

# GEOLOGIC PAST

## Highlighting Articles from Past Issues of *GSA Bulletin*

### “The Problem of Petroleum”

Frederick G. Clapp, *GSA Bulletin*, March 1939

In an “Anniversary Day” address to the Society at its semicentennial celebration in December 1938, Frederick G. Clapp tackles “the problem of petroleum” with a global historical view of the science of petroleum geology, an analysis of the economics of “over- or undersupply” (p. 370), and a call for scientific foresight. His speech was published in *GSA Bulletin* in March 1939 (v. 50, p. 361–374).

First, Clapp addresses the question, “Who was the first petroleum geologist?” (p. 362). Clapp wisely argues that this person or persons would not “be found among our fathers, uncles, or contemporary teachers” (p. 362), but rather would have lived at the edge of recorded history. The first petroleum geologist could have been a Chinese engineer, a Babylonian navigator, a general of Alexander the Great, or even Lot, the nephew of Abraham.

According to Clapp, the subject of petroleum was not raised in scientific circles until the latter part of the nineteenth century, when the “anticlinal theory” for location of petroleum and natural gas gradually evolved. “For decades this theory quietly smoldered in oil circles, prevented from breeding an army of petroleum geologists only because of limited demand for oil products and the inherent conservatism of a majority of operators, few of whom had at that time faith that oil geology was more than a passing fad” (p. 363).

One of the perceived most valuable functions of geologists in the very early days of petroleum exploration was “showing where *not* to drill” (p. 364). Technical advances were driven by increasing demand and professional competition. “Commencing with two small consulting offices in 1908 ... the number of practicing geologists in the United States slowly increased ... as it became fashionable for oil operators to have their properties ‘detailed’ in advance of drilling” (p. 365).

With the rise of geophysics, petroleum geologists and operators gained new exploration and location methods. However, Clapp writes, “A note of warning must be sounded which might have saved millions of dollars if it had been radioed over the world when geophysics came into use. Far from being an infallible means of oil discovery when used alone, the new science is useful only when its method and practice are controlled by a supervising geologist” (p. 366).

Yet this was not “the problem of petroleum,” and neither was the need for improvements in geologic technique and in understanding petroleum origin. The problem, according to

Clapp, was “how to produce and distribute the volume of petroleum which is economically necessary at any given time” (p. 368). Clapp blames fluctuations in the balance between supply and demand for price swings “between 10 and 20 cents per barrel” (p. 369)—perhaps a pittance given the present-day economic situation, but still, a 100% variance.

Clapp emphasizes the fact, as is widely acknowledged today, that “there are only a certain number of possible oil-bearing States, as is likewise the case with foreign countries. Consequently, even if technique should advance to an unlimited extent, new discoveries ... will in time cease” (p. 369). Clapp also predicts that even if the United States curtailed its consumption of oil products, other nations would increase demand, “particularly the Asiatic countries, some of which have hardly begun to expand commercially” (p. 370).

While the main effects of the “depression-oversupply cycle” were, and still are, economic and political, this “vicious circle,” writes Clapp, also affected the quality of geologic education and employment. On the one hand, education of young geologists declined, and on the other, geologists found it difficult to obtain positions in oil exploration—“Consequently, geologic talent was wasted as well as oil” (p. 371).

It is interesting to note Clapp’s opinion that progress in the petroleum industry was, even then, hampered by public perception. Clapp, a petroleum geologist for the U.S. Geological Survey with a point of view delicately balanced between his profession and pure science, seems to mix accuracy, partiality, and prescience as he writes, “Any problem in the oil industry is ignorantly or maliciously made much of by journalists, politicians, and government agencies, with seemingly no general desire to find a solution. This attitude results in outside interference, unjust criticism, unwise regulation, and unnecessarily burdensome taxes” (p. 373).

Clapp ends his address with a call for scientific foresight: “Since we always have too much oil or too little, it behooves us to look ahead” at least 20 years (p. 372). “The role of The Geological Society of America is, of course, purely scientific,” Clapp writes, while noting that, as part of the “geologic fraternity,” GSA and other societies, the USGS, academia, industry, and government were duty bound to coordinate efforts toward “leveling out inequalities between flush and lean production” (p. 374).

