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Correlation of the Tertiary
rocks of Alaska.



DEPARTMENT OF THE INTERIOR INFORMATION SERVICE

GEOLOGICAL SURVEY

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SURVEY PARTICIPATES IN FIRST INTERNATIONAL SYMPOSIUM ON ARCTIC GEOLOGY

Geologists and geophysicists of the Geological Survey are participating in the First International Symposium on Arctic Geology which started January 11, in Calgary, Alberta, and will present a dozen scientific papers and several new maps and charts which illustrate United States research activities in the Arctic, the Department of the Interior announced today.

An exhibit on the physiographic provinces of Alaska has been prepared by Clyde Wahrhaftig using aerial photographs and up-to-date topographic maps now available for most of the State. This is the first comprehensive attempt in more than 50 years to outline Alaska's physiographic features and reflects a tremendous wealth of geologic and geographic information which has been obtained in the intervening time.

Twelve provinces are delimited and these in turn are divided into 60 sections on the basis of physiographic characteristics illustrated by selected aerial photographs, detailed topographic maps and an accompanying text. Material exhibited at Calgary will be available for inspection later at the Geological Survey Library in Menlo Park, Calif.

A Surficial Deposits Map of Alaska at a scale of 1:1,584,000 compiled by T. N. V. Karlstrom, will be exhibited at Calgary for the first time. In a paper to be presented at the Symposium, Karlstrom points out that it is now possible to appreciate fully the effect of precipitation on the size and distribution of ice fields that previously originated in the Pacific Coastal Ranges, and which flowed north and northwestward with dominant development on the coastal sides. He will also describe two areas, one on Kodiak Island and the other in the upper Cook Inlet area, that were surrounded by ice during the last two glaciations and which became refuges for plants and animals. These refuges previously were inferred from

distribution studies of regional plants and animals. The map will be available for inspection in the U. S. Geological Survey Library at Washington, D. C., after the close of the symposium.

Geologic studies of the Chukchi shelf off the Ogotoruk Creek area, northwest Alaska, designed to develop data on the feasibility and safety of detonating several nuclear explosives to create an underwater excavation that can be used for a channel and harbor will be reported on by D. W. Schoil and C. L. Sainsbury. The work was conducted by the Survey during the summer of 1958 on behalf of the U. S. Atomic Energy Commission.

W. E. Davies will describe permanently frozen ground in north Greenland which because of the aridity of the area contrasts sharply with the physical characteristics and surface features of previously studied permanently frozen ground in Alaska and Canada. Four major Pleistocene glaciations and two minor recent glacial fluctuations will be reported from the northeastern Brooks Range of Alaska by G. W. Holmes and C. R. Lewis.

The extent of the latest glaciation of northeast Greenland and the position of the Greenland Ice Cap during the subsequent deglaciation of the area will be described by D. B. Krinsley. Unusual "mud volcanoes" in the Copper River Basin, Alaska, will be reported by D. R. Nichols and L. A. Yehle. The cones formed largely before or during the latest major glaciation.

To assist in a better understanding of the geologic history of Alaska correlation charts of Paleozoic, Mesozoic and Tertiary rock units in that State have been drawn up by J. T. Dutro, D. J. Miller, Clyde Wahrhaftig, and Stearns MacNeil. In this work, fossils constitute the chief evidence in support of geologic age determinations. Following the Calgary symposium the Paleozoic and Tertiary charts (previously unpublished) will be available for public inspection at Survey libraries at Washington, D. C., and Menlo Park, Calif.

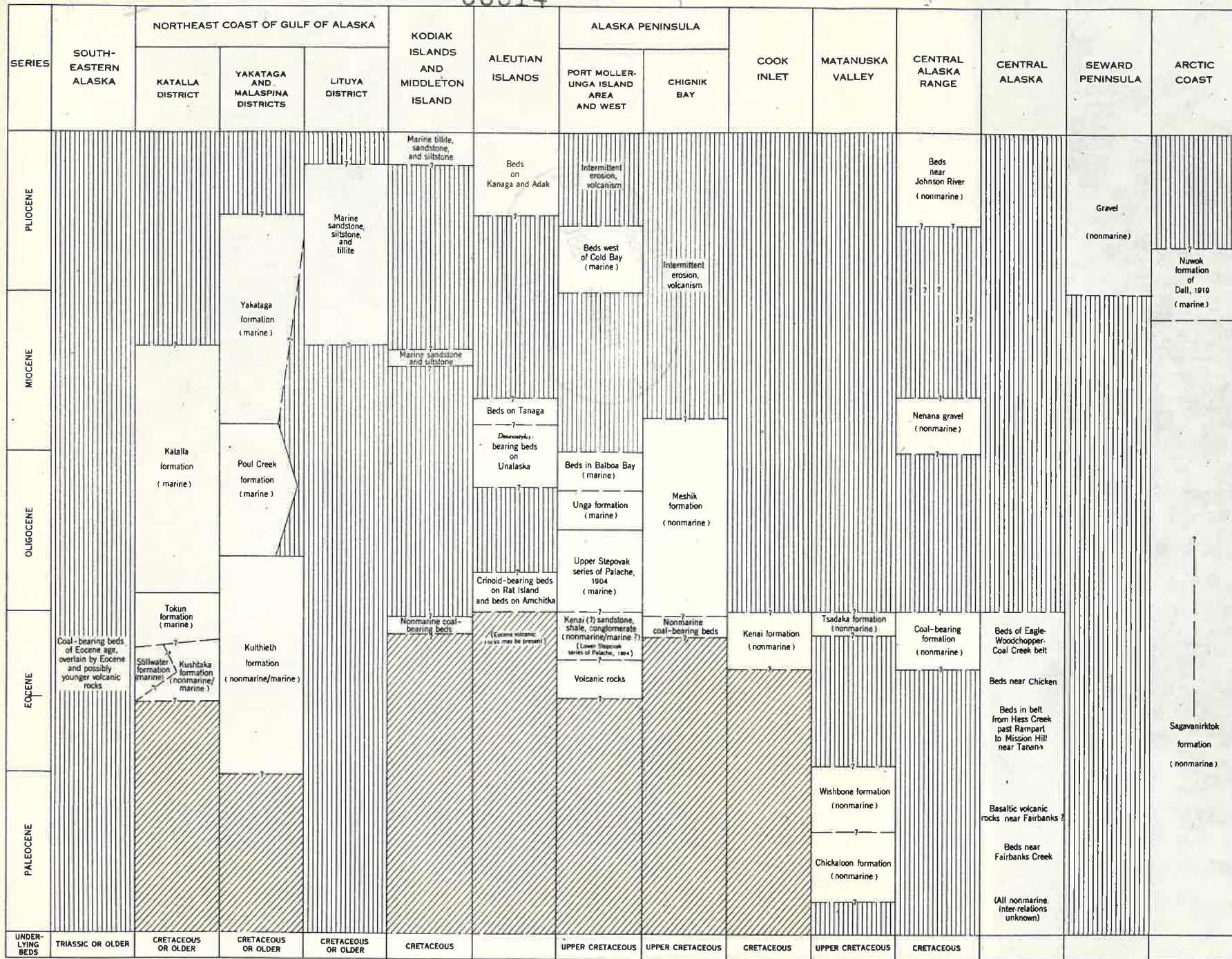
D. M. Hopkins and W. S. Benninghoff will present a paper on Upper Tertiary sediments in Alaska and northwestern Canada. Pollen grains and woody plants, indicative of a late Tertiary age have recently been discovered in carbonaceous layers interbedded with nonmarine sediments on the Seward Peninsula, Alaska, and on the north flank of the Alaska Range.

George Gryc will deliver a progress report on the tectonic map of Alaska being compiled at a scale of 1:2,500,000. This map will show rock structures and earth forms resulting from deformations of the earth's crust. The format, particularly the type and portrayal of information to be shown, closely follows that used for the "Tectonic Map of the United States, exclusive of Alaska and Hawaii", now in press.

Other scientific papers to be presented include: "Geophysical studies on ICY Drifting Station Bravo (T-3), 1958 to 1959" by D. Plouff, G. V. Keller, F. C. Frischknecht, and R. R. Wahl which summarizes preliminary results obtained from

gravity, magnetic, seismic, resistivity, and electromagnetic measurements while T-3 drifted more than 1,000 nautical miles in the Arctic Ocean; "Mechanical aspects of the contraction theory of ice wedge polygons" by A. H. Lachenbruch which provides a mathematical analysis in support of the generally accepted theory that ice wedge polygons result from freezing of water in seasonally recurring thermal contraction cracks; and "Electrical resistivity studies on the Athabasca Glacier, Alberta, Canada" by G. V. Keller and F. C. Frischknecht, a report on the use of galvanic and electromagnetic resistivity techniques for measuring ice thickness and in determining structural and textural changes within the glacier.

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CORRELATION OF THE TERTIARY ROCKS OF ALASKA

BY DON J. MILLER, F. STEARNS MACNEIL AND CLYDE WAHRHAFTIG