

14. SALEM J. RICE, California Division of Mines, San Francisco. Reconnaissance Geology of the California Coastal Area North of Eureka.

The area discussed includes the Eureka, Trinidad, Orick, Requa, and Point St. George quadrangles, all 15-minute sheets. Because of the dense redwood forest cover in most of the region, reconnaissance mapping was accomplished largely along roads and well exposed sections of the coast line.

The oldest rocks comprise a sequence of low-grade metamorphic rocks, slate, phyllite, graphite schist, and green schist, which occurs in a northwest-trending belt in the Trinidad and Orick quadrangles. This belt is continuous southeast with the western belt of the Kerr Ranch schist in the Blue Lake Quadrangle. These metamorphic rocks have been thrust toward the southwest over the Jurassic Franciscan formation.

The Jurassic is represented by a thick sequence of metavolcanic rocks which crop out in the eastern part of the Point St. George Quadrangle, and by the Franciscan formation, which underlies most of the area. A large elongate mass of peridotite lies between the Franciscan sediments and the meta-volcanics in the Point St. George Quadrangle.

Cenozoic marine and continental sediments, ranging in age from Miocene through Quaternary, are widely distributed. Erosional remnants of the marine Miocene Wymer formation occur on the ridge crests east of the Crescent City platform. Marine Pliocene beds crop out near Patricks Point in the Trinidad quadrangle and in the vicinity of Point St. George. A thick sequence of late Cenozoic floodplain deposits occurs in the central portion of the Orick Quadrangle. The northern extension of the Wildcat group, which was not differentiated, covers most of the Eureka Quadrangle.

15. HARRISON S. BROWN, California Institute of Technology, Pasadena. Modern Methods of the Determination of Geologic Time.

A discussion of methods which have been used for estimating the duration of geologic eras and the age of the earth with emphasis on new techniques which have been recently developed. The new techniques make use of refined methods for the precise determination and isolation of micro quantities of trace elements and will lead eventually, it is hoped, to the formulation of a precisely dated geologic time scale. The analytical techniques known as "isotope-dilution techniques" make use of separate isotopes and mass spectrometry and make possible the precise determination of trace-element concentration at levels of 0.001 part-per-million.

16. ROY L. LAY, The Texas Company, Houston. Our Expanding Horizons.

Exploration assignments to-day are more challenging than ever before. The emphasis is on smaller structures and more accurate and deeper interpretations. Many of the more difficult areas, formerly not considered amenable to geophysical exploration, reveal a similarity of problems in widely separated geological and geographical provinces. Geologists and geophysicists are continually broadening their viewpoints because they realize more and more that few areas are unique.

Geophysics has made and is continuously making substantial contributions to basic geology. Exploration thinking is broadening steadily toward more definite evaluation of the many types of oil-bearing traps.

Explorationists are learning the principles of sound business risk and thereby expanding their horizons by becoming good businessmen as well as higher training specialists. The opportunity to expand our horizons further was never more promising than at the present.

17. PIERRE DE CHAMBRIER (Presented by Charles F. Gallagher), Schlumberger Well Surveying Corporation, Bakersfield. Microlog Continuous Dipmeter.

Some of the methods used at the present time for the determination of the angle and of the azimuth of the dip of the formations traversed by a bore hole are based on the correlations between three curves recording certain electrical characteristics of the formations, such as SP or resistivity, along the wall of the bore hole in three equally spaced azimuths. With the conventional equipment used for the application of these methods, the measurements are made over separate intervals of depth.

In the present paper, a new improved instrument called microlog continuous dipmeter is described, wherein the three curves used for the determination of the dip are obtained with three microlog devices, and wherein these three dipmeter curves,—and furthermore the orientation of the instrument and the inclination of the bore hole—are simultaneously and continuously recorded.

It is shown that, with the help of this instrument, more numerous dip determinations can be made in a given well, with a higher accuracy and a greater recording speed.

The paper is illustrated with field examples.

18. JOHN W. MATHEWS, Richfield Oil Corporation, Bakersfield. Geophysical History of South Cuyama Oil Field, Santa Barbara County, California.

In the course of a regional seismograph survey an anticlinal dip reversal was obtained in the foot-