# NEWS and VIEWS

## GEOPHYSICAL ACTIVITY INCREASING

MEETING OF EXPLORATION GEOPHYSICISTS

The Society of Exploration Geophysicists met in St. Louis March 14–17. The group, organized in 1930, now numbers two thousand members, and as the word exploration in its title implies, is composed of men active in geophysical exploration—primarily for oil, and to a lesser extent for ores. The annual meeting in St. Louis was, as is usual, held jointly with the American Association of Petroleum Geologists and the Society of Economic Paleontologists and Mineralogists.

Since geophysical exploration is a highly competitive industry among oil companies and geophysical contractors, it is to be expected that many new developments are zealously guarded and not presented in papers until private exploitation ceases to be of particular advantage. Yet a number of new developments were reported, and collectively they serve to show advance in the highly specialized business of supplying the ravenous demand for petroleum products. Statistically, 1948 marked a seventeen percent rise in geophysical activity in the United States and a corresponding rise in foreign geophysical operations. The five hundred and twenty seismograph parties now operating in the U. S. mark an all time high in that phase of exploration. Significantly, three billion barrels of oil were found in this country last year to more than match the two billion barrel consumption.

Since no radically new or direct method for finding oil seems even remotely imminent, advances in the industry for some time have taken the form of engineering and instrumental improvements as well as advances in interpretation techniques in the old methods of seismic, gravity, magnetic, and electrical exploration. These were duly reported in a number of papers. But among the very new, very practical things mentioned was a new system of seismic exploration presented by Dr. T. C. Poulter of the Stanford Research Institute. His method consists of firing a pattern of explosions above the ground to originate a flat wave front which has certain definite advantages in many areas over the conventional method of firing a single shot in a hole in order to obtain reflections from sedimentary beds of rock. Another new seismic method presented by Dr. Norman Ricker of the Carter Oil Company is concerned with "composite" reflections. He utilizes a part of the disturbance originated by a shot which travels as a dilatational wave to the reflecting bed and returns to horizontal component seismographs as a shear wave.

Considerable attention was given the involved processes of interpreting magnetic and gravity data in terms of subsurface geology. The recent development of the airborne magnetometer has made it possible to obtain magnetic coverage of vast areas rapidly and cheaply. The variations in the earth's field so mapped, however, are the result of many factors of which the contribution of deep rocks below the sediments is predominant. The same is, to a lesser extent, true of gravity maps. The difficult problem of the interpreter is to distinguish what proportion of total potential fields the structure of sediments alone contributes.

Several papers were devoted to the geophysical exploration for "reefs." Since fossil reefs formed by colonial animals such as corals are important oil traps, of which the recent Canadian LeDuc field and others are examples, a keen interest was manifested in the reports on the delineation of these rock masses by the several geophysical methods, of which the seismic seems by far the most successful.

A significant academic contribution came from Dr. Ludger Mintrop of Germany, who in the 1920's helped introduce commercial seismographs into the United States. He reported on observations taken at the explosion of ten million pounds of munitions to destroy the island of Helgoland in 1947. A most remarkable result was the determination by Dr. Mintrop of a plastic earth layer at the depth 110–118 kilometers, substantiating theories of isostasy.

Perhaps the most ingenious contribution was made by Dr. Harold C. Urey, of the Institute of Nuclear Studies at the University of Chicago. He reported a means of determining the temperature of the sea water in which a fossil animal grew by a mass spectrograph analysis of carbon and oxygen isotopes present in its calcium carbonate shell. The ratio of isotopes present is in some forms determined by the sea water temperature during the fossil's growth, and the sensitivity of the determination is indicated by cyclical temperature changes indicated for different shell layers corresponding to seasonal variation. Dr. Urey's method has great possibilities in the determination of oil-forming processes and may mark a significant advance in the study of earth history.

—Paul L. Lyons

## PACIFIC SCIENCE CONGRESS

NEW ZEALAND MEETING REPORTED

The Seventh Pacific Science Congress which was held in New Zealand during February 1949 was the first after the war. The Congresses are mainly intended to unite scientists in fields with special interest in the Pacific Ocean. Thus, pure physics is not represented, but there are divisions of geophysics, geology, meteorology, and oceanography, in addition to other sections such as botany, zoology, public health, anthropology, and social science.

This Congress was broken into four parts: one week of scientific sessions in Auckland was followed by a week of excursions through the North Island; then there was a week of scientific discussions at Christchurch, and finally a week of excursions through the South Island. The intersessional tours were made in busses carrying groups of about twenty scientists each and following different routes depending on the chief scientific interest of each group. All joined in Wellington, where a day or two were spent at the various government institutions. While each group in these excursions was guided by a special-