Lenticularity of both major and minor sedimentary units makes correlation between sections difficult, though siltstone sequences may be traced for several miles. The Boss Point Formation is underlain conformably by Hopewell Group redbeds, and the lowest siltstone sequence in most places is red, with "kunkar" nodules indicating semi-arid conditions. Higher siltstones are predominantly gray, with a partial return to oxidizing conditions near the top. The gray color probably results from increased or more constant river flow rather than a climatic change, being associated with greater thicknesses of coarse clastics.

Palaeocurrents indicated by cross-bedding and plant fragments show that the coarser northern sediments were deposited by currents flowing south and east, while elsewhere the flow was north and east. In conglomeratic beds plant fragments tend to be oriented parallel with the current direction, but they are perpendicular in finer-grained rocks.

The palaeogeography indicated is a delta forming between northeast-southwest-trending metamorphic ridges. A large northeasterly flowing river on the site of the Bay of Fundy supplied most of the detritus, and streams flowing off the Caledonia Mountains deposited the conglomeratic beds, probably mixing with detritus from a south-flowing river entering the delta near Dorchester, which may have flowed into the adjacent Moncton basin from the southwest.

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Big Geology for Big Needs

If we are to continue the current rates of petroleum demand and production, it will be necessary to obtain more petroleum during the next 37 years, or by 2000 A.D., than during the past 100 years. And, if discovery of new deposits is to continue as the most important source of petroleum, then the question becomes:" Is there that much oil yet to be discovered within the United States?" This is a geological question.

As has happened so often in the past, one or more of the chief ingredients for a discovery may lie staring us in the face, sometimes for years, before being put into the discovery recipe. The petroleum industry has gradually developed a great many fine geological administrators who deal with reports from highly trained specialists—but the administrators move farther and farther away from the rocks and the specialists become more and more specialized and more microscopic in their outlook. Needed are more experienced geologists in between, who are still with the rocks and able to integrate the various specialized elements of structure, stratigraphy, and fluids into a discovery picture.

Two situations typical of the "in between" problems, with their import to discovery.

1. One is the arched, updip, wedge-out of a potential reservoir rock coupled with a downdip flow of the water. The flanks of every fold, large or small, from the surface to the basement and in every sedimentary area, both productive and non-productive, offer innumerable opportunities for petroleum discovery.

2. The second is the simple fact that many oil fields and oil provinces—including some of the largest—occur in close association with truncated reservoir rocks. Large volumes of potential reservoir rocks, with many unconformities, well known and staring us in the face, but as yet unexplored, are potentially productive on a large scale.

The answer from this "Peek at the Deep" seems to be, "There is enough potential, favorable geology to supply a normal expected demand." The big question that remains is "Will there be sufficient incentive to do the exploring?" And this is in the realm of economics and politics.

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Floating Drilling Methods Open Areas for Oil Exploration

Until recent years, prospecting for oil has been limited to land areas. While marine drilling methods date back as far as the early 1900s, the most concerted effort to develop inundated properties began in the Gulf of Mexico off the Louisiana Coast in 1947. First attempts to drill in open water utilized the platform-tender method, still in use today. It appeared obvious that cheaper methods of wildcatting were required, as the expense of installing the platform was prohibitive in the event of a dry hole. The solution was found in the submersible drilling barge, a mobile platform for exploratory work.

Approximately 50 submersible barges were constructed for use in the Gulf of Mexico. Existing leases were in water depths of 100 feet and less. Enormous reserves were discovered in this area and it was assumed that substantial reserves should likewise be found on all of the Continental Shelf. Immediately, water-depth limitations for available equipment were reached and again it became necessary to search for new solutions to the inherent problems.

The drilling equipment for this new project would necessarily be required to operate in open water of depths as great as 600 feet and be capable of drilling to 15,000 feet with a minimum of risk and shut-down time due to weather. This paper discusses the evolution of one such piece of equipment, the problem involved in its design and the results of operation in deep water. In this way, new areas have been opened to oil exploration.

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Structure of the Argentine Continental Margin

Long lines of end-to-end seismic refraction profiles, shot parallel with the coast line, have defined several major sediment-filled depressions on the Argentine continental shelf. Two large elongate depressions which trend perpendicular to the coast and extend out to the edge of the continental shelf in the Province of Buenos Aires, are the only ones presently known. Extensions of land basins exhibiting a similar seismic sequence of layers were found to close on the continental shelf in the Golfo San Jorge, Magellan Straits, and Tierra del Fuego regions.

The section of shelf lying between the Province of Buenos Aires and Tierra del Fuego exhibits a marked lithologic change from that to the north and south. Undoubtedly the northern Patagonian Mesozoics extend well out onto the continental shelf in this region and may be part of the seaward extension of the central craton of Argentina. The basins, therefore, are associated with the evolution of a central craton, a dominant continental mass of enormous proportions which has influenced the geologic history of Argentina.

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Continental Geophysics

Assembly maps may now be made of regional gravity