Pliocene and that most of the uplift to the present elevations occurred during the Pleistocene. There was slight mountain glaciation during the Pleistocene, but two terraces and stream-bed alluvium suggest two stages of glacial climate. The region is now experiencing an increase in aridity. [From author's abstract.]

GLACIOLOGICAL LITERATURE

THIS bi-annual list of glaciological literature aims to cover the scientific aspects of snow and ice in all parts of the world. Attention is drawn to the bibliographies in each number of *The Polar Record* (Cambridge), which aim to cover the significant work dealing with expeditions, research, equipment and conditions of living in the Polar regions. Both journals, however, deal with Polar literature having specific glaciological interest and with general matters of a practical nature such as snowcraft.

Readers will greatly assist the Editor by notifying him of their own, or any other, publication of glaciological interest.

AHLMANN, HANS W:SON. Contribution of Polar expeditions to the science of glaciology. *Polar Record*, Vol. 5, Nos. 37, 38, 1949, p. 324-31.

BARTELL, M. J. The relation of runoff to precipitation in the Sierra Nevada, California. *Transactions American Geophysical Union*, Vol. 30, No. 1, 1949, p. 89-97. [Method for estimating the amount of delayed runoff due to accumulated snow on a drainage area. Discusses precipitation-runoff relationship.]

BERGERON, TOR. Nyare rön om nederbördens uppkomst och fördelning. *Ymer*, 69 Årg., Häfte 3, 1949, p. 161-88. [Advances in physics and geographical distribution of precipitation. English summary.]

- BENFIELD, A. E. The effect of uplift and denudation on underground temperatures. *Journal of Applied Physics*, Vol. 20, No. 1, 1949, p. 66-70. [Uplift and denudation may increase heat flow from the earth by disturbing underground temperature gradient.]
- BROOKS, C. E. P. The "end" of the Ice Age. *Weather*, Vol. 4, No. 9, 1949, p. 304. [Letter. End of latest glacial episode not a definite point of time.]
- BROWN, ANDREW H. Sno-cats mechanize Oregon snow survey. *National Geographic Magazine*, Vol. 96, No. 4, 1949, p. 691-710, illus., map. [Journey in Tucker Sno-Cats, joint project of U.S. Soil Conservation Service and the Oregon Agricultural Experiment Station, along the crest of the Oregon Cascade Range, March-April 1948.]
- BRYAN, KIRK. Geologic implications of cryopedology. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 101-04. [Introduction to Vol. 57, No. 2, devoted entirely to the study of Arctic phenomena and to the interpretation of similar phenomena when found in temperate regions.]
- CAILLEUX, ANDRÉ, and THELLIER, ÉMILE. Sur la détermination de la couche de sol gelé. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* (Paris), Tome 224, 1947, p. 1174-75. [Describes a "cryopedometer," a simple instrument for measuring the depth of frost in the ground.]
- CHRISTIAN, FRANCIS G. The use of snow-surveys as an aid in flood-control operation of reservoirs. *Transactions American Geophysical Union*, 1944, Part 1, p. 155-65, diags. [Discussion of "The use of snow-surveys as an aid in flood-control operation of reservoirs," by Fred Paget, *Transactions American Geophysical Union*, 1943, Part 3, p. 28-38; comments by L. Standish Hall and Ray K. Linsley, p. 160-65.]
- COURT, ARNOLD. Meteorological data for Little America III. Tabular and graphical results of observations made at the west base of the United States Antarctic Service Expedition of 1939-41. *Monthly Weather Review, Supplement* No. 48, 1949, 150 pages. [Includes snow observations and sub-surface temperatures by F. A. Wade.]
- EKHART, E. Die Niederschlagsverteilung in den Alpen nach dem Anomalienprinzip. *Geografiska Annaler*, Årg. 30, Häft. 3-4, 1948, p. 728-39. [Critical examination of the distribution of precipitation in the Alps with the aid of the principle of anomalies.]
- EMERY, K. O. Topography and sediments of the Arctic basin. *Journal of Geology*, Vol. 57, No. 5, 1949, p. 512-21. [Includes note on distribution of Pleistocene glaciers; map of Arctic ice boundaries.]
- FRASER, D. Production of ice-crystal clouds by seeding. *Nature*, Vol. 164, No. 4161, 1949, p. 179-80. [Note from the Flight Research Section, National Research Council, Ottawa; discusses limitations of the process.]
- GARSTKA, WALTER U. Interpretation of snow surveys. *Transactions American Geophysical Union*, Vol. 30, No. 3, 1949, p. 412-20. [Method for forecast of seasonal water yield based on snow-survey data.]
- [GLACIER RESEARCH.] Glacier research. Connections with climate, minerals and metals. *Science To-day*, Vol. 6, No. 151, 1949, p. 301-03. [Summary of recent research.]
- GRIPP, KARL. Glazialmorphologie und geologische Kartierung. *Zeitschrift der Deutschen Geologischen Gesellschaft*, Bd. 99, 1947 (1949), p. 190-205. [Criticism of geological maps of east Holstein on the basis of glaciomorphology.]
- HONDA, KOTARO. Formation of frozen rain-drops and the condition of ice-crusts on trees. *Nature*, Vol. 164, No. 4161, 1949, p. 180. [Pressure of ice in frozen rain-drops and on ice-encrusted trees keeps internal water liquid.]
- JENNESS, JOHN L. Permafrost in Canada. Origin and distribution of permanently frozen ground with special reference to Canada. *Arctic Journal Arctic Institute of North America*, Vol. 2, No. 1, 1949, p. 13-27, illus., maps, diags.
- KANAVIŅŠ, EDVIGS. *Eisverhältnisse in Osteuropa und die angewandten Massnahmen zur Beeinflussung der Eisbildung und des Eisganges in der Düna (Daugava)*. Riga, Verlag der Generaldirektion der Technik und des Verkehrs, 1944. 40 pages, illus., diags. [Investigation of ice conditions in the Daugava during the winters 1941-42 and 1942-43; discusses influence of general ice conditions in the eastern Baltic.]
- KINZL, HANS. Die Vergletscherung in der Südhälfte der Cordillera Blanca (Peru). *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 1-28. [Glaciation in the southern sector of the Cordillera Blanca; with stereo-photogrammetric map 1 : 100,000.]
- KLÆBOE, H. Hydrological conditions in Norway. *Norsk Geografisk Tidsskrift*, Bind 12, Hefte 1, 1948, p. 21-31. [Lecture at the congress of the International Union of Geodesy and Geophysics at Oslo, 1948.]
- KLEBELSBERG, R. von. *Alpengletscher jetzt und einst. Berge und Heimat* (Oesterreichischer Alpenverein), Jahrg. 3, Heft 7, 1948, p. 172-75. [Traces extent of alpine glaciation in recent times.]
- KLEBELSBERG, R. von. Spuren eiszeitlicher Lokalvergletscherung in den Luganer Bergen (Südschweiz). *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 79-83. [Traces of local Pleistocene glaciation in the Lugano district.]
- KLEIN, S. Restzeugen alter Vereisungen auf der oberbayerischen Hochebene westlich München. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 1, Ht. 1, 1949, p. 74-78. [Evidences of glaciation in the Bavarian highlands west of Munich.]
- KOHLER, M. A., and LINSLEY, R. K. Recent developments in water supply forecasting from precipitation. *Transactions American Geophysical Union*, Vol. 30, No. 3, 1949, p. 427-36. [Details of methods developed by U.S. Weather Bureau in its programme of water supply forecasting.]
- KRINITZSKY, E. L. Origin of pimple mounds. *American Journal of Science*, Vol. 247, No. 10, 1949, p. 706-14. [Remains of dunes and hillocks formed under a variety of conditions including glacial outwash.]
- LAVROVA, M. A. Osnovnye etapy chetvertichnoy istorii Kol'skogo poluostrova [Principal phases in the Quaternary history of Kol'ski Poluostrov]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society] (Moscow, Leningrad), Tom 79, No. 1, 1947, p. 21-38. [Study of last two glaciations and interglacial period between them, based mainly on data obtained since 1935. Copy in Foreign Office Research Department, London.]
- LEHMANN, H. Periglaziale Züge im Formenschatz der Veluwe. *Erdkunde*, Bd. 2, Lfg. 1/3, 1948, p. 69-79, maps. [Examination of unsolved geomorphological problems in the Veluwe area of Holland, with reference to its periglacial position in the Pleistocene glaciation.]
- LEHMANN, H. Über periglaziale Erscheinungen in der Umgebung von Bonn. *Erdkunde*, Bd. 2, Lfg. 1/3, 1948, p. 186-90, illus. [Examination of periglacial features in the Bonn area, Germany.]
- LUNDOQVIST, G. Norrlands jordarter. *Sveriges Geologiska Undersökning, Avhandlingar och Uppsatser, Ser. C*, No. 457, *Årsbok* 37, No. 6, 1943, 166 pages, illus., maps, tables, diags. [The Quaternary deposits of Norrland, north and central Sweden.]
- LUNDOQVIST, G. Dubbla moränen i Boliden. *Sveriges Geologiska Undersökning, Avhandlingar och Uppsatser, Ser. C*, No. 471, *Årsbok* 39, 1945, 20 pages, illus., diags. [The "double moraine" in glacial deposits at Boliden, north Sweden; author holds that the upper "moraine" was formed when water flowed in and out of a lagoon there.]

- MANLEY, GORDON. Fanaråken: the mountain station in Norway. *Weather*, Vol. 4, No. 11, 1949, p. 352-54. [Meteorological data including precipitation and temperature, the latter in comparison with Ben Nevis.]
- MILLER, MAYNARD MALCOLM. *Progress report of the Juneau Ice Field research project 1948*. New York, American Geographical Society, 1949. [vi], 108 p., illus., maps. [Alaska. Includes account of glaciological and meteorological research and recommendations for future work.]
- MORAWETZ, SIEGHARD. Die Postglaziale Wärmezeit und die Vergletscherung der zentralen Ostalpen. *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 63-69. [Post-glacial climatic amelioration and the glaciation of the central Eastern Alps.]
- MURRI, Carlo Alfredo. Variabilità del sole e periodi di glaciazione. *Il Polo* (Macerata), Anno 4, 1948, p. 1-3.
- ÖSTMAN, C. J. Den svåra isvintern 1939-1940. *Statens Meteorologisk-Hydrografiska Anstalt, Meddelanden, Serien Uppsäter*, No. 33, 1940, 25 p., illus., maps. [Survey of ice conditions on Swedish coasts during the cold winter 1939-40; ice thickness in different harbours; photographs of ice formations; English summary.]
- ÖSTMAN, C. J. Isvintern 1940-41. En jämförelse med 1939-40. *Statens Meteorologisk-Hydrografiska Anstalt, Meddelanden, Serien Uppsäter*, No. 38, 1941, 10 p. [Comparison of cold winters 1940-41 and 1939-40; maps of ice conditions in the Baltic; English summary.]
- PASCHINGER, V. Profiländerungen der Pasterze (Glocknergruppe) 1848-1942. *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 39-55. [Profile changes on the Pasterzenkees.]
- PASCHINGER, V. Die Firnmoiräne der Pasterze. *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 56-62.
- POSER, HANS. Boden- und Klimaverhältnisse in Mittel- und Westeuropa während der Würmeiszeit. *Erdkunde*, Bd. 2, Lfg. 1/3, 1948, p. 53-68, maps, tables. [Abridged version of author's studies of permanently frozen soil in west and central Europe during the Würm glaciation, with a view to reconstructing climate.]
- RENAUD, ANDRÉ. *Nos glaciers*. Neuchâtel, Delachaux et Niestlé, [1947], 44 pages. (Cahiers d'enseignement pratique, 48.) [Instructional monograph on Swiss glaciers.]
- RICHMOND, GERALD M. Stone nets, stone stripes, and soil stripes in the Wind River Mountains, Wyoming. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 143-53. [Considers that most of the stone stripes result from solifluction acting on stone nets.]
- RICHTER, HANS. Photogrammetrie in Arktis und Antarktis. *Polarforschung*, Jahrg. 15, Heft 1/2, 1945, p. 1-5. [Technique of photogrammetric surveys.]
- RIKHTER, G. D. *Snezhny pokrov, yego formirovanie i svoystva*. [Snow cover, its formation and properties.] Moscow, Leningrad, Izdatel'stvo Akademii Nauk SSSR [Publishing House of the Academy of Sciences of the U.S.S.R.], 1945. 120 p., maps, tables, diagrs., 22 cm. [Formation of snow cover, its physical properties, influence on visibility, drifting action and thawing; features of snow cover in U.S.S.R. by regions.]
- ROGSTAD, OLAF. Breenes virkning på den nyttbare vannmengde ved kraftverkene i Glåma. *Norsk Geografisk Tidsskrift*, Bind 12, Hefte 1, 1948, p. 9-20. [The influence of glaciers on the water supply to power plants in Glåma.]
- [SEA ICE.] *Merkblatt für die Eiserkundung durch Flugzeuge. Ausgabe für Nordsee, Ostsee und Schwarzes Meer. Bearbeitet von der Deutschen Seewarte*. Berlin, Oberkommando der Kriegsmarine, 1942. 25 pages, illus., 21 cm. (Nr. 2199.) [Well-illustrated description of forms of ice in North Sea, Baltic, and Black Sea for aircraft reconnaissance.]
- [SEA ICE.] Radar detection of floating ice. 1946 ice season. *U.S. Coast Guard Bulletin*, No. 32, 1947, p. 178-88. [Brief account of experiments on radar detection of floating ice, 1944-45; results of work, 1945-46; experiments with airborne radar.]
- SIMOJOKI, HEIKKI. Über den Zeitpunkt des Entstehens und des Verschwindens der dauernden Schneedecke in Finnland. *Fennia*, 70, No. 3, 1947, 31 pages, maps, tables, diagrs. [On the time of appearance and disappearance of snow cover in Finland.]
- SMITH, H. T. U. Periglacial features in the driftless area of southern Wisconsin. *Journal of Geology*, Vol. 57, No. 2, 1949, p. 196-215.
- STEFANSSON, VILHJAJMUR. Bibliography of Arctic books. *Explorers Journal*, Vol. 26, No. 1, 1947-48, p. 15-16, 23-24, 30; No. 2, 1948, p. 13-15; Nos. 3 & 4, 1948, p. 46-48. [Reprinted from SHELESNYAK, M. C. *Across the top of the world. A discussion of the Arctic*. Washington, D.C., Office of Naval Research, 1947, p. 49-71.]
- STREIFF-BECKER, R. Der Bächfirn. *Die Alpen*, Bd. 25, No. 7, 1949, p. 264-66. [This area in lee of prevailing winds collects snow therefrom and is described as a "Windgletscher."]
- TROLL, CARL. Der Subnivale oder periglaziale Zyklus der Denudation. *Erdkunde*, Band 2, Lief. 1/3, 1948, p. 1-21. [Discusses soil frost formations and solifluction processes.]
- TROLL, CARL. Schmelzung und Verdunstung von Eis und Schnee in ihrem Verhältnis zur geographischen Verbreitung der Ablationsformen. *Erdkunde*, Band 3, Lief. 1, 1949, p. 18-29. [Brings up to date the author's previous work on ablation and ablation forms.]
- VARESCHI, VOLKMAR. Der grosse Aletsch. *Berge und Heimat* (Oesterreichischer Alpenverein), Jahrg. 3, Heft 7, 1948, p. 188-92, maps. [General and glaciological description.]
- WALLÉN, CARL CHRISTIAN. Glacial-meteorological investigations on the Kårsa Glacier in Swedish Lapland 1942-1948. *Geografiska Annaler*, Årg. 30, Häft. 3-4, 1948, p. 451-672, illus., maps, tables, diagrs. [Kårsajökel. Meteorological conditions, accumulation, ablation, heat-balance at glacier surface, dependence of ablation on different meteorological factors.]
- WEGENER, KURT. Die Ursachen der Abtragung (Ablation) der Gletscher. *Zeitschrift für Gletscherkunde und Glazialgeologie* (Vienna), Bd. 1, Ht. 1, 1949, p. 71-74. [Causes of glacial ablation.]
- WENNBERG, GUNNAR. *Differentialörelser i inlandsisen. Sista istiden i Danmark, Skåne och Östersjön*. Lund, 1949. 201 + 46 p., illus. [Variations in limits of ice sheet over Skåne, Denmark, and the Baltic Sea during Pleistocene glaciation.]
- WOOD, WALTER A. Project "Snow cornice." The establishment of the Seward glacial research station. *Arctic. Journal Arctic Institute of North America*, Vol. 1, No. 2, 1948, p. 107-12, illus. [Describes glaciological and meteorological programmes and other scientific studies. The area of operations is the drainage basin of the Seward Glacier.]
- WUNDT, W. Relieftheorie, Niederschlagstheorie und Theorie der kosmischen Nebel als Erklärung für die Entstehung der Eiszeiten. *Meteorologische Zeitschrift*, Bd. 60, Heft 8, 1943, p. 274-81. [Examination of origin of Pleistocene glaciation with reference to the theories of pre-glacial land uplift, of precipitation and its connection with temperature change and a review of difficulties arising from the theory of cosmic obscuration.]