The primary sediment source of Osagian and Meramecian rocks was organic. Sediments probably were deposited in warm, shallow seas. Thin intraformational conglomerate beds, quasi-brecciated limestone beds, and local beds of anhydrite are known in upper Meramecian rocks. An increased content of clastic (quartz) rocks in upper Meramecian strata marks a change in sediment source. Siliceous sediments were provided from areas of provenance from the Central Kansas uplift and the Las Animas arch. In Chesteran rocks, sandstone, siltstone, and thin limestone beds predominate.

A normal sequence of Osagian and Meramecian rocks was deposited in south-central Kansas. The term "Cowley Formation" should be dropped; the cherty "Cowley" facies is developed only locally.

JOHN C. GRIFFITHS, Pennsylvania State University, University Park, Pa.

UNIT REGIONAL VALUE CONCEPT AND ITS APPLICATION TO KANSAS

From 1911–1964 the United States produced non-renewable natural resources whose value was $458,101 billion, yielding a return of $151,569 per sq mi; with this as the expected value, one finds that the individual states have returned from $9.6 × 10^5 to $1 × 10^6 per sq mi. Thus the return is not uniform. Return does not appear to depend solely on geology, and in particular is independent of surface geology. In fact, the distribution of return in dollar value per square mile is log-normal and, in these terms, dollar return per unit area is a random variable. This implies that any area large enough may be equally well blessed in resources to return at least the expected value of the United States.

In this period the return for Kansas is $106,402 × 10^3 per sq. mi; with basement at 5,000 feet, this is equivalent to the return per cubic mile. For the year 1960 the distribution of unit regional value per square mile per county ranges from $36 × 10^5 to $6,76. × 10^5; the effect of the Central Kansas uplift is, of course, obvious but what is not by any means clear is whether those areas with very much lower than average value have been given an equal opportunity to achieve their true level of return.

On the basis of unit regional value it appears possible to classify areas into those which are largely depleted, those worthy of additional search, and those which have received little attention. Because the existence of resources in an area is not the sole determinant of its value, the unit regional value concept may be used as a useful planning tool.

JOHN F. HARRIS, Consultant, Tulsa, Okla.

SOME INTERESTING ASPECTS OF CARBONATE OIL ACCUMULATION IN MID- CONTINENT AREA

Detailed sample studies are necessary to evaluate properly the porosity and permeability characteristics of carbonate reservoirs. The depositional porosity fabric and resultant permeability are varied in carbonates. These may range from highly porous impermeable chalk into somewhat less porous, but highly permeable, intergranular porosity present in carbonate rocks, which may be composed of pellets, ooliths, or admixtures of fragmental debris. The presence of fossils, cement spheres, and a few reefoid deposits may modify the overall fabric. In addition to these depositional characteristics, tectonism can alter the basic porosity-permeability relations by means of fracturing, recrystallization, and (or) tectonic dolomitization.