

aquifer removed during the formation of the canyon. Accompanying excessive pumping of the aquifer will be the development of a landward slope of the piezometric surface and the intrusion of ocean water into the submarine area of the aquifer. The first water wells abandoned because of ocean water will most likely be in the vicinity of the submarine canyons.

TAKEO SUSUKI, University of California at Los Angeles

Faunal Assemblages from Type Topanga Formation, Santa Monica Mountains, California

The middle Miocene Topanga formation at its type locality in Topanga Canyon, 10 miles northwest of Santa Monica, Los Angeles County, California, consists of more than 8,000 feet of conglomerates, sandstones, and shales with intercalated basalts. An abundant molluscan fauna, obtained from four different horizons within the formation is divisible into two major faunal assemblages separated stratigraphically by 1,200 feet of barren beds. The lower assemblage ranges through approximately 200 feet of strata at the base of the formation and is characterized by the presence of *Turritella ocoyana* s. s. and *Pecten (Lyropecten) crassicardo* n. var. The upper assemblage ranges through the three upper horizons and is characterized by the presence of numerous specimens of *Turritella ocoyana topangaensis* and *Turritella temblorensis*.

THOMAS CLEMENTS, University of Southern California, Los Angeles

Further Evidence of Wind-Blown Rocks on Playas

Since the report by McAllister and Agnew in 1948 of trails left by rocks on the Racetrack Playa, there has been much speculation as to their origin. Those authors attributed the movement of the rocks to the wind. However, since the Racetrack is at a high elevation, where freezing occurs during the winter, the aid of ice could not be ruled out. The finding of similar trails on Little Bonnie Claire Playa, recently reported by the present writer did not completely eliminate ice as a possible aid since it, too, is at a relatively high elevation.

The same phenomenon has since been observed on a playa at 1,600 feet elevation, and somewhat farther south than either of the previously mentioned ones. The aid of ice seems to be definitely ruled out, as well as possible pushing about by human beings. This leaves the wind as the most likely agent causing the movement of the rocks, as first suggested by McAllister and Agnew.

FRED B. PHLEGER, FRANCES L. PARKER, AND JEAN F. PEIRSON, Scripps Institution of Oceanography, La Jolla

North Atlantic Core Foraminifera Collected by Swedish Deep-Sea Expedition

Foraminifera have been studied from 39 long deep-sea cores and from 53 undisturbed surface sediment samples collected from the North Atlantic. Mid-latitude and low-latitude planktonic assemblages can be differentiated, with at least five different distribution types. The long cores contain faunas normal for their latitude alternating with faunas typical of higher latitudes. These are suggested as representing alternating cold and warm epochs, mostly Pleistocene; correlation of these epochs appears possible in a mid-latitude series of cores.

Several cores contain shallow-water Foraminifera which have been displaced from shallow water. It is suggested that much of the mud in the deep ocean may be the finer fraction of sediments displaced from shallow water. Four cores contain planktonic Foraminifera of Miocene age. There is abundant evidence of solution of calcium carbonate; it is suggested that most of this solution occurred at the sediment surface and is related to the rate of production of Foraminifera.

A mixed high and low latitude planktonic fauna occurring off Africa between 15° and 20° N. Lat. is attributed to mixing at the convergence of the Equatorial Counter Current and the Canary Current. Mixed planktonic faunas occur in lower sections of cores off Africa between 0° and 7° N. Lat.; this suggests that the convergence area was displaced southward during the past.

W. DWIGHT PIERCE, Los Angeles County Museum, Los Angeles

Significance of Insect Remains in Asphalt Deposits

Asphalt deposits at Rancho La Brea, Carpinteria, McKittrick and Sulphur Mountain have been studied for insect remains. An astonishing number of species has been found varying in size from about 1 millimeter to 3 inches.

The four deposits studied present three distinct types: Rancho La Brea and Carpinteria were open pools due to upward surge of asphalt, with consequently constant movement in the liquid asphalt. The McKittrick field was due to chimneys opening on hillsides and the slow flow of the asphalt down the slopes caught many insects and small animals, with the larger animals only caught in the pools formed at the bottom. Sulphur Mountain is an almost vertical flow down a mountain side with small pools caught on ledges. Here as in McKittrick the insects are deposited where they die.

The stratification of the McKittrick field will permit climatic correlations and also studies in the gradual change of insect characters over a long period of time.

The finding of certain carrion insects indicates the time required for complete submersion of the animal. This took up to three months at La Brea, but two to three years at McKittrick.

The large number of aquatic insects in the deposits poses a number of interesting questions. The continuous deposition of asphalt from Middle Pleistocene to this day gives a wonderful opportunity for paleoecological study.

HAROLD G. BILLMAN, Union Oil Co., Bakersfield

ALFRED A. HOPKINS, JR., Richfield Oil Corp., Bakersfield

Stratigraphic Distribution of Foraminifera of Type Luisian Stage, California

STANLEY A. CARLSON, Richfield Oil Corp., Bakersfield

Stratigraphy of Cuyama Valley Area, California

The sedimentary rocks in Cuyama Valley range in age from Cretaceous(?) to Pliocene-Pleistocene. The major rock units in ascending order are: Cretaceous(?) interbedded sandstone and shale; Pattiway formation, Eocene(?); Simmler formation, continental Oligocene(?); Soda Lake sand, Soda Lake shale, and Painted Rock sand members of the lower Miocene Vaqueros formation; Saltos shale and Whiterock shale members of the lower and middle Miocene Monterey formation; Bitter Creek formation, the sand equivalent of the Monterey formation; Caliente formation, in large part the eastern continental equivalent of the Bitter Creek and Monterey formations; Santa Margarita formation, upper Miocene and its continental equivalent on the east, the Quatal formation; and the Morales formation, continental Pliocene(?).

The time-stratigraphic sequence of some of these rock units can be determined from microfaunal, megafaunal and vertebrate fossil assemblages.

NINETEENTH INTERNATIONAL GEOLOGICAL CONGRESS, ALGIERS, 1952¹

PERRY OLCOTT²

Houston, Texas

The decisions of the Council during its business meetings have become available through W. E. Wrather who headed the U.S.G.S. delegation.

At the third meeting after two preliminary meetings, the following Permanent Commissions were approved.

1. Spendiarov Prize
2. Lexicon of Stratigraphy
3. Crust of the Earth
4. Geological Map of Europe
5. Geological Map of the World
6. Distribution and Correlation of the Gondwana System
7. International Geological Map of Africa
8. Association of African Geological Surveys
9. Authors' Abstracts
10. Determination of Geologic Age by Radiological Methods
11. World Physiographic Province Map
12. Meteorites

The following Temporary Commissions were approved:

1. Pliocene-Pleistocene Boundary
2. Division of the Carboniferous System into Two Sub-Systems
3. International Palaeontological Union—Fossil Man (Sub-Commission)

Fourth meeting.—Recommended that Schurmann's (Netherlands) proposal to print papers in advance of the meetings be referred to the Organizing Committee of the XXth Congress.

After a prolonged discussion of a proposal to recommend the formation of an International Geological Union in which it was apparent that such an International Union would not meet with unanimous approval, the following resolutions were adopted.

1. The International Geological Congress should continue autonomously as it is.
2. That a national union, which could assist the Congress, be created in each country.

¹ Manuscript received, December 4, 1952.

² Chairman of A.A.P.G. delegation.