

LAWRENCE, DONALD B. Estimating dates of recent glacier advances and recession rates by studying tree growth layers. *Transactions, American Geophysical Union*, Vol. 31, No. 2, Pt. 1, 1950, p. 243-48.

Study of the growth layers of trees growing along the margins and below 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 center; that after trunk tilting is asymmetric. The non-conformity between concentric central growth and eccentric outer growth marks the year of the tilting. This technique and others described here may be used to date landslides, windstorms, and river floods as well as glacier fluctuations.

[Author's abstract.]

THOMPSON, H. R. Some corries of north-west Sutherland. *Proceedings of the Geologists' Association*, Vol. 61, Pt. 2, 1950, p. 145-55.

Among the conclusions of the author are the following: Quartzite breaks up more readily than gneiss under the influence of melting and re-freezing. The effect of moving ice on gneiss is largely confined to polishing and sapping. Rock basins in corrie floors may possibly have been formed in pre-glacial times, but were more probably excavated by debris-armed ice, the action of which may have been that of rotational slipping.

[G. S.]

VIETE, GÜNTER. Ueber die allgemeine atmosphärische Zirkulation während der diluvialen Vereisungsperioden. *Tellus*, Vol. 2, No. 2, 1950, p. 102-15.

The range of polar cold air over the northern hemisphere was increased during the glacial periods primarily due to the extension of the large ice shields. Particularly in the north Atlantic region the atmospheric centers of action and the storm tracks were shifted southwards, the meridional temperature gradient was strengthened and consequently the general circulation increased. This intensification of the large scale exchange of air does not contradict the recent increase of the general circulation and its consequences, since during the glacial periods the increase was of a compulsory and secondary nature caused by the ice extension itself. On the contrary the atmospheric circulation at the beginning of the glaciation must have been decreased. However, the continued extension of the Scandinavian ice shields, as well as the creation of the Keewatin and Labrador shields in North America and the North Asian glaciation, occurred during periods of secondarily increased circulation. An examination of the most important Ice Age theories shows that the primary weakening of the circulation may be satisfactorily explained only by assuming a decrease of the earth's solar radiation supply. The astronomical Ice Age theory is applicable only in connection with the assumption of an uplift of the Iceland-Faerisland submarine ridge.

[Author's abstract.]

WISEMAN, J. D. H., and OVEY, C. D. Recent investigations on the deep-sea floor. *Proceedings of the Geologists' Association*, Vol. 61, Pt. 1, 1950, p. 28-84.

It is becoming evident that in order to interpret correctly the earth's history it is necessary to investigate the deep-sea floor, which covers approximately two-thirds of the earth's surface. Owing to the great increase of bathymetrical soundings with the development of the echo-sounder and the publication of bathymetrical charts, it has been possible to develop a rational classification of deep-sea morphological features. The origin of these features is discussed. . . . As satisfactory methods have now been developed for obtaining long cores from the deep-sea floor it is possible to investigate past oceanic history as far back as the Pliocene. The various methods by which past oceanic history may be revealed are described. . . . The use of radium determinations for marine chronology is discussed. . . . The use of planktonic foraminifera in the interpretation of chemical changes from washed core samples is discussed. Brief notes are given concerning the individual planktonic species used as temperature indicators. A short survey of the implication of chemical changes from a study of the deep-sea floor is given, mentioning a few of the theories advanced to account for them in the Pleistocene and the dangers of arriving too hurriedly at conclusions from the analysis of only a few cores.

[From authors' 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 WILSON. *Glaciological research on the North Atlantic coasts*. London, Royal Geographical Society, 1948. [iv], 83 p., maps, tables, diagrs., 24½ cm. (R.G.S. research series, No. 1). 7s. 6d. [Summarizes results of author's researches in Norway, Sweden, Svalbard, Iceland, and north-east Greenland, 1918-46.]

ALIMEN, H., and DAVID, P. Cryoturbations dans des couches archéologiques de la Charente et du Périgord *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* (Paris), Tom. 229, No. 23, 1949, p. 1246-47. [Fossil evidence of soil polygons in archaeological beds.]

[ARCTIC CARTOGRAPHY.] *The American Geographical Society's map of the Americas, 1 : 5,000,000. Index to the two sheets Alaska, northern Canada, and Greenland [and] United States, southern Canada, and Newfoundland*. New York, N.Y., American Geographical Society, 1948. [100] p., 25½ cm. \$1.00.

ARMSTRONG, TERENCE. Study of sea ice in the Soviet Arctic, 1920-45. *Polar Record*. Vol. 5, No. 39, 1950, p. 468-73. [Review of work done by scientists of the Arctic Institute at Leningrad.]



- AUROLA, ERKKI. Über die Verbreitung submoräner Sedimente als Widerspiegelung der Bewegungen des Inlandeises. *Bulletin de la Commission Géologique de Finlande*, No. 144, 1949, p. 41-63, illus., map, diags. [Discusses distribution of sub-moraine sediments as reflecting movements of inland ice over Finland and south-west Karelia.]
- BAILEY, E. B. Pleistocene deep weathering. *Nature*, Vol. 164, No. 4183, 1949, p. 1130. [Weathering of granite and other rocks beneath comparatively unweathered glacial deposits.]
- BATEMAN, J. D. Permafrost at Giant Yellowknife. *Transactions of the Royal Society of Canada*, Vol. 43, Ser. 3, Sect. 4 (Geology), 1949, p. 7-11. [Depth of permafrost at Giant Yellowknife, Great Slave Lake, is a function of its "overburden" and extends downwards 280 ft. beneath a 60-ft. blanket of clays.]
- BERG, L. S. *Dostizheniya sovet'skoy geografii (1917-1947)*. [*Achievements of Soviet geography (1917-47)*]. Lenizdat [Leningrad Publishing House], 1948. 48 p., 17 cm. [Includes advances made in study of permafrost, glaciology, meteorology.]
- BERTHELSEN, ASGER. Nogle ledebloktællinger på Horsenseggen. *Meddelelser fra Dansk Geologisk Forening*, Bd. 11, Hefte 4, 1949, p. 449-55, map. [Survey of distribution of erratic boulders in the Horsens area, north Jutland, Denmark.]
- BIAYS, PIERRE. Problèmes de glaciation et de nivation. *Revue Candieme de Géographie*, Vol. 3, No. 1-4, 1949, p. 97-117. [Review of work on this subject during 1938-48 mainly in Europe.]
- BLÜTHGEN, JOACHIM. Die Vereisung der Ostsee-Häfen. *Heute und Morgen* (Schönberg), Jahrg. 1950, Heft 2, p. 1-7. [Abstract from a longer paper in *Wissenschaftliche Abhandlungen des Meteorologischen Zentralobservatorium, Potsdam*, on freezing-up of harbours in Baltic Sea.]
- BOYD, LOUISE A., and others. The coast of northeast Greenland, with hydrographic studies in the Greenland Sea. The Louise A. Boyd Arctic expeditions of 1937 and 1938. *American Geographical Society, Special Publication No. 30*, 1948, xii, 339 p., illus., maps, tables. [Includes chapter on glacial geology and geomorphology (1937) by R. F. Flint.]
- BROOKS, CHARLES F., and HOWELL, WALLACE E. Harvard-Mt. Washington icing researches, 1946-47. *Mount Washington Observatory News Bulletin*, No. 16, 1948, p. 3-4, illus. [Work done by the Blue Hill Observatory, Harvard University, with the collaboration of Mount Washington Observatory.]
- BRÜGGEN, JUAN. La cronología de las épocas glaciales de Chile. *Universidad Católica de Chile, Revista Universitaria*, Año 31, No. 1, 1946, p. 27-38, map.
- BUCHER, EDWIN. Considerazioni tecniche sulla formazione delle valanghe. *Mitteilungen des Eidg. Institutes für Schnee- und Lawinenforschung*, Nr. 5, [1948], 19 p., illus., diags. [Well-illustrated review of the mechanics of avalanches. Reprinted from *Revista Tecnica della Svizzera Italiana*, No. 2, 1948.]
- BUCHER, EDWIN. Nomenklatur der Lawinen. *Mitteilungen des Eidg. Institutes für Schnee- und Lawinenforschung*, Nr. 7, [1949], p. 3-10. [Definition of German Swiss expressions used to describe avalanches, with bibliography. Reprinted from *Der Praktische Forstwirt für die Schweiz*, 85 Jahrg., Heft 1, 1949.]
- BÜDEL, JULIUS. Neue Wege der Eiszeitforschung. *Erdkunde*, Bd. 3, Heft 2/3, 1949, p. 82-96, 192. [Review and synthesis of recent research on Pleistocene glaciation.]
- CAHEN, L. Les glaciations pré-Karoo du Bassin du Congo et de l'Afrique Australe. *Bulletin de la Société Belge de Géologie, de Paléontologie et d'Hydrologie*, Vol. 56, 1947, p. 109-51.
- CARRUTHERS, R. G., and BADEN-POWELL, D. F. W. Pleistocene deep weathering. *Nature*, Vol. 165, No. 4195, 1950, p. 488-89. [Criticism of views of Sir Edward Bailey on rock weathering beneath ice sheets.]
- CARTER, GEORGE F. Evidence for Pleistocene man in southern California. *Geographical Review*, Vol. 40, No. 1, 1950, p. 84-102. [Suggests that man lived there at least 40,000 years ago.]
- CHAPMAN, L. J., and PUTNAM, D. F. The recession of the Wisconsin Glacier in southern Ontario. *Transactions of the Royal Society of Canada*, Vol. 43, Ser. 3, Sec. 4, 1949, p. 23-51. [Modifications in the interpretation of the extensively studied moraines in this region.]
- CHERNIGOVSKIY, N. T. Rol' radiatsionnogo faktora v protsessakh tayaniya i rosta l'da arkticheskikh morey. [Rôle of the radiation factor in the processes of thawing and growth of ice in the arctic seas.] *Problemy Arktiki [Problems of the Arctic]*. (Moscow, Leningrad), No. 1, 1943, p. 150-55. [Copy in Hydrographic Department, Admiralty, London.]
- CLEVE-EULER, ASTRID. Zur Geographie der Eiszeit und zur spätglazialen Entwicklung des Nordens, besonders Schonens. *Bulletin of the Geological Institution of the University of Upsala*, Vol. 32, [No.] 5, 1947, p. 65-104, maps, tables, diags. [Writer adduces archaeological, biological and geological evidence in support of theory that Scandinavia was less completely covered with ice in the Pleistocene glaciation than has been supposed and rebuts the belief that a land-bridge connected Götaland with Germany at this period.]
- CURRIE, B. W. Water content of snow in cold climates. *Bulletin American Meteorological Society*, Vol. 28, No. 3, 1947, p. 150-51. [Suggests a somewhat lower water content factor than normal for new snow in cold climates.]
- ENGELN, O. D. von. Submarine canyons and the Ice Age: a discussion. *Journal of Geology*, Vol. 58, No. 2, 1950, p. 161-63. [Discussion on points raised by F. P. Shepard's *Submarine geology* (1948).]
- ETIENNE, ERICH. Expeditionsbericht der Grönland-Expedition der Universität Oxford 1938. ("Oxford University Greenland Expedition 1938") *Veröffentlichungen des Geophysikalischen Instituts der Universität Leipzig*, 2 Serie, Bd. 13, 1940, 227 p., illus., maps, tables, diags. [Oxford University Expedition to West Greenland; includes glaciological and meteorological work; chapter on glacier photogrammetry by P. G. Mott.]
- FIELD, WILLIAM O., jr., and MILLER, MAYNARD MALCOLM. The Juneau Ice Field research project. *Geographical Review*, Vol. 40, No. 2, 1950, p. 179-90. [Contains summary of 1949 field work and plans for 1950-52.]
- FISHER, JOEL E. The pressure melting point of ice and the excavation of cirques and valley steps by glaciers. *American Alpine Journal*, Vol. 7, No. 1, Issue 21, 1948, p. 67-72, diagr. [Holds that slight changes in pressure melting point throughout the long profile of a glacier explain formation of valley steps and carries by the scour of ground moraine.]
- FROMM, ERIK. Datering av den sen-glaciala utvecklingen i Norrbottens kustland. *Geologiska Föreningens i Stockholm Förhandlingar*, Bd. 71, Häfte 2, No. 457, 1949, p. 313-27, tables, diags. [Dating of the recession of the last ice sheet from the coastal region of Norrbotten, north Sweden. English abstract.]
- GALLWITZ, H. Eiskeile und glaziale Sedimentation. *Geologica. Schriftenreihe der Geologischen Institute der Universitäten Berlin, Greifswald, Halle, Rostock*, 2, 1949, 24 p., illus., diags. [Various forms of ground ice wedges depending upon local conditions.]
- GRIPP, K. Jasmund und Møen, eine glacialgeomorphologische Untersuchung. *Erdkunde*, Bd. 1, Lfg. 4-6, 1947, p. 175-82, maps, diags. [Author discusses origin of "nunataks" at Jasmund (Rügen) and Møen, north Germany.]
- GROSSMAYR, FRITZ BÉLA. Die Milderung der Wintertemperaturen auf Island seit der Jahrhundertwende. *Polarforschung*, Jahrg. 17, Bd. 2, Heft 1/2, 1947, p. 176. [Tabulated review of winter temperatures at Stykkishólmur, Iceland, 1846-1945.]



- GROISSMAYR, FRITZ BÉLA. Die ungewöhnliche Wärme von Dezember 1946 und Januar 1947 in Island, der Höchstwert seit 100 Jahren. *Polarforschung*, Jahrg. 17, Bd. 2, Heft 1/2, 1947, p. 179. [Comments on the anomalous temperature-maximum in Iceland, December 1946 and January 1947, which confirmed Memery's secular period theory.]
- GUILCHER, ANDRÉ. Le développement de la cryopédologie. *Annales de Géographie*, 58 An., No. 312, 1949, p. 336-38. [Summary of work in various countries.]
- GUILCHER, A. Nivation, cryoplanation et solifluction quaternaires dans les collins de Bretagne occidentale et du Nord de Devonshire. *Revue de Géomorphologie Dynamique*, Année 1, No. 2, 1950, p. 53-78. [Definite indications of nivation in area adjacent to Pleistocene glaciation.]
- HANSEN, KAJ. Ispresning i Tystrup Sø og Esrum Sø vinteren 1946-47. *Geografisk Tidsskrift*, Bd. 49, 1948-49, p. 67-72. illus. [Effects of ice pressure on shores of two Danish lakes. English abstract.]
- HEDSTRÖM, H., and KOLLERT, R. Seismic sounding of shallow depths. *Tellus*, Vol. 1, No. 4, 1949, p. 24-36. [Theory and method; the smallest depth in a glacier accurately determined was 96 m.]
- HOBBS, WILLIAM HERBERT. The climate of the Arctic as viewed by the explorer and the meteorologist. *Science*, Vol. 108, No. 2800, 1948, p. 193-201. [Follows previous lines but admits that "... glacial geologists do not appear generally to have accepted the glacial anticyclones."]
- JAANUSSON, V. Über die glaziale Erosion in Nordestland. *Bulletin of the Geological Institution of the University of Upsala*, Vol. 32, [No.] 3, 1946-48, p. 21-28, diagr. [Erosive action of land ice on bedrock topography in north-east Estonia.]
- JOYCE, J. R. F. Notes on ice-foot development, Neny Fjord, Graham Land, Antarctica. *Journal of Geology*, Vol. 58, No. 6, 1950, p. 646-49.
- KING, W. B. R. Some periglacial problems. *Proceedings of the Yorkshire Geological Society*, Vol. 28, Pt. 1, 1950, p. 43-50. [Reviews recent challenges to the orthodox interpretation of Drift succession.]
- KLEBELSBERG, R. VON. *Handbuch der Gletscherkunde und Glazialgeologie*. Wien, Springer-Verlag, 1948-49, 2 vols., illus., maps, tables, diagrs., 25 cm. [Bd. 1, 1948, xii, 404 p., Bd. 2, 1949, vii, 405-1028 p. Bd. 1, comprehensive study of glaciology and glacial geology; Bd. 2, compendium of existing knowledge on glaciated and glaciated regions.]
- KLEBELSBERG, R. VON. Von den Gletschern auf Blatt Gurgl und den Gletschermessungen des Alpenvereins. *Jahrbuch des Osterreichischen Alpen-Vereins* 1949, Bd. 74, 1949, p. 30-36. [The 12 glaciers of the Gurgl valley (Ötztal Alps) have shown a general decrease, with, however, a short increase between 1912 and 1926.]
- KOSIBA, ALEXANDER. Częstość szaty śnieżnej na Ziemiach Śląskich. *Prace Wrocławskiego Towarzystwa Naukowego, Seria B*, (Wrocław [Breslau]), Nr. 21, 1949, 90 p. [Frequency of snow cover in Silesia.]
- LACAILLE, A. D. The chronology of the deglaciation of Scotland. *Proceedings of the Geologists' Association*, Vol. 61, Pt. 2, 1950, p. 121-44. [Pollen analysis of peats reveals forest history and sequence akin to those in Baltic regions.]
- LÅG, J. Noen merkander om dreneringen av Mjøs-bassenget ved avslutningen av siste istid. *Norsk Geografisk Tidsskrift*, Bd. 12, Hefte 3, 1949, p. 142-49, illus., map. [Notes on the drainage of the Mjøsa basin, Norway, towards the end of the last glaciation; English summary, p. 148-49.]
- LEAKEY, L. S. B. Tentative study of the Pleistocene climatic changes and Stone-age culture sequence in north-eastern Angola. *Companhia de Diamantes de Angola: Publicações Culturais* (Museo do Dundo, Dundo, Angola), No. 4, 1949, 82 p. [A sequence and correlation with other areas are suggested.]
- LOSACCO, U. La glaciazione quaternaria dell' Appennino settentrionale. *Rivista geografica italiana e Bollettino della Società di studi geografici e coloniali in Firenze*, Vol. 56, 1949, p. 91-152.
- MAKSIMOVICH, G. A. Klassifikatsiya l'dov pescher [Classification of cave ice]. *Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya i Geofizicheskaya* [News of the Academy of Sciences of the U.S.S.R. Geographical and Geophysical Series] (Moscow), Tom 9, No. 5/6, 1945, p. 565-70. [Suggested classification of cave ice. Bibliography of 90 entries on cave ice. Copy in Cambridge University Library.]
- MANNERFELT, CARL M:SON. Några glaciala skulpturer. *Ymer*, Arg. 64, Häfte 1, 1944, p. 60-65, illus. [Aerial photographs of various glaciated areas in the Arctic and Antarctic.]
- MASON, D. P. The Falkland Islands Dependencies Survey: Explorations of 1947-48. *Geographical Journal*, Vol. 115, No. 4-6, 1950, p. 145-60. [Additional to glaciological account in *Journal of Glaciology*, Vol. 1, No. 8, 1950, p. 419-13.]
- MILLER, STANLEY A. Some snow-melt runoff characteristics. *Transactions of the American Geophysical Union*, Vol. 31, No. 5, 1950, p. 741-49. [Method of evaluating maximum run-off in a large drainage basin.]
- MILTHERS, V. Det danske istidslandskabs terrænmformer og deres opstaaen . . . *Danmarks Geologiske Undersøgelse*, 3, Række, Nr. 28, 1948, 233 p., maps. [Morphology and genesis of the glacial landscape in Denmark. English summary.]
- MODEL, FRITZ. Eisdicke auf der Alster im Winter 1946-47. *Deutsche Hydrographische Zeitschrift*, Bd. 1, Heft 2/3, 1948, p. 104-06, diagr. [Measurements of the effect of radiation on ice thicknesses on the Alster, Hamburg, during the winter of 1946-47. English summary.]
- MORAWETZ, SIEGHARD. Gletschergang und Klimafaktoren. *Petermanns Geographische Mitteilungen*, Jahrg. 93, Heft 4, 1949, p. 164-68, tables. [Relation of climate and glacier movement in Central Europe since ca. 1775.]
- MÖRIKOFER, WALTER, and PERL, GERTRUD. Ueber die Abhängigkeit der Schneeverhältnisse von der Meereshöhe in Graubünden. *Verhandlungen der Schweizer. Naturforschenden Gesellschaft*, 1944, p. 103-05. [Connection between snow conditions and altitude in Grisons, Switzerland.]
- NAZAROV, V. S. Istorieskiy khod-ledovitosti Karskogo morya [History of the fluctuations of ice cover of the Kara Sea.] *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society] (Leningrad), Tom 79, No. 6, 1947, p. 643-55. [Extent of ice cover annually from 1580 to 1946. Copy in Foreign Office Research Department, London.]
- NIGGLI, PAUL. The science of snow and avalanches. *Transactions New York Academy of Sciences*, Series 2, Vol. 10, No. 4, 1948, p. 127-35. [Brief account.]
- NUSSBAUM, F. Sur les traces des glaciers quaternaires dans la région de l'Aragon. *Pirineos* (Zaragoza) Año 5, 1949, p. 497-515. [Pleistocene snow line in the Cotilla massif in the Pyrenees 2100 m.]
- NYBRANT, GUNNAR. Vatten temperaturmätning i älvar sammansatt temperaturanpassning. *Tekniska Skrifter*, Svenska Teknologforeningen. No. 132. [Temperature measurements in rivers with relation to thermometer registration lag.]
- PANZER, WOLFGANG. El desarrollo de los valles y el clima de la época cuaternaria en el N.E. de España. *Estudios Geográficos*, Año 9, Num. 30, 1948, p. 79-130. [Morphological history of the Ebro basin.]
- PASCHINGER, VIKTOR. Pasterzenstudien. 11 *Sonderheft der Carinthia 2, Mitteilungen des Naturwissenschaftlichen Vereines für Kärnten* (Klagenfurt), 1948, 119 p., illus., maps, tables. [Detailed study of glacier in eastern Austrian Alps.]
- PENCK ALBRECHT. Sechzig Jahre Eiszeitforschung. *Die Erde*, Ht. 1, 1949, p. 5-11. [Description by the author of his 60 years of research on the Ice Ages, from a manuscript found among his papers.]



- PENCK, ALBRECHT. Rückzug der letzten Vergletscherung. *Erdkunde*, Bd. 1, Lfg. 4-6, 1947, p. 182-84. [Posthumous publication of author's final views on the retreat of the Pleistocene glaciation in Europe.]
- PETROVSKIY, A. A., and DOSTOVALOV, B. N. Pervyye opyty prosvechivaniya vechnoy merzloty elektromagnitnymi volnami [First attempts at penetrating permanently frozen soil with electro-magnetic waves]. *Trudy Instituta Merzlotoyedeniya im. V. A. Obrucheva* [Transactions of the V. A. Obruchev Institute for the Study of Permanently Frozen Soil] (Moscow, Leningrad), Tom 5, 1947, p. 121-60. [English summary. Copy in Science Section, Society for Cultural Relations with U.S.S.R., London.]
- PETTERSSON, HANS. The Swedish Deep Sea Expedition. *Geographical Journal*, Vol. 114, Nos. 4-6, 1949, p. 151-56. [General summary of work; description of Kullenberg core-sampler; discussion.]
- PFANNENSTIEL, MAX. Klimatisch bedingte Spiegelschwankungen des Mittelmeeres im Quartär und die paläolithischen Kulturen. *Mitteilungen der Geologischen Gesellschaft in Wien*, Bd. 36-38, 1943-45 [pub. 1949], p. 257-63. [Fluctuations of the Mediterranean sea-level during the Pleistocene caused by climatic influences.]
- PFANNENSTIEL, M. Das Klima der Würm-Eiszeit in Mittel- und Westeuropa. *Petermanns Geographische Mitteilungen*, 92 Jahrg., 3/4 Quartalsheft, 1948, p. 161-62. [Criticizes Poser's study of Würm glacial period climate in central and western Europe.]
- PHLEGER, FRED B. Submarine geology and Pleistocene research. *Bulletin Geological Society of America*, Vol. 60, No. 9, 1949, p. 1457-61. [Pleistocene research. A review by the members of the Committee on Interrelations of Pleistocene Research, National Research Council. 8.] [Contribution to the new study of the Pleistocene history on the ocean bed.]
- POPOV, YU. N. Ploshchad' sovremennogo oledeniya na severo-vostoke SSSR [Area of contemporary glaciation in the north-east of the U.S.S.R.]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society] (Leningrad), Tom 80, No. 2, 1948, p. 182-83. [Recent and more exact information on size of glaciated areas.]
- POSER, HANS. Aolische Ablagerungen und Klima des Spätglazials in Mittel- und Westeuropa. *Die Naturwissenschaften* Bd. 35, Heft 9, 1948, p. 269-76; Heft 10, 1948, p. 307-12. [Evidence of late-glacial climatic conditions in central and western Europe provided by aeolian deposits.]
- PUTNAM, W. L. Snow Conditions I: The individual crystal and its evolution. *Appalachia*, Vol. 16, No. 109, 1950, p. 56-61. [Classifies snow conditions as "fresh," "powder" and "névé," each according to stability and dangerous nature.]
- PUTNAM, WILLIAM C. Moraine and shoreline relationships at Mono Lake, California. *Bulletin of the Geological Society of America*, Vol. 61, No. 2, 1950, p. 115-22. [Discusses the former geomorphology and suggests *inter alia* that the ice retreat was pulsatory.]
- RILEY, A. The glacial deposits in the Borrowdale valley. *Compass* [Cambridge University Geographical Society], Vol. 1, No. 3, 1949, p. 95-101. [Support Raistrick's studies to the effect that only the deposits of the last retreat have been preserved.]
- ROBERT, M. Les traces de glaciation et les périodes glaciaires au Katanga et au Afrique Australe. *Bulletin de la Société Belge de Géologie, de Paléontologie et d'Hydrologie*, Vol. 56, 1947, p. 62-76.
- ROUSSEAU, J. Modifications de la surface de la toundra sous l'action d'agents climatiques. *Revue Canadienne de Géographie*, Vol. 3, 1949, p. 43-52. [Solifluction phenomena in the tundra region of the Ungava peninsula, Canada.]
- RUHE, ROBERT V. Graphic analysis of drift topographies. *American Journal of Science*, Vol. 248, No. 6, 1950, p. 435-43. [Proposal for method of quantitative analysis.]
- SCHILD, MELCHIOR. Zur Vermeidung von Lawinenunfällen (vermittelt durch den Lawinendienst Weissfluhjoch). *Mitteilungen des Eidg. Institutes für Schnee- und Lawinenforschung*, Nr. 7, 1949, p. 17-20, tables. [Brief analysis of avalanche accidents 1940-48, and work of Lawinendienst in preventing casualties. Reprinted from *Der Praktische Forstwirt für die Schweiz*, 85 Jahrg., Heft 4, 1949.]
- SCHILD, MELCHIOR. Zur Frage der Beobachtung und Registrierung niedergergangener Lawinen durch Forstpersonal. *Mitteilungen des Eidg. Institutes für Schnee- und Lawinenforschung*, Nr. 7, 1949, p. 11-16, illus. [Discussion of problems relating to reporting and registration of avalanches, through forest service personnel. Reprinted from *Der Praktische Forstwirt für die Schweiz*, 85 Jahrg. Heft 3, 1949.]
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