6. James S. Booth: Sediment dispersion in northern Channel Island passages, California

FRIDAY MORNING, MARCH 20
SEG Session

1. M. Turhan Taner: Limitations of reflection-seismic method: lessons from computer simulations
2. R. O. Lindseth: New dimensions: amplitude and frequency mapping
3. J. Lindsey: Automigration of seismic data

FRIDAY MORNING, MARCH 20
SEPM Session

1. W. W. Wornardt, Jr.: Fossil diatoms and silicoflagellates from Newport Beach, California, studied with scanning electron microscope
2. Hsin-Yi Ling: Occurrences of silicoflagellates from central North Pacific cores
3. Fritz Theyer: Benthic foraminiferal trends in Pacific-Antarctic basin
4. Edith Vincent: Pleistocene-Holocene boundary in southwestern Indian Ocean
5. Ronald W. Morin: Late Quaternary biostratigraphy of cores from beneath California current
6. Richard L. Pierce: Preliminary reevaluation of late Miocene biostratigraphy of California
7. Augustus K. Armstrong: Foraminifera and rugose coral zones of Mississippian-Pennsylvanian Lisburne Group, Brooks Range, Arctic Alaska

FRIDAY AFTERNOON, MARCH 20
AAPG Session

1. Eugene M. Shoemaker: Lunar regolith at Tranquility base
2. D. R. Holbert, G. B. Thomas, M. Sweeney, R. D. Vontiehl, T. W. Ehring*: Building and using computerized well-course file in offshore, geologically complex field
3. Tsvi Meidav, R. W. Rex: Geothermal exploration in Imperial Valley
4. Tom F. Manera: Sedimentology of southeast Pacific Ocean deep-sea cores

FRIDAY AFTERNOON, MARCH 20
SEG Session

1. N. S. Neidell: Semblance and other coherency measures for multichannel data
2. Gary Greene: Detailed geophysical study of Northwest Norton basin, Bering Sea shelf, Alaska
3. R. O. Lindseth: Multichannel mapping techniques

FRIDAY AFTERNOON, MARCH 20
SEPM Session

1. W. O. Addicott: Tertiary climatic change in San Joaquin basin, California: evidence from shallow-water mollusks
2. R. J. Stanton, Jr.: Cyclicity in upper Tertiary basin-margin deposits of California Coast Ranges
3. Donald H. Zenger: Supratidal dolostones: an overemphasis on their significance in geologic record?
4. Barbara E. Haner: Geomorphology and sedimentary character of Redondo submarine fan
5. H. ab Iorwerth: Magnetic grain fabric of sedimentary rocks
6. Ivan P. Colburn, James Rodine*: Paleocurrent and basin analysis of Late Cretaceous "Chico" formation, Simi Hills, California
7. Dean Milo: Biostratigraphy of Leg 5, JOIDES holes, off California coast

ABSTRACTS OF PAPERS
(in order of presentation)

W. P. Brosgé and Irvin L. Tailleur, U.S. Geol. Survey, Menlo Park, Calif.

Depositional History of Northern Alaska

(No abstract submitted)

Robert D. Walker, Mobil Oil Corp., Dallas, Tex.

Geologic Data Processing—An Effective Exploration Tool

To be effective, a geologic data-processing system must be economically feasible, user oriented, relatively simple to operate, easy to maintain, and must provide meaningful output. Output may be in the form of a map, cross section, or list. The first and most important phase in the development of a geologic data-processing system is the establishment of a network of wells among which the correlation has been standardized. This standard correlation network should cover the entire geographic area that is included by the system.

A major expense associated with the establishment of a geologic data-processing system results from gathering and encoding data. Cost reductions can be achieved by eliminating redundant and nonessential data from the file. Input costs may be reduced further by using the computer to code, format, and edit data. After the data file has been created, it can be searched by the computer for the information required to construct structure, isopach, paleogeologic, and fault-occurrence maps. Additionally, data displays such as cross sections, trend surface maps, and isometric diagrams are readily available to the explorationist.

Jack E. McKee, California Inst. of Technology, Pasadena, Calif.

Environmental Impact of Petroleum Waste

(No abstract submitted)

Wilferd W. Peak, California State Division of Safety of Dams, Sacramento, Calif.

California Geologic Registration—Where Do You Fit?

The Geologists' Act, approved by the California State Legislature in 1968, regulates the practice of geology and establishes state-wide standards for geologists for the benefit of the safety, health, and property of the people of California. All existing and projected local certification boards and regulations will be phased out as the State legislation becomes effective in 1970.

To interpret and administer the new statute, the Act created the State Board of Registration for Geologists. This Board first met on April 30, 1969, and since then has received and is processing more than 3,000 appli-

cations for registration. Deadline for indicating interest in filing for registration was November 13, 1969, and closing date for submitting final completed application form is April 30, 1970. The date after which it will be unlawful to practice or offer to practice geology in California, except as specifically exempted in the Act, has been extended to June 30, 1970. This was done to enable the Board to complete registration of the unexpectedly large number of geologists who have applied.

Individuals missing the "grandfathering" period may still register without examination under certain provisions of the Act. They also may apply to take the next examination, for registration in geology and/or certification in engineering geology, at any time. This test will be given between August and October 1970.

Provisions of the Act require that the "specialty" of engineering geology be established and defined by the Board, and that qualified individuals be certified as engineering geologists upon proper application. Groups of geologists desiring to have similar "specialty" certifications established in other disciplines may bring their requests before the Board, which has the authority to regulate these into existence on the basis of public need.

M. B. DOBRIN, Univ. of Houston, Houston, Tex.

GEOPHYSICS AND FUTURE OIL POTENTIAL

(No abstract submitted)

JOHN W. HARBAUGH, Dept. of Geology, Stanford Univ., Stanford, Calif.

COMPUTER SIMULATION OF MARINE SEDIMENTATION

Geology has lacked an effective experimental approach to many problems. Although some kinds of experiments can be carried out, such as sediment transport on a stream table, most geologic processes cannot be re-created in the laboratory. A mountain range can be observed in the field, but neither the mountain range nor the mountain-building processes can be duplicated in the laboratory. These are shortcomings of which geologists are fully aware.

There is, however, another shortcoming in the geologist's kit of tools—namely, his difficulty in dealing with many interdependent variables or processes that mutually and simultaneously affect each other. However, computers can be used, in conjunction with appropriate mathematical geologic models, to perform kinds of experiments which otherwise could be performed only with difficulty, or not at all. Furthermore, these computer models are ideally suited for "exploring" the effects of interdependent geologic processes that are linked together to form dynamic systems.

The processes of marine sedimentation are highly interdependent. All too commonly, geologists who study stratigraphic sequences attempt to interpret the depositional environments of the strata in terms of only one or two variables—such as water depth or wave energy. Clearly, methods of analyzing the effects of multiple interdependent geologic variables are needed.

Computerized, dynamic mathematical models which represent geologic processes and products in two- or three-dimensional space provide one method of attack. These models are philosophically identical to dynamic oil-reservoir simulation models, and they also share many of their constructional details. Most dynamic geologic simulation models can be constructed from relatively few mathematical "building blocks," which may be grouped into the following categories: (1) materials-balance accounting systems; (2) sources of random variables; (3) Markov chains; (4) flow and transport mechanisms using finite-difference methods of representing diffusion and fluid-flow processes; (5) feedback control; (6) optimization; and (7) graphic display. Virtually all models employ methods in which both space and time are compartmented into small increments.

Experiments with relatively simple sedimentation models suggest that feed-back control exerts much influence on sedimentary sequences. A lag in the isostatic adjustment of the crust in response to the load imposed by deposition of sediment may be responsible for some of the large-scale rhythms in cyclic sedimentation. Simulation models can be used effectively to explore the results of different assumed lag factors in sedimentation/isostatic-adjustment feedback loops.

OSCAR E. WESER, Standard Oil of California, La Habra, Calif.

STRATIGRAPHY AND SEDIMENTATION OF JOIDES HOLES OFF CALIFORNIA COAST

Five holes were drilled several hundred kilometers offshore near the Mendocino and Pioneer fracture zones. Situated in 3,200–4,200-m water depths, these holes penetrate most or all of the stratigraphic column present at each site. They provide pertinent geologic data concerning the age of the oceanic crust and demonstrate 200–1,200-km offset across the fracture zones in that region. The deposits range in age from Pleistocene through late Oligocene. Their rates of deposition range from 0.1 to 56.0+ cm/1,000 years. Most are of terrigenous origin, although thin pelagic intervals are present in two holes. Such sedimentation agents as biogenous productivity, tropospheric transport, bottom currents, grain-by-grain settling, and turbidity currents have contributed to the sediment accumulations. Two of the holes that are only 20 km apart are lithologically similar. Each of the other holes has distinctive lithologic characteristics and thereby reflects variations in the contributions made by the different sedimentation agents. Several holes contain intervals of porous sand as well as organic-rich mud.

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DIAPIRS AND DIAPIRLIKE STRUCTURES, SOUTHEASTERN BERING SEA[1]

Four diapiric folds and two folds that are probably diapiric have been located by seismic-reflection profiling beneath the edges of Umnak Plateau, a broad platform at a depth of about 1,860 m in the southeastern corner of the Bering Sea. The plateau is underlain by 2,000–3,000 m of generally flat-lying strata thought to be of Neogene age. These strata overlie an "acoustic basement" that probably consists of lithified rocks of Paleogene age or older.

The piercement cores appear to rise from, or through, the acoustic basement, or possibly from the basal beds of the strata that form the plateau. The cores rise as much as 1,500 m above the acoustic basement and to within 700 m of the sea floor. Folding above the cores decreases upward, but the plateau is gently domed in places. Intrusion of the diapiric cores probably formed these folds in late Tertiary time; how-

[1] Publication authorized by the Director, U.S. Geological Survey.