easy to find and the latter difficult. Thus, it is not likely that large traps of the anticlinal or fault types have been missed in well-drilled areas. But there is a fair chance that some great "other" kinds are still to be found.

Several techniques have been available for a long time, but none is routine. Detailed gravity-meter and torsion-balance surveys come high on my list, providing that core density values are carefully and competently measured (and now checked with a borehole gravimeter). Another important tool is the reflection seismograph, without CDP(!)—for scattered events, usually very poor.

These are only beginnings. They are of little value unless management, and searching engineers and scientists, are together in the gamble that focuses on the "big sleeper." They must look backward as well as forward. If they have made errors, they must study them to improve future practice. If they have been lucky, they must find why, to improve future practice—or continue to rest on luck.

So, try to get *good* case histories (not only the parts that justified pride but also the errors). Look for observations that were not thought necessary (*luck* was too good to require them!) but might still be made. Try to decide how that giant (*e.g.*, East Texas) might have been found with a *minimum* of good luck. This requires a very careful analysis and understanding.

Recognize the simple fact that no technique can ever be regarded as *sufficient* for success in this venture. No routine package can be sold with a claim that if you manage your field teams and fine instruments according to directions you can have success.

However, there are certain *necessary* conditions—the kind of conditions you can look back on. Possibly the most important of these is "a high level of intellectual honesty, general competence, and a wish to know fact from fiction for the purpose of future productive use through the whole exploration and production group." Though the industry does seek new ideas and processes quite actively, it is not particularly noted for relinquishing mistaken ideas—especially when these ideas have been very expensive. Thus a kind of smokescreen is erected by many circumstances. The air needs to be cleared by critical reexamination of premises.

It is interesting and valuable to inquire "what measurable differences exist in an environment of a large petroleum accumulation that are due to this accumulation?" The effects may be a little subtle, but not completely absent.

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Title to be announced

(No abstract submitted)

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PORTABLE REFRACTION SEISMOGRAPHY SURVEY OF GOLD PLACER AREAS NEAR NOME, ALASKA[1]

A seismic refraction study of the beach and tundra gold placer areas near Nome, Alaska, was made using a small, light-weight, portable seismograph during the summer of 1967. Geophone configuration and type of energy source were determined during a preliminary experimental survey.

Because the beach study was successful, a short experimental seismic line was completed inland to determine the usefulness of a portable refraction seismograph in permafrost areas near Nome. Basic problems in permafrost areas are the high seismic velocities in the overburden, caused by increase in elastic modulus in frozen ground, and the acoustical absorption and variable thickness of the overlying tundra. The increase in sediment velocity reduces the possibility that there is a marked velocity contrast at the bedrock-overburden interface, and the organic material of the tundra absorbs returning seismic energy. These problems were reduced by detonating the explosive energy source on the permafrost surface and by placing the geophones in the thaw zone of silt beneath the spongelike matter of the tundra.

The beach survey results indicated that internal stratigraphy of the overburden could be interpreted and seismic velocities assigned to the different units. A very low-velocity, dry to damp layer of Holocene sands covering most of the beach has seismic velocity values of 0.15–0.73 km/sec. In other low-velocity layers included in the overburden, and especially conspicuous near river mouths, velocity values range from 0.62 to 1.00 km/sec. A poorly consolidated nearshore or estuarine silt, clay, and sand layer of Sangamon age (late Pleistocene) with velocity values of 1.20–1.80 km/sec is below the very low-velocity layer. Beneath the estuarine material is a till of Illinoisan age (middle Pleistocene) that has a velocity of 2.80–4.00 km/sec. Bedrock was well defined in all seismograms and exhibited velocity values from 4.20 to 5.60 km/sec.

A basement contour map of the beach was constructed from depth data obtained along the beach with the refraction seismograph, from offshore seismic-reflection data, and from onshore drillhole information. Several buried channels were identified which may be sites of possible gold placer deposits. Beneath the tundra a bedrock surface dips under Dry Creek from both sides, and a bedrock contour map was drawn from refraction-seismograph data and drillhole information. Results of the Nome tundra survey illustrate the feasibility of the portable seismograph as a placer prospecting tool for use in tundra-permafrost areas.

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Title to be announced

(No abstract submitted)

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STRUCTURE OF THE CONTINENTAL SHELF OFF SOUTHERN OREGON

A detailed continuous seismic-profiling survey was conducted on the continental shelf off southern Oregon between Cape Blanco and the Oregon-California border during the summers of 1967 and 1968. This part of the shelf is divided into northern and southern regions, which appear to be unrelated structurally. The surface trace of a prominent angular unconformity, which crosses the continental shelf in a WSW direction between Cape Sebastian and the Rogue River, is the dividing line between the two regions. A series of folds parallel or subparallel with the coastline characterizes

[1] Publication authorized by the Director, U.S. Geological Survey, Washington, D.C.

the structure of the northern region. Folding is most gentle on the outer continental shelf; the number of folds increases toward the present coastline. The fold amplitudes appear to be independent of the distance from shore. These fold trends are disrupted in the vicinity of the Rogue River where the Gold Beach shear zone appears to extend offshore. The southern region is dominated by a large sedimentary basin with a synclinal axis trending approximately S65°W from Cape Sebastian. This basin extends across the entire continental shelf and has been only slightly deformed by local folding or warping near the coastline.

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SHALLOW STRUCTURE AND SEDIMENTATION OF UPPER CONTINENTAL SLOPE OFF SOUTHERN AND CENTRAL OREGON: A PRELIMINARY INVESTIGATION

Preliminary investigation of the shallow structure of the outer continental shelf and the upper continental slope has been made recently off southern and central Oregon by continuous-seismic profiling. Between Cape Sebastian and the California border, a well-developed topographic bench is present at 500–650 m. The bench has been produced by sediments which were ponded behind a gentle fold on the continental slope. Between Humbug Mountain and Coos Bay, a wedge of Quaternary sediments unconformably overlies older rocks of the continental shelf and upper slope. The Quaternary sediments appear to be absent in the area of Coquille Bank, a doubly plunging, asymmetric anticline. The straight western side of the bank appears down faulted and the benches north and south of the bank structurally controlled by the plunging anticline. Between Yaquina Bay and Cape Lookout, a series of large, north-trending folds underlie the upper continental slope. Several synclines are local basins of deposition. In this area at depths of 400–600 m a bench is present and is the surface expression of a large section of sediments which were ponded behind the first of several large folds on the upper continental slope. Small hills on the continental slope constitute the surface expression of several anticlinal folds.

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CONTINUOUS SEISMIC PROFILING ON CONTINENTAL SHELF OFF WASHINGTON

(No abstract submitted)

JOINT INSTITUTE OF PETROLEUM (LONDON)—AAPG MEETING

BRIGHTON, ENGLAND, JUNE 29-JULY 2, 1969

The AAPG Executive Committee calls the AAPG members' attention to the following announcement. Additional detailed information appears on pages 473–475, this issue.

One of the great opportunities afforded to the members attending the Brighton Conference in 1969 will be the opportunity to travel with one of the postconvention tour programs that have been arranged with a geological and a scenic background.

In conjunction with several universities in Europe, programs have been arranged for entire families to begin immediately after the meeting ends on July 2 and to terminate either on July 19 or July 22, affording 3 weeks of travel in some of the most scenic countries of Europe.

For example, a grand tour of Britain has been scheduled to leave from Brighton on July 2 and will visit Exeter, Devon and Cornwall, Wales, the Cotwolds, the Lake Country, Scotland—including Loch Lomond, the areas north and west of Edinburgh, and the beautiful High Country of Scotland—and return via the eastern part of England to Stratford and eventually ending in London. This is an 18-day program which covers every historic part of England and Scotland.

For those desiring to take a shorter tour a 13-day program has been arranged which covers the same areas, with the exception of the Devon-Cornwall area. Both trips are all-inclusive, with the finest motorcoaches and operators available to provide this service.

Three programs to the Continent include some of the most magnificent scenic areas of Europe. For example, one tour will fly from London to Geneva, thence by motorcoach to Grenoble, and back through Switzerland—including Berne, Zermatt, and Lucerne. It will then continue into Austria to Innsbruck, Cortina, and Salzburg, and then to Vienna. In Vienna, an excursion has been arranged to the various oil fields in Niederösterreich, Kagrram, and Matsen. From Vienna the tour continues to Munich, Rothenburg, and finally to Frankfurt in time for the special flight to New York on July 22.

Another program is scheduled to begin July 3 with a flight to Bordeaux, continuing to Pau and Lacq, and thence to Lourdes and Luchon. From that area in the French Pyrenees the tour continues to Spain to Barcelona, Zaragoza, and Madrid, and then by air to Palma de Majorca for a relaxing stay in that beautiful Mediterranean island. From Palma the group returns to London for the special flight back to New York on July 22. A magnificent program of France and Spain!

The third program leaves London on July 3 for Milan and thence to the Italian Lake District at Stresa, then into Zermatt, Andermatt, and St. Moritz in Switzerland, returning to Italy to Cortina and Venice, from there to Ravenna and Florence for the Renaissance city and into Rome for 3 days of sightseeing in the Eternal City. From Rome members fly to Frankfurt for the special chartered flight to the United States.

Regardless of where the tours are going, all the accommodations will be in first-class hotels with private bath; two meals a day will be included, as well as all tips; expert tour escorts not only in the field of tourism but also well versed in the field of geology; and porterage and assistance throughout.

Specific information with detailed itineraries on all of the tour programs will be mailed to all of the delegates as soon as notification is received of their registration, or by request, to:

THOMAS M. KEESLING
Travel Associates, Inc.
701 West Hampden Avenue, Unit C-2099
Englewood, Colorado 80110