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-

ist (geologist, volcanologist, botanist, etc.), the guides of the postsessional tours were generally naturalists, and the regions visited, including the "New Zealand Alps" for all groups, were selected mainly for scenic beauty, although points of scientific interest were always pointed out.

The importance of these Congresses lies not only in the presentation and discussion of symposia and single papers, but to a large extent in the exchange of information in small groups and in visits to such points of special interest as volcanoes, earthquake faults, regions with special fauna or flora or aborigines, etc. Last, and not least, recommendations are made at the Congresses to scientific organizations or governments for new facilities of research or for improvements of existing research centers. Among many other resolutions passed at the present Congress was one calling for more gravity observations in the South Pacific, where scarcely any are being made. Modern seismographs were recommended for a number of existing seismological stations there, and a request was made for new stations to provide better information on the seismicity in the southern hemisphere.

Similar resolutions were passed in connection with meteorological and oceanographic stations, and a better and speedier exchange of all data was discussed. Much attention was given to discussions on volcanism and the prediction of volcanic eruptions, by locating on "dormant" volcanoes, for example, the point of shaking inside the volcano with seismic instruments; if the source of these volcanic tremors approaches the surface an eruption is usually imminent. Magnetic, seismic, and gravity observations in the volcanic area of New Zealand are planned and have partly been started. Fortunately for the geologists, one of the volcanoes had its strongest eruption in history (according to the specialists) while the geological and geophysical groups were in the neighborhood. The seismologists had a chance to feel an earthquake originating at a depth of about one hundred miles, a matter of considerable interest because such large focal depths are unknown in the United States and Canada.

Extended discussions concerned the history and structure of the Pacific Basin and of the processes going on in its boundary regions, as well as in the petrographic peculiarities of these processes. The special features in New Zealand were discussed during excursions on the ground and in a few cases from the air as well. There was little doubt left that the structure and phenomena of the Pacific area are unique in many respects. The information, however, is far from sufficient to give a clear picture of the origin and development of the Pacific Basin. The hypothesis that the moon formed from material taken out of the Pacific area met serious astronomical objections, as at many times previously.

The over two hundred and fifty delegates from overseas and the New Zealand scientists seemed all to be greatly satisfied by the Congress, the former by experiences in this area, which shows an unusually large variety of phenomena of interest to scientists, the latter by the advice and information which they received in their "isolated" country (as they frequently point out), and the assurance that in most fields of research New Zealand is up to date. They also appreciated the moral support which they got from the visitors in connection with many of their problems. Still higher scientific achievements would be possible in New Zealand if there were more funds for a number of specific problems, and especially if additional research men with more adequate salaries were available.

—Beno Gutenberg

THE YOUNG PHYSICIST

A NEW SOCIETY?

The present relationship between the professional physics societies and the newcomers to the field was considered by a group of some forty physicists, many of them heads of physics departments at colleges and universities in various parts of the country, who met at the National Academy of Sciences in Washington, D. C. on April 27. The meeting was concerned particularly with the possibility that some further organizational development geared to the special needs of students might in large measure eliminate certain problems now facing the graduate and undergraduate physicist.

The understandable tendency toward specialization on the part of the existing professional societies in the physics field has in a sense erected a barrier between the young physicist and his future in the field. The complex and ever changing nature of physics presents a bewildering array of special interests from which he must choose, and the societies, which once were in a position to help simplify this picture, have themselves become so intricately patterned that they merely make more difficult for students the matter of deciding upon a path to follow.

The activities and services of the societies are designed for those whose formal training is completed, yet it has become a matter of great concern that young physicists are not better aware of the purposes and the works of the societies by the time they emerge as professional physicists. Reference was made in this connection to a letter from M. H. Trytten of the National Research Council (Physics Today, April, 1949) deploring the fact that all too many young scientists are not familiar with the technical societies and journals in their own fields.

Homer L. Dodge, president of the Sigma Pi Sigma Physics Honor Society, proposed to the meeting that it go on record as favoring the establishment of a new society of physics students, operating through local chapters, which would be a member society of the American Institute of Physics. The aim of the new society, as proposed, would be to encourage a professional spirit among physics students, to strengthen relationships among students and professional physicists, and to popularize interest and knowledge of physics in the general collegiate public. The motion was carried without dissent.

The sense of the meeting was that the proposal be understood as an exploratory one, and that the matter should be studied in somewhat greater detail before specific proposals involving organizational structure are formulated. It was pointed out that independently organized physics clubs now exist on various campuses,