

Stratigraphy and petroleum potential of Lower Cretaceous Inyan Kara Group in northeastern Wyoming, southeastern Montana, and western South Dakota

WEDNESDAY AFTERNOON, SEPTEMBER 29

Presiding: BRUCE F. CURTIS, JOHN R. SANDERS

- JAMES A. BARLOW, JOHN D. HAUN: Stratigraphic accumulation of oil in Salt Creek field, Natrona County, Wyoming
 ROBERT J. WEIMER: Patrick Draw field, Sweetwater County, Wyoming—an old stratigraphic trap
 J. C. HARMS: Stratigraphic traps in a valley fill, western Nebraska
 EARL G. GRIFFITH: Geology of Saber bar, Logan and Weld Counties, Colorado
 CURTIS J. LITTLE, THOMAS C. CARLSON: Many Rocks-Gallup field, San Juan basin, northern New Mexico
 DONALD I. FOSTER: Trapping mechanisms of selected fields, Cherokee Ridge, Wyoming and Colorado
 D. O. ASQUITH: Mesaverde and "Almy" production, Birch Creek Unit, Sublette County, Wyoming
 ROBERT E. COVINGTON, RALPH L. McDONALD: Stratigraphic and structural controls of bituminous sandstone deposits of Utah
 JERALD ALLIGER, GILBERT THOMAS: Comprehensive surface mapping in Williston basin

ABSTRACTS OF PAPERS

(In sequence as presented in technical program)

1. A. I. LEVORSEN, Consulting petroleum geologist, Tulsa, Oklahoma¹

THE OBSCURE AND SUBTLE TRAP

The tremendous expanding demand for petroleum and its products that continues to develop means that we must take a hard look at where our future supply of petroleum is to be found. In spite of the fact that most exploration has been and is directed toward the search for petroleum in local structural traps, many of the largest oil and gas pools in the Western Hemisphere are trapped by non-structural phenomena. Structural traps are so obvious that they are the first to be tested. But we are now facing the situation where the supply of structural traps in the United States seems to be limited; untested anticlines are becoming more difficult to find. Does this indicate an impending shortage of petroleum? The answer would seem to be *No*—but this means the search will have to be for more obscure and subtle trapping situations. The search will continue for the purely structural trap, but there will be added stratigraphic variations and fluid-flow phenomena, all operating either together or independently.

We have "stumbled" into many great non-structural oil and gas pools while looking for purely structural traps, but the time seems to have arrived when we must start looking directly for combination traps of all kinds involving different proportions of structure, stratigraphic change, and fluid-flow phenomena. Such traps may contain very large petroleum pools as past experience has shown.

There are in the Rocky Mountain region many such untested potential combinations of large and broad structure, stratigraphic change, and favorable fluid-flow

conditions to justify the belief in its continuing great future as a petroleum producing region of importance to our national needs. The fact that the Rocky Mountain Section is dedicating a full meeting to the obscure and subtle trap is a sure indication of a change in our thinking. Once we start actively looking for traps that combine structure, stratigraphic change, and fluid phenomena instead of looking only for local structure, there is no reason why discoveries in the United States should not continue to meet the demand. And the Rocky Mountain region has as bright a future for petroleum discovery as any other.

2. IRA H. CRAM, Vice president and chairman, Executive Committee, Continental Oil Company, New York City, New York

THE OLDEST IS THE NEWEST

Geologists and other scientists and engineers on the exploration team have the continuous job of improving their performance to the end that oil and gas are found in adequate quantities at the lowest possible cost at all times—come boom or bust. Nobody can know what the future holds, but if present forecasts of domestic and foreign demand for oil and gas down the line materialize, outstanding growth in exploration and production technology is a necessity. Fear that such (or larger) demand cannot be satisfied evaporates once the basic lesson history teaches has been learned. That lesson is our unfortunate tendency to underestimate the magnitude of the world's mineral resources, and further to underestimate man's ability to capture them and use them.

Growth in the importance of geologists to the exploratory process seems definitely assured as the more obvious prospects are taken out of circulation leaving deeper, more far-flung, and altogether more baffling hunting grounds with which to cope. As time passes, geologists will be called upon to make a greater contribution to the exploratory process than they have in the past.

Rocky Mountain geologists have a goodly piece of the domestic hunting grounds as well as a fair cross section of the oil- and gas-finding problems. These include the discovery of fields at great depths, in unusual structural traps, and, in particular, in stratigraphic traps. In effect, the area is a hand specimen of the finding problems of the future. The opportunity of advancing the art of discovery while maintaining or even increasing the area's position in the domestic industry is ever present. Success can hardly be achieved, however, unless Rocky Mountain geologists lead exploratory thinking and action and do not "pass the buck" to the geophysicists and Dad Joiners.

More geology, more imaginative geology, and more geology in geophysics, coupled with more wildcat drilling, will produce surprising results—surprising on the right side of the ledger. The oldest scientific finding tool—geology—becomes the newest, not only in the Rockies but elsewhere.

3. MICHEL T. HALBOUTY, Consulting geologist and petroleum engineer, Houston, Texas

IF THEY HAD NO FEAR, WHY SHOULD WE?

The oil industry was founded by men of imagination and daring who ignored the prophets of doom and employed their enthusiasm and optimism to discover and bring about a world of abundant energy. With this significant observation in mind, a few interesting highlights of petroleum history are traced; particularly, the achievements of Edwin L. Drake, who drilled the first

¹ Deceased, July 16, 1965. Paper presented by ORLO E. CHILDS.