arouse national interest in the field. In January, 1947, production was extended into the Martin Creek Window, 4 miles northeast of the discovery wells on Fourmile Creek. Some oil has since been obtained from the intervening area, and some of the successful wells have penetrated thin remnants of the overthrust block. Drilling activities, "shooting," and acidizing work are summarized. The stratigraphic characteristics of the field and the evolution of the trapping structures are discussed with particular reference to the manner of accumulation and other fundamental problems.

14. "Regional Aspects of Cambrian and Ordovician Subsurface Stratigraphy in Kentucky," *by Louise Barton Freeman.*

Suggestions are made for correlation of Cambrian penetrated in the deeper wells in Kentucky with the outcrop on the Ozark uplift and with the sections on the north. Thickness maps indicate (1) the overlap of older Knox formations by younger members of the Chazyan on the north, and (2) the unconformity at the top of the Cincinnatian with loss of younger formations toward the Ozark uplift.

Facies maps are used to indicate lithologic changes through the major divisions of the Ordovician. The pattern of these facies suggests that an extended Ozark uplift was source for much of the clastic sediments from Chazy to the close of the Cincinnatian. A sub-Cretaceous areal geologic map is presented to show the probable extent of the old uplift.

15. "Late Ordovician and Silurian Facies, Conditions of Deposition and Paleogeography in North-Central Appalachians," *by Frank M. Swartz.*

The Late Ordovician and Silurian sediments of the north-central Appalachians consist dominantly of detritals, their maximum thickness about one mile, swept from land surfaces on the east into a broad geosynclinal area.

Three great detrital complexes reflect diastrophic-paleogeographic activities; they are formed by Bald Eagle-Oswego-Juniata-Queenston sediments; the Shawangunk-Tuscarora-Medina-Clinton-McKenzie sediments; the Bloomsburg-Vernon-Wills Creek-Camillus sediments. Carbonates are significant in the McKenzie limestone and shale and Lockport dolomite above the Clinton shales, and at higher levels are more widespread in the Tonoloway and Keyser limestones and their equivalents.

Each of the three great detrital complexes attains its greatest thickness in Pennsylvania. The sedimentary maximum for the Bald Eagle-Oswego-Juniata-Queenston deposits is located in central Pennsylvania; maxima for the Shawangunk-Tuscarora-Medina-Clinton and Bloomsburg-Verona-Wills Creek-Camillus are shifted farther east. It is suggested that location of these maxima reflects the area of debouchment of an ancient major river system that drained from the Old-land Appalachian across the present region of northern New Jersey.

The Late Ordovician Juniata-Bald Eagle sediments consist of poorly winnowed sand and silt detritals coarsening toward and north of Harrisburg to puddingstones with 3- to 6-inch pebbles of vein quartz, vitreous quartzites, meta-argillites, cherts. The Bald Eagle and Juniata are eastwardly equivalents of Maysville-Richmond marine shales and limestones of Ohio, but themselves lack fossils; they were deposited rapidly in freshened waters, perhaps in part directly on alluvial surfaces, in part in extensive lagoonal-estuarine regions. The Middle Silurian Clinton and McKenzie sediments contain profuse marine faunas; sedimentation as compared to evolution was long enough continued, and there are finely developed evolutionary faunal zones as well as intriguing facies problems. The Tuscarora sandstone below the Clinton, and the Shawangunk conglomerate that replaces both Tuscarora and Clinton on the east, contain some eurypterids, and were deposited in part in shallow freshened seas where winnowing of quartz sands was active and effective, in part on the east on or near alluvial areas where gravelly, somewhat graywackyish sands are present. The Bloomsburg redbeds are nonfossiliferous. On the whole they are presumed to be alluvial; but extensive fine-grained sandstone members in the thinned western parts indicate active spreading in shallow bodies of water. The Bloomsburg red sediments grade westward into upper McKenzie and Wills Creek clayey deposits, and into lower beds of the Tonoloway limestone. Widespread Upper Silurian salt deposits are equivalent in age to parts of the Bloomsburg redbeds, but not co-extensive with them.

In the Late Silurian, marine advances culminated in sedimentation of the Tonoloway and Keyser limestones. The Keyser seaways had good oceanic connections both north and south, and in them flourished extensive and diagnostic, progressively changing assemblages of brachiopods, corals, bryozoans, and ostracods, that are excellent for correlation. Waters well connected with the oceans and favorable for profuse marine life, persisted along much of the Appalachian region during Lower Devonian Helderbergian and Oriskany sedimentation; at times these waters were clear over large areas; elsewhere and at other times well winnowed sands and clays accumulated slowly over the sea floor.

In their northwesterly subsurface extensions, gas has been extensively produced from the Lower Silurian Tuscarora-White Medina and Lower Devonian Oriskany sands: some production has come from Middle Silurian Lockport equivalents of the McKenzie formation; the Late Ordovician Bald Eagle-Oswego sands may have reservoir possibilities.