A. I. LEVORSEN, consultant, Tulsa, Oklahoma

The Mid-Continent—Land of Geological Opportunity

The Mid-Continent region offers unsurpassed opportunities for the young petroleum geologist to learn the geology of petroleum, the technology of exploration and production, and the business of oil and gas. Here we see a concentration of large numbers of oil and gas pools of many geologic ages, all accumulated under a geologic environment of great diversity. Nor is the end in sight; it is still a long way ahead. The vast quantities of well records, well samples, surface and subsurface maps, and engineering and production data, furnish the basis for the four-dimensional thinking—length, breadth, thickness, and time—necessary to reconstruct the geologic history and thereby better predict what to expect under the surface. We see here the most advanced technology practiced daily —and talked about weekly, bi-weekly, and monthly at innumerable technical meetings of all kinds. And for those who have business acumen and administrative ability, the countless petroleum organizations of all kinds offer abundant opportunity for advancement up the organizational ladders.

Here we may observe continuously the advantages of our free, American, competitive system as a way of creating natural resources; for the Mid-Continent is a shining example of this way of finding the oil and gas that lie buried as compared with the monopolistic and nationalistic methods of many foreign countries. The Mid-Continent is truly a land of opportunity for learning for those who plan to devote their lives to the finding and production of oil and gas anywhere in the world.

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New Geophysical Techniques Improve Geological Interpretation

After many years of emphasis on the improvement of geophysical field techniques and instrumentation, new geophysical methods simplify and improve geological interpretation of geophysical data.

The gravity analog computer gives almost instantaneously the theoretical gravity anomaly of complex structures. Examples are shown.

Seismic magnetic recording and replay, variable-density and variable-area recording cameras permit presentation of seismic data in a form which simulates geological cross sections and stimulates geological interpretation. Examples of variable density and standard trace cross sections are given. While variable density cross sections simulate geological cross sections, their limitations must be understood and proper dip migration made where necessary. A new plotter is described which facilitates such corrections.

New seismic techniques afford a promising approach to the location of stratigraphic traps. Synthetic reflection records made from continuous velocity logs indicate the possibility of determining the presence or absence of a sand from seismic reflection records. Variable density cross sections reveal stratigraphic changes usually unnoticed on standard trace cross sections. Examples of such applications are portrayed and discussed.

The improved techniques of data presentation may be used to review old standard seismic records by employing a new device which converts such records into corrected variable density cross sections or into magnetic tapes for further replay.

ERNEST E. FINKLEA, Schlumberger Well Surveying Corporation, Tulsa, Oklahoma

The Geologist and Logging

The geologist, in the achievement of his many and varied duties, has found the electrical well log to be a useful tool. Many different types of logs are available and to be most useful the proper logs must be run. The selection of the logging program is often the responsibility of the geologist. It is found the proper selection entails many considerations, such as bore-hole conditions, formation characteristics, and ultimate use of the logs. These are discussed and a guide is offered to assist in the selection of the proper logging program. The data available from the logs have numerous geological applications. These data are summarized and examples presented to illustrate various applications.

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Geologic Use of Densilog

There is need for measurements of rock density in geologic interpretation of gravity data, determination of porosity, and in other geologic problems.

A logging instrument has been developed which provides in-hole measurements of rock density. This instrument contains a source of gamma rays and a detector. The gamma rays from the source are scattered and absorbed in the rock. The portion reaching the detector is related to the density of the rock in the vicinity of the bore hole.

Examples of the application of the Densilog to problems of porosity are given. Other possible uses of the Densilog in geologic interpretation are described. It is concluded that the Densilog offers promise as a useful tool in the solution of geologic problems.