

the Iniskin-Chinitna Peninsula to the Kenai Peninsula. These profiles show several magnetic features that seem to have geologic significance.

The over-all arched character of the profiles suggests a block-shaped rock mass underlying Cook inlet at great depth. A 1,600-gamma anomaly was observed over Mt. Susitna, a granitic intrusion. A two-dimensional anomaly observed over Knik Arm may reasonably be attributed to a zone of buried granitic intrusive rocks continuous with the intrusive cropping out at Eklutna. This intrusive, or zones of intrusives, appears to deepen southward, reaching estimated depths of 5,000-6,000 feet at the lower end of Knik Arm. Anomalies observed over the Susitna flats indicate that the magnetic basement is buried 12,000-14,000 feet.

An abrupt magnetic rise of 300-400 gammas observed over the coast line of the Iniskin-Chinitna Peninsula is caused by a significant change in rock type, suggesting the possible existence of a fault with a vertical displacement of several thousand feet. East of this area, no near-surface anomaly-producing rock masses are present. It is likely that here the depth to magnetic basement is very great.

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#### Stratigraphic Classification and Terminology

Certain types of stratigraphic units are based primarily on objective features of rocks which are physically discernible or physically measurable, such as lithologic character, fossil content, and electrical character. Other types of stratigraphic units are of a more subjective nature and are based on interpretation, in terms of geologic age, environment of deposition, etc., of the evidence supplied by the various objective features.

Rock-stratigraphic and bio-stratigraphic units are dominantly objective; time-stratigraphic and eco-stratigraphic units are dominantly subjective. Countless pages of geological literature have been wasted in fruitless controversy merely because of failure to differentiate these two types of stratigraphic units by clear and precise systems of classification and terminology. Likewise, effectiveness in the application of stratigraphic thinking to petroleum geology has been impeded by the existing confusion in stratigraphic classification and terminology. An attempt is made here to bring out the proper relations between rock-stratigraphic, bio-stratigraphic, time-stratigraphic, eco-stratigraphic, and other kinds of stratigraphic units.

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#### Gravity Exploration

The relation between the gravity field of the earth and the various properties of the earth, its geology, and the mineral deposits is described. The instruments and methods used for investigating the gravity field of the earth and its anomalies are discussed, and, finally, the methods of interpreting the gravity anomalies, that is, the methods of determining the objectives of gravity exploration, are critically reviewed.

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#### Stratigraphy of North Coastal Area of Olympic Peninsula, Washington

A sequence of sedimentary and volcanic rock totaling more than 33,000 feet in thickness is exposed in the northern part of the Olympic Peninsula, Washington. These rocks range in age from early Eocene (?) to Miocene and occur in a structural belt that was undergoing deformation during most, if not all, of Tertiary time. Lithologic units recognized include the following, listed from oldest to youngest.

Unnamed sequence of argillite and graywacke

Crescent formation: spilitic pillow lava, flow breccia, and tuff

Unnamed unit: siltstone

Lyre formation: conglomerate and sandstone

Twin River formation of Arnold and Hannibal, 1913 (to be redefined): sandstone and siltstone

Clallam formation: sandstone and conglomerate