ridges are prominent at Cape Henry, Virginia, Bogue Island, Parramore Island, and elsewhere on the Atlantic Coast and at many places on the Gulf Coast.

Beach sands on modern coasts are well sorted within individual beds or laminae. On the other hand, there is considerable range in grain size from laminae to laminae. The beach sands are composed chiefly of grains of quartz but contain minor amounts of a great variety of minerals.

Beach sands on modern coasts are transitory features that are modified by every storm. It is truly remarkable that many similar sand bodies of the geologic past have been so perfectly preserved in the geologic column. A few examples include the so-called shoestring oil sands in the Cherokee shale of Pennsylvanian age in Kansas and Oklahoma. These sand bodies have many features of the modern coastal sands. The length of one system of these sands is 150 miles. Some of the sand bodies in the Cretaceous system in the Denver basin of Colorado and Nebraska, and in the Powder River basin of Wyoming and the somewhat younger Cretaceous sands in the San Juan basin in New Mexico appear to have had a similar origin.

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Facies Changes in Pennsylvanian Rocks along North Flank of Wichita Mountains

The area of investigation in southwestern Oklahoma extends from Cement field, Tps. 5–6 N., Rs. 9–10 W., northwestward along the north flank of the Wichita Mountains to the Oklahoma-Texas boundary. A study of Pennsylvanian sediments in this area reveals conspicuous facies changes both laterally and normal to the mountain flank. In the lateral facies changes show a close relationship to the provenance from which the sediments were derived. Correlation difficulties are increased because of these facies changes. Fusulinids provide reliable age determinations when present. The Pennsylvanian rocks are dominantly clastics. The principal facies near the mountain front is "granite wash," a coarse clastic sediment composed primarily of igneous rock fragments with variable amounts of detrital carbonates and chert. Subordinate facies are arkosic sandstones, arenaceous, silty shales and thin, argillaceous limestones. These continental and transitional facies interfinger basinward with normal marine sandstones, shales, and limestones.

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Facies Patterns and Oil Accumulation in Pennsylvanian of Southern Oklahoma

Analysis of the complex facies patterns expressed by Pennsylvanian strata of southern Oklahoma requires identification of regionally extensive, correlatable, stratigraphic units. The writers have been able to extend a correlation network based on recognition of cyclical units which can be grouped into major operational mapping units separated by regional unconformities. The resulting stratigraphic subdivisions, both major and minor, are not those of the formal stratigraphic nomenclature accepted in the area but they do make possible a classification of trapping conditions related to position in the stratigraphic succession. The types are as follows: (1) blanket sands in which facies trapping components are markedly subordinate to structure; (2) discontinuous sand bodies with traps largely independent of structural axes; differentiation can be made between major sand bodies of greater areal extent than the associated structures, and minor sand bodies significantly smaller than the areas of the structures on which they lie; (3) traps related to unconformities, including channel fills, overlapping strand-line sands associated with marine transgression across major structures, truncation traps sealed by overlying permeability barriers, and secondary accumulations in permeable strata overlying truncated reservoirs; (4) sandstone reservoirs with apparent random distribution and without discernible relationships to facies patterns.

Relationships of the trap types enumerated can be demonstrated in terms of position in the stratigraphic succession, time and geography of structural growth, development and character of major unconformities, and other elements of the regional geologic history.

The regional study raises a number of questions which are not easily resolved but certain tentative conclusions can be drawn from analysis of regional and local facies patterns. Such questions include: (1) vertical homogeneity of areas either rich or poor in number and thickness of sand bodies; (2) relationship of limestone conglomerate to reservoir and sealing components; (3) diagenetic introduction of carbonate cement in relationship to time of oil accumulation; (4) volumetric proportions of sand and marine shale requisite to significant oil accumulation.

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Oil and Gas Possibilities in Central Nebraska Basin

The Central Nebraska basin comprises an area of more than 25,000 square miles bounded on the west by the Chadron-Cambridge arch, on the east by the Table Rock-Nehawka-Richfield arch, on the north by the Sioux uplift, and on the south by the Kansas-Nebraska line. For all practical purposes this basin is a northern extension of the Salina basin of Kansas. The area is extensively mantled with variable thicknesses of Cenozoic rocks resting on Cretaceous, Permian, and Pennsyl-