thinning, wedging and grading. The major lithologic units recognized within the two formations consist largely of cobble and pebble conglomerate, fine-, medium- and coarse-grained sandstone, siltstone, and mudstone.

The red pigment (Fe_2O_3) which colors several members within the Sespe and Alegria formations is dispersed throughout the clay complex of the finer-grained sediments. The rapid burial of these sediments before alteration has thus preserved much of the original red coloration. The presence of organic matter at the site of deposition caused reduction and the initially red sediments transformed into drab-colored deposits.

TJEERD HENDRIK VAN ANDEL, Scripps Institution of Oceanography

Sedimentary Facies in Modern Basins

WALTER W. WORNARDT, JR., University of California, Berkeley

Stratigraphic Distribution of Diatom Floras in Sisquoc Formation of Purisima Hills, California

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HELEN TAPPAN, University of California, Los Angeles

Suprageneric Classification of Rhizopodea

A proposed suprageneric classification of the class Rhizopodea is given, with particular revision to the order Foraminiferida.

The subclass Lobosia contains the orders Amoebida, Arcellinida, and Mycetozoida. The subclass Filosia includes the orders Aconchulinida and Gromida, and the subclass Granuloreticulosia includes the orders Athalamida, Monothalamida, Foraminiferida, Xenophyophorida, and Proteomyxida.

The order Foraminiferida includes 7 superfamilies based on wall composition and structure, and method of test growth: Lagynacea (gelatinous to chitinous tests), Astrorhizacea (non-sepate, agglutinated test), Lituolacea (septate and agglutinated), Parathuramminacea (non-septate, with wall of calcareous granules in calcareous cement), Endothyracea (septate, with granular or fibrous calcareous wall, generally with two distinct layers), Fusulinacea (basically three distinct wall layers), Miliolacea (porcellaneous). The so-called calcareous perforate foraminifera represent ten superfamilies, six of which have radially built walls: the Nodosariacea (with basically radiate aperture), Buliminacea (high spired test and commonly with internal toothplate), Asterigerinacea (enrolled, no-canaliculate, walls and septa single layered), Rotaliacea (canaliculate, enrolled), Globigerinacea (planktonic), Orbitoidacea (with double walls and primarily formed double septa). The last four superfamilies include the Cassidulinacea (walls of perforate granular calcite), Carterinacea (walls of calcareous secreted spicules), Robertinacea (wall of aragonite and chambers internally subdivided) and Spirillinacea (wall optically acts as a single crystal of calcite).

A complete synonymy of all suprageneric categories has been compiled, in order to determine the correct family group names to be utilized, on a priority basis.

THEODORE L. JAHN, Department of Zoology, University of California, Los Angeles
EUGENE C. BOVEE, Department of Biology, University of Florida
EUGENE B. SMALL, Department of Zoology, University of California, Los Angeles

Mechanisms of Movement: Basis for New Major Dichotomy of Sarcodina

Members of the Sarcodina seem to possess either of two basic mechanisms for protoplasmic movement: (1) a contraction-hydraulic system, in which flow of protoplasmic sol is caused by contraction of a tube of gel, and (2) an active shearing or active sliding mechanism in which two surfaces, usually both of gel but possibly one of gel and one of sol, move in relation to each other. The first system occurs typically in *Amoeba* (Mast, 1926) and *Physarum* (Jahn, Rinaldi, and Brown, 1960; Jahn, 1960), and the second in *Allogromia* (Jahn and Rinaldi, 1959). Examination of older literature and of living specimens reveals that the contraction-hydraulic system is found in the Amoebida, Mycetozoida, Acrasinorida, and some the the Testacida (e.g., *Arcella*), and that the active sliding system is found in the Foraminiferida, Radiolarida, Acantharida, Helozoida, Heliоflagellorida, most Protemyxida, and some Testacida (e.g., *Euglypha*). No organism has been found which possesses both mechanisms.

If these two mechanisms are distinct, possession of either one or the other must be of great phylogenetic importance to the organisms, and therefore should be of taxonomic importance. If so, we should divide the Sarcodina into two major groups on the basis of possession of one or the other.

The morphological basis established by the French school (Grasse, 1948) for the rearrangement of the orders of Rhizopoda on the basis of the morphology of pseudopods is further emphasized by the existence of two basic mechanisms for pseudopod formation. However, use of these mechanisms as a basis of the major dichotomy combines the Actinopoda with the Filosa and the Granuloreticulosa into one of the two major groups.

DALE WIGGINS, Standard Oil Company of California

Mississippian Microspore Assemblage from White Pine County, Nevada

Core samples from the subsurface Chainman formation in the Standard-Continental Hayden Creek Unit No. 1, Sec. 17, T. 15 N., R. 59 E., White Pine County, Nevada, were examined for palynological data.

The abundant Mississippian microspore assemblage obtained from this interval included the important spore genera. *Rotaspora, Grandispora, Densosporites, Callisporites, Tripartites, Schulzospora, Auroraspora, Convolutispora, Knoxisporites,* and *Reinschospora.*

In comparison with the Pennsylvanian, Mississippian strata have remained virtually unexplored for palynological criteria. However, in recent years investigations have been considerably expanded with the increased interest in palynology as a tool for correlation.

Mississippian microspore literature is rare world-wide and generally confined to sediments of Chesterian age. In the United States published data are practically nonexistent, being limited to three papers, two of which have not been satisfactorily correlated with type Mississippian sections.

A comparison made of the assemblage obtained from the Chainman formation with other published and unpublished data indicates that it is probably lower Chesterian in age.

SHERWIN CARLQUIST, Claremont Graduate School, Claremont, California

Pollen Morphology of Rapateaceae

Rapateaceae is a family of monocots restricted to

northern South America and Liberia. Although pollen is basically of a monsulcate type common in monocots, specializations occur: (1) lengthening of the furrow into an aperture widened at both ends, providing two germ pores instead of one; (2) lengthening of the furrow to form a continuous aperture around the equator of the grain; (3) presence of two identical furrows; and (4) variations in coarseness of exine patterning. Evolutionary and taxonomic correlations of these features are discussed. Pollen of Rapateaceae is an excellent example of the fact that no one method of preparation is sufficient, and reasons are given for use of several methods to provide (1) complete descriptions and (2) accurate descriptions. Current literature on pollen of the family is deficient in these respects.

COMMITTEE FOR INDUSTRIAL-ACADEMIC RELATIONS[1]

ORLO E. CHILDS[2]
Denver, Colorado

The need for a special committee on industrial-academic relations was expressed by the Executive Committee of the A.A.P.G. Ben H. Parker, president of the Association, stated this need in the following words: "The Executive Committee of the Association is deeply concerned by the current imbalance between employment opportunities in geologic fields and available geologists. This concern is two-fold: it results, first, from the critical personal problems of the unemployed members of our profession; and, secondly, from the serious and perhaps critical shortage of trained geologists which may follow this period of excess supply within a few years." A committee, therefore, of 25 geologists was organized, with Orlo E. Childs of Phillips Petroleum Company acting as chairman.

The first task has been to assemble accurate data that clearly point to today's employment and training status. Accordingly, two questionnaires have been prepared; one for industry, and one for universities and colleges. Both questionnaires are organized around an attempt to establish a ten-year history of employment and training, together with a five-year forecast of expectations in industry and universities.

To implement the gathering of these data, major oil companies will be contacted by A. G. Alpha, M. G. Gulley, H. T. Morley, J. S. Royds, and J. T. Rouse. Independent oil companies (who hire less than 20 geologists) are to be circularized under a subcommittee headed by M. T. Halbouty; working with him are: C. E. Brehm, Frank Gardner, J. B. Hudson, K. V. Schroeder, R. D. Sloan, and Carl Ulvog. The colleges and universities over the country giving degrees in geology will be contacted by A. J. Eardley, S. P. Ellison, E. N. Goddard, V. E. Monnett, Charles F. Park, and R. R. Shrock. Special assignments have been made to cover other branches of industry: State surveys—J. C. Frye; consulting and service companies—G. A. Hill and Floyd Miller; U.S.G.S.—D. M. Kinney; foreign operations of oil companies—V. C. Maley and W. E. Wallis; U. S. mining companies—John Payne, Jr.; Canadian oil companies—J. L. Usher.

Committee for Industrial-Academic Relations in session at Denver, October 30, 1960. From left to right around the table: E. N. Goddard, University of Michigan, M. G. Gulley, Gulf Oil, M. T. Halbouty, Independent, A. J. Eardley, University of Utah, H. T. Morley, Pan American Petroleum, O. E. Childs, Phillips Petroleum, G. A. Hill and F. H. Miller, Petroleum Research Corporation, and D. M. Kinney, U.S.G.S.

A committee meeting was held in Denver on October 30, 1960 (see picture). This meeting coincided with the G.S.A. annual meeting. The printed questionnaire forms were distributed to the Industrial-Academic Relations committee members, and the plans of circulation were formulated. It is hoped that all our data will be collected by the end of January so the results can be coded and tabulated in time for a report to the A.A.P.G. at the Denver meeting in April, 1961.

[1] Manuscript received, November 23, 1960.

[2] Chairman, 1160 Denver Club Building.