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## MAPPING THE MISSOURI-VIRGIL BOUNDARY IN NORTH-WEST OKLAHOMA: A PROGRESS REPORT

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For more than two decades the Missouri-Virgil boundary in Oklahoma has been placed at the base of the Cheshewalla sandstone in northeastern Osage County, at the base of the Bigheart sandstone in east-central Osage County and Creek County, and at the base of the conglomerate in the Vamoosa formation north of the Arbuckle Mountains. However, we were not entirely satisfied with the correlation of the Cheshewalla sandstone and the Bigheart sandstone and not certain that the Bigheart is the northern equivalent of the conglomerate in the Vamoosa formation.

In the field season of 1947, as part of the task of revising the Geologic Map of Oklahoma,<sup>1</sup> a program of mapping and stratigraphic study was begun with the purpose of determining the southern equivalents of lower Virgil and upper Missouri beds present at the Kansas-Oklahoma line.

By mid-November, 1949, the work had progressed sufficiently to justify several rather definite statements: (1) the Dewey limestone equivalents have been mapped as far south as the vicinity of Castle, Okfuskee County; (2) the Iola formation has been mapped as far south as Deep Fork, south of Bristow in Creek County; (3) farther south the Iola and the overlying Wann

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<sup>2</sup>A cooperative project between the Oklahoma Geological Survey and the United States Geological Survey.

formation have been removed by post Wann-pre Birch Creek erosion; (4) tracing of beds has established the continuity and equivalence of the Tonganoxie sandstone at the base of the Virgil series in Southern Kansas, with the sandstone called Cheshewalls in north-eastern Osage County, with the Cheshewalla sandstone of the type locality in east-central Osage County, and with the basal part of the conglomerate in the Vamoosa formation north of the Arbuckle Mountains; (5) the Bigheart sandstone is not in the Virgil series, but in the Missouri series; (6) the Bigheart is represented by local sandstone lenses in the Weston shale of Southern Kansas and does not extend farther south than northern Okfuskee County.

The base of the Virgil series has thus been extended southward from the Kansas-Oklahoma line to the Arbuckle Mountains where higher Virgil beds progressively overlap lower Virgil beds and rest upon the Viola limestone of Ordovician age.

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