Siberian province the largest gas field in the world was discovered (Urengoy). Productive and prospective strata are known to range through the whole Jurassic and Upper Cretaceous sections. Prospective oil and gas structures extend offshore into the southern part of the Kara Sea shelf.

In the Timan-Pechora area west of the Polar Urals–Pay-Khoy, several oil and gas fields have been discovered. Productive and prospective zones are in the middle and upper Paleozoic, and possibly in the Mesozoic. Structures favorable for oil and gas accumulation extend offshore into the southern part of the Barents Sea shelf.

The great petroleum possibilities of the northern part of the Siberian platform and of the bordering Mesozoic troughs are confirmed by the discovery of gas fields in the western part of the Yenisey-Khatanga trough and of oil fields in the eastern part of the trough. In addition a large bitumen (tar) field is near the southern border of the Lena-Anabar trough, and abundant oil and bitumen shows occur through the whole section from the upper Precambrian through the Lower Cretaceous.

The Mesozoic-Cenozoic troughs and depressions of the Verkhoyansk-Kolyma, Koryak-Kamchatka, and Chukotsk areas in the northeastern part of the USSR also are prospective for oil and gas.

The high estimate of the oil and gas possibilities for the shelf seas is based on the favorable geologic and geophysical facts from the Soviet Arctic islands and shelves. The most prospective are structures within the Barents-Kara platform, the offshore part of the West Siberian basin, the Chukotsk-East Siberian troughs, the southern Chukotsk and southern Laptev troughs, and the Wrangel rise.

GRANTZ, ARTHUR, and W. F. HANNA, U.S. Geol. Survey, Menlo Park, Calif., M. L. HOLMES and JOE S. CREAGER, Dept. Oceanography, Univ. Washington, Seattle, Wash.

Reconnaissance Geology of Chukchi Sea as Determined by Acoustic and Magnetic Profiling

The geologic framework of the Chukchi Sea, which lies between Alaska and Siberia north of Bering Strait, was determined by low-frequency sparker profiles, magnetometer profiles, sonobuoy runs, and published gravity and magnetic data. Most of the southern Chukchi Sea is underlain by the Hope basin of Tertiary (and possibly in part Upper Cretaceous) nonmarine and probably marine sedimentary rocks. The basin locally reaches depths of 3 km and its rocks contains gentle folds and high-angle faults. The downwarping that produced the Hope basin continued into late Cenozoic time and, together with Quaternary marine planation, produced the present outlines of the southern Chukchi Sea. The downwarping also must have helped set the stage for the marine invasions that periodically severed the Bering Land Bridge.

A belt of acoustically incoherent rocks trending northwest from Cape Lisburne 300 km to Herald Shoal is interpreted to be the offshore extension of the pre-Cretaceous rocks of the Brooks Range. Very young sedimentary beds lap against the southwest flank of this belt, indicating that it was emergent during Plio-Pleistocene time. A major northwest-striking thrust-fault zone separates the inferred offshore extension of Brooks Range rocks and structures from acoustically coherent rocks interpreted to represent the offshore extension of Cretaceous rocks in the North Slope's Colville geosyncline. Thrust faults and folds in the Cretaceous rocks near the major fault zone strike northwest and are superimposed across older, east-striking faults and folds that trend into the Chukchi Sea from the North Slope. The folds in both fault and fold systems are of the "wrinkled carpet" type associated with detachment thrust-fault zones. The structural relation of the 2 systems indicates that the great bend in Brooks Range rocks and structures on the Lisburne Peninsula is due to this superposition of an older across a younger fault and fold system, rather than to the oroclinal folding of only one.

HALL, JOHN K., Lamont-Doherty Geol. Observatory, Palisades, N.Y.

Geophysical Evidence for Ancient Sea-Floor Spreading from Alpha Cordillera and Mendeleyev Ridge

This paper presents the geophysical findings from Fletcher's Ice Island (T-3) for the period 1962 to mid-1970. During this time the station traversed the Chukchi Rise, parts of the Alpha Cordillera and Mendeleyev Ridge, and the Chukchi, Mendeleyev, and Canada plains. The findings support the suggestion of earlier investigators that the Alpha Cordillera is a fossil center of sea-floor spreading. Five fractures were observed to cut the Mendeleyev Ridge and the Alpha Cordillera, and many other closely spaced fractures are suggested by topographic, magnetic, and gravity trends. Seismic reflection profiles show a buried topography similar to that of the Mid-Atlantic Ridge. Offsets in the apparent axial rift suggest that the fractures are transform faults. The angular relation between the Mendeleyev Ridge and the Alpha Cordillera appears to result from a southerly displacement of the Alpha Cordillera crest along numeous *en echelon* transform faults. Magnetic anomalies are consistent with the sea-floor spreading hypothesis, but no spreading dates are available. A broad zone of low amplitude anomalies over the central and southern Canada Plain might represent the Kiaman Magnetic Interval in Permian time or similar quiet intervals in the early Mesozoic. A crustal gravity model based on a 600 km long gravity and bathymetric profile and an unreversed refraction measurement from Station Alpha shows the observed gravity to be consistent with a section of East Pacific Rise type with a 5 km thick oceanic layer overlying 27 km of anomalous ($p = 3.15$) mantle. The relation of this ridge to the surrounding continental geology is explored. It is suggested that this ridge generated a sea floor which was consumed by marginal trenches along the Lomonosov Ridge (then the northern margin of the European continental block), the northern Alaskan coast, and the Canadian Archipelago. Sea-floor generation and consumption apparently ended with the separation of Greenland from Labrador in late Mesozoic time. The age of the basin is reflected in the large sediment thickness observed. Seismic reflection profiles show more than 2 km of sediment beneath the Mendeleyev and Canada plains, with prominent reflectors suggesting major climatic or depositional changes. Sediment cover on the ridge varies from several hundred meters to more than a kilometer. Sedimentary ridges blanket the crestal plateau of the Alpha Cordillera, apparently the result of currents which transport sediment across the crest from northwest to southeast. This process is presently inactive, and may have terminated with the initiation of continental glaciation as far back as late Miocene time. Similar sedimentary structures 700 m be-