

GEOPHYSICAL EXPLORATION— AN OPPORTUNITY

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One of the more recent outlets for Tech men has been in the field of applied geophysics, particularly in reflection seismograph work. During the past few years this work has played an important part in the exploration programs of all the major oil companies. Although reflection seismic surveying has been practiced since about 1926, it is only in the past five or six years that the method has found wide acceptance by the major oil companies. Reflection shooting is an expensive undertaking, but one that has more than justified its existence by furnishing information that has led to the discovery and development of new oil fields. It is practically the only method for accurately mapping subsurface beds and plotting the underlying geologic structure to a considerable depth with a fair degree of accuracy.

Of course the method in itself does not show the presence or absence of oil. It does however give the best available map of subsurface geology from which geologists must determine the probability of there being an oil deposit. This, oil company geologists do by combining the knowledge they already have of surface indications with quantitative subsurface data turned over to them in the form of maps by geophysical crews.

Since 1933 a good many Caltech graduates have found employment with geophysical companies or with large oil companies operating their own geophysical departments. It is highly probable that none of these men during their undergraduate years had the faintest idea that they would enter this type of work, since the industry, if it may be called such, was barely in its infancy. Strictly speaking no Tech man found himself particularly trained for this field, but the electrical engineer and the physicist had the best qualifications. What was actually needed was the combination of a seismologist and an audio frequency circuit engineer. This would be a rare combination indeed.

Practically all employment opportunities in reflection seismograph work are to be found on field crews. These crews do a good deal of traveling, and for this reason the job is not an ideal one from the standpoint of a married man or for a man who dislikes out of the way places in Texas, Louisiana, Kansas, Oklahoma and California.

Each field crew is roughly divided into two parts. One part goes out on location and does the actual recording work. Dynamite blasts are set off electrically and the seismic vibrations in the earth plus the much wanted reflections from the various subsurface strata are picked up by special multiple arrangements of "geophones" or "seismometers" strung out over the ground at predetermined spacings. Cables leading from these pickup devices enter the main recording truck and connect to control panels and thence to amplifiers and a multiple channel oscillograph. In the field crew there are also surveyors and drillers who lay out and prepare the shot holes in advance of the recording trucks arrival.

The other part of the crew consists of computers and a party chief, who work in an office somewhere near the shooting location examining the oscillograms turned in by the chief observer who handles all the recording equipment and is in charge of operations at the shooting location. The party chief directs the computers in their calculations and is in general charge of the whole crew.

Most geophysical companies also have a laboratory where research and development work is carried on.



David Sheffet '30 who is a research engineer in the Los Angeles laboratory of the Western Geophysical Company sends in a list of some Caltech men who are with his organization. Incidentally the Western Geophysical Company is a subsidiary of Standard Oil of Indiana and is one of the largest reflection seismograph companies operating in California, Mid-Continent, and Gulf Coast territories.

Charles C. Lash, '28 is party chief of a crew that has been operating mostly in Kansas, Texas and Louisiana, but was recently transferred to California.

Merrill D. Tucker, '30 is party chief of a crew operating in Texas.

Charles E. Buffum, '31 is party chief of a crew operating in both Texas and Louisiana.

George W. Read, '30 formerly in Texas but now chief observer with a crew operating in California.

Jack Desmond, '34 is a computer with a crew operating in the San Joaquin Valley, California.

Moses B. Widess, '33, Ph.D. '36, is also computer with a crew in the San Joaquin Valley.

Louis Sexton, '34 is computer with a crew in Texas.

Joe Grimm M.S., '35 is a junior observer with a crew in the San Joaquin Valley.

Paul Hawley M.S., '33 is a research engineer in the Los Angeles laboratory.

Other men in geophysical work include the following:

Michael C. Brunner, '25 is in charge of all geophysical crews for the Shell Oil Company.

E. D. Alcock, M.S., '33, Ph.D., '35 is doing geophysical field work with the Shell Oil Company.

David Scharf, '30 is with the Independent Exploration Company as a geophysicist in the Mississippi Delta region.

Gordon E. Bowler, '32 is with a Texas Company field party in the San Joaquin Valley.