one common goal: *To find and exploit reserves of oil and gas at a profit.* Today the economic factors are playing a dominant role in the highly competitive world petroleum situation. In order to justify his existence in the forecast 70-billion-dollar exploration effort set during the next ten years, the scientist must translate his thoughts into terms the nontechnical business man or executive can readily grasp. The obvious common language is dollars and cents in terms of anticipated profits. These economic terms transcend the semantics barrier that normally exists between the executive and the oil finder.

Various methods are discussed to show how geophysicists and geologists can convert exploration factors into anticipated profit-to-risk ratios. The authors include examples.

Significant factors contributing to a successful exploration program are: (1) The exploration and economic analysis must be compatible with, and integrated into, modern business techniques. That is, the analysis must enhance the executive's ability to make decisions. (2) The explorationist must recognize and avoid "marginal ventures," because 60 per cent of the wells completed in the United States are submarginal economically. (3) The laws of probability must be taken into consideration when establishing an exploration program. (4) To insure success, a company must hold risks to a minimum. This can be accomplished, in part, by participating in a large number of potentially profitable ventures, and/or by taking only a part of each drilling venture rather than the entire deal. (5) Anticipated profit-to-cost ratios can be estimated for many areas. Oil companies can use this information in evaluating and accepting wildcat prospects that have at least double the normal odds of developing into a profitable oil field.

The scientist who applies quantitative analyses skillfully will quickly achieve both recognition within his company and the status of a key decision-maker in his company's exploration program.

▲ ▲ ▲

March 15, 1965

LEWIS M. CLINE, Univ. of Wisconsin, Madison

"Geology of the Ouachita Mountains"

The Stanley-Jackfork-Johns Valley-Atoka rocks of the Ouachitas and the Tesnus-Haymond sequence of the Marathons typify what Alpine geologists call black shale flysch. Wild flysch and calcareous flysch also are represented.

In late Mississippian and early Pennsylvanian time a minimum of 22,500 feet of alternating sandstones and shales was deposited in a rapidly subsiding, linear trough. During the cannibalistic stage of the Ouachita geosyncline, (*sensu lato*) the Oklahoma-Arkansas trough probably was but one part of an 1800-mile foldbelt stretching from the Marathons to the Appalachians. Deposition of fine pelitic muds and siliceous shales was interrupted hundreds of times by deposition of quartzose sandstones. The sandstones debouched from a shelf environment exhibit convolute bedding, graded bedding, sole marks and other features now commonly ascribed to turbidity current deposition.

The foldbelt is structurally complex, with several major thrust faults striking parallel to the axis of the foldbelt and thrust toward the craton. Where observed at the surface the thrusts emerge at high angles but some (at least) seem to flatten with depth and probably become bedding plane faults.

The facies patterns and structural characteristics compare closely with those of the Polish Carpathians, Swiss Alps, and Italian Apennines and the characteristic sedimentary features are duplicated in intricate detail in the four mountain systems. Direct comparisons will be made between the Ouachita flysch and that of the classical European areas.

▲ ▲ ▲

March 22, 1965

C. J. MANKIN, W. H. BELLIS, and R. L. KERNS, JR., Univ. of Okla., Norman

"Regional Clay Petrology of Permian Shale in Southwestern Oklahoma"

Permian strata cover an area in excess of 50,000 square miles in the western half of Oklahoma, northern Texas, and southern Kansas. These strata are about 4,000 feet thick, are essentially flat lying, and consist dominantly of shale, mudstones, siltstones, and sandstones. In addition to these terrigenous redbeds, the Blaine and Cloud Chief Formations contain on the outcrop two major evaporite units.

This study and the resulting preliminary report are directed toward the genetic relationships of this redbed-evaporite sequence. Funds for the study are from a two-year National Science Foundation Grant No. G19186 entitled, *Mineralogy and Chemistry*