sas contain abundant quartzose clastics thought to be derived from the Central Kansas uplift and Las Animas arch.

In the Williston basin, Mississippian rocks are dominantly carbonates but in Late Mississippian time thick evaporites were deposited. Late Mississippian or Chesteran deposits are not common in the Rocky Mountain region and may have been removed by pre-Pennsylvanian erosion. Chesteran time was characterized by advance and retreat of the shallow seas in the Mid-Continent area and strata reflect rhythmic displacement of the strandlines into basinal areas. The Chesteran seas were less widespread than Meramecian seas.

Present distribution of Mississippian rocks outlines Late Mississippian-Early Pennsylvanian tectonic features, but the dominant tectonic feature throughout Devonian-Mississippian time was the Transcontinental arch.

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The computer "explosion" has affected all phases of business, government, and industry, and has gained tremendous momentum in expanding the capacity of exploring for oil and gas. Many programs have been developed to aid the geologist in screening his area of interest in the search for drilling prospects. Among these are sifting the data files, commercially available, for the massive amounts of information that might never been seen on a comparable basis by a geologist. Lithologic maps are quickly made from digitized sample and electric logs by the computer and the plotter. Ouantitative studies of the electric log are in the operational stage and, under the supervision of competent log analysts, entire basins are being mapped on computed porosity, water saturation, lithology, etc. Mapping techniques such as structural, isopachous, trend analysis, and factor analysis appear to be commonplace within the industry as aids in the location of prospects. The computer can even be programmed to identify all the mineral content in an X-ray diffraction pattern. The purpose of all of these, and many other programs, is to aid the geologist in the search for prospects.

Just as important in the "overview" of the entire exploration effort are the programs written to evaluate the geological and geophysical prospects, analyze the land situation, prepare bidding strategies for lease sales, and coordinate the economic activities of all the departments that compose the exploration team. All of these efforts are the product of operations research personnel and fit into the management information systems of most companies.

It is imperative that the geologist master and control the programs which are available, utilize them, and work closely with the computer experts in the generation of new ideas.

- L. S. GRIFFITH, Hudsons Bay Oil and Gas, Calgary, Alberta, MAX G. PITCHER, Continental Oil Co., Ponca City, Okla. AND G. W. RICE
- QUANTITATIVE ENVIRONMENTAL ANALYSIS OF A LOWER CRETACEOUS COMPLEX

(No abstract submitted)

JOHN HARMS AND FRANK EXUM, Marathon Oil Co., Littleton, Colorado MARINE AND CHANNEL SANDSTONES IN LOWER CRE-TACEOUS OF D-J BASIN (No abstract submitted)

- JACK HENDRICKSON, Champlin Petr. Co., Ft. Worth, Texas
- EXPLORATION MANAGEMENT, ESP or IBM? (No abstract submitted)
- ROBERT S. HOUSTON, University of Wyoming, Laramie, Wyoming
- REGIONAL PRECAMBRIAN TECTONICS AND STRATIGRAPHY OF ROCKY MOUNTAINS WITH EMPHASIS ON WYO-MING PROVINCE

The most ancient rocks of Precambrian age in the Rocky Mountains are in the Wyoming province. These rocks are in Wyoming and adjacent parts of Montana and South Dakota, and may include rocks older than 3 b.y. The older rocks of this province probably are granitized metasedimentary rocks that have been deformed severely and show no evidence of a regional structural pattern. Younger metasedimentary rocks, including iron formations, are in northeasttrending synclinoriums, but even these units are older than 2.5 b.y. Most areas studied in the Wyoming province have had an extraordinarily complex structural history and many areas show evidence of more than one episode of deformation; several areas have northwest fold systems and shear zones that disrupt earlier structure.

The Wyoming province may be bordered on all sides by younger rocks or rocks affected by deformation after 2.5 b.y. Miogeosynclinal rocks of possible middle Precambrian age are along the southeastern border of the province. These rocks may be facies of metasedimentary rocks in Colorado that have been metamorphosed in an event of ~ 1.7 b.y. Evidence for middle Precambrian metamorphic events also has been found in South Dakota, Nebraska, and Mohtana. These events cannot be related to regional tectonic trends. For example, Colorado structural trends are east-northeast and northeast, whereas in the Dakotas and Nebraska trends are north-northwest.

Precambrian rocks that are younger than middle Precambrian are primarily west and southwest of the Wyoming province. These include Beltian metasedimentary rocks in Idaho and Montana, and probable Beltian and younger sedimentary rocks in Utah and Nevada. In some areas Beltian metasedimentary rocks have been deformed several times; north-northwest to northwest structural patterns appear in many areas. Some Beltian metasedimentary rocks are probably older than ~1.2 b.y.

Although fragmentary evidence based on partial mapping of the 10% outcrop area of Precambrian rocks in the Rocky Mountains does not allow establishment of firm regional tectonic patterns or make satisfactory correlations of ages and tectonics, evidence to date suggests a remarkably complete sequence of Precambrian rocks may be present from rocks older than 3 b.y. to rocks of late Precambrian age.

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- PRE-PENNSYLVANIAN—POST-CAMBRIAN GEOLOGY OF CORDILLERAN TROUCH

(No abstract submitted)