

most of the major ridges in the mapped area. The formation is approximately 1,000 feet thick in the southern part of the area but thins to approximately 800 feet in the northern part. The lower part of the Potsville formation extends southward across the Eisenhower Run anticline and into the Southern anthracite field.

The rocks of the Potsville formation are mainly conglomerate and sandstone, but they also include small amounts of shale, claystone, and coal. Most of the strata are gray, but brown, red, and green beds are present near the bottom of the formation. The conglomerate is poorly bedded and contains well-sorted and well-sorted pebbles of quartz and scattered pebbles of chert embedded in a siliceous matrix. In diameter the quartz pebbles are as much as 4 inches and the chert pebbles are generally less than 2 inches. The sandstone in the formation is medium to coarse-grained and commonly grades laterally into conglomeratic sandstone and conglomerate.

A persistent coal bed known as the Lykens Valley (No. 7) coal bed is near the middle of the Potsville formation in all the basins in the area. Two nonpersistent coal beds—Whites (No. 3) and Little Buck Mountain (No. 4)—are present in the upper part of the formation.

Allegheny formation.—The Allegheny formation, the base of which was designated by White (1900, p. 824) as the Buck Mountain (No. 5) coal bed, overlies the Potsville formation and underlies the Conemaugh formation. The Allegheny formation ranges from 300 feet to 450 feet in thickness and averages about 400 feet. This formation is composed of conglomerate, sandstone, siltstone, claystone, and coal. The coal beds are the only laterally persistent lithologic units. In the lower part of the formation, sandstone and conglomerate are abundant; in the upper part, claystone and siltstone are more common, and the conglomerate is a minor constituent.

Conemaugh formation.—The Conemaugh formation overlies the Allegheny formation. The base of the Conemaugh is the Holmes (No. 10) coal bed according to Lohman (1917, p. 46), and although the lower 1,000 feet of strata is present in the central part of the area, the top of the Conemaugh has been removed by erosion. These rocks consist of sandstone, siltstone, claystone, and scattered lenses of conglomerate, interbedded with six persistent coal beds and several local beds (columns sections, sheet 2). The Holmes (No. 10), Primeau (No. 11), Orchard (No. 12), Little Orchard (No. 13), Diamond (No. 14), and Tracy (No. 15) are the persistent coal beds in the Conemaugh.

STRUCTURE
The anticlinal fields of Pennsylvania occur in four structural basins. Each basin is a synclinal or composite synclinal consisting of several overlapping characteristic asymmetric folds; some of the folds have been faulted. The area covered by this report is in the eastern part of an asymmetric syncline that constitutes the Western Middle anthracite field. The principal component synclines and some of the truncated limbs of synclines in this field are called basins by miners, a practice followed by the authors of this report. The miners' "underlies" a truncated limb of a syncline that dips below an adjacent overlying syncline; it also underlies in this report. The underlies in the Centralia basin is considered to be a part of that basin and not a separate basin as in the case of the North basin (sheets 1 and 2).

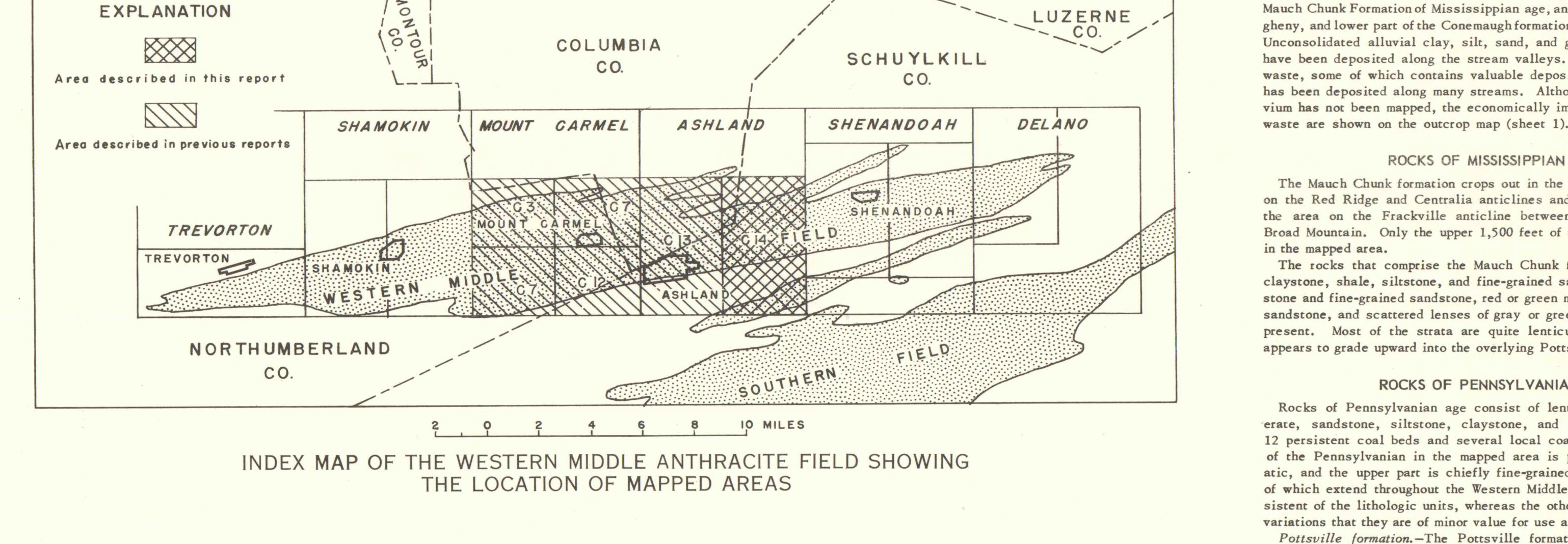
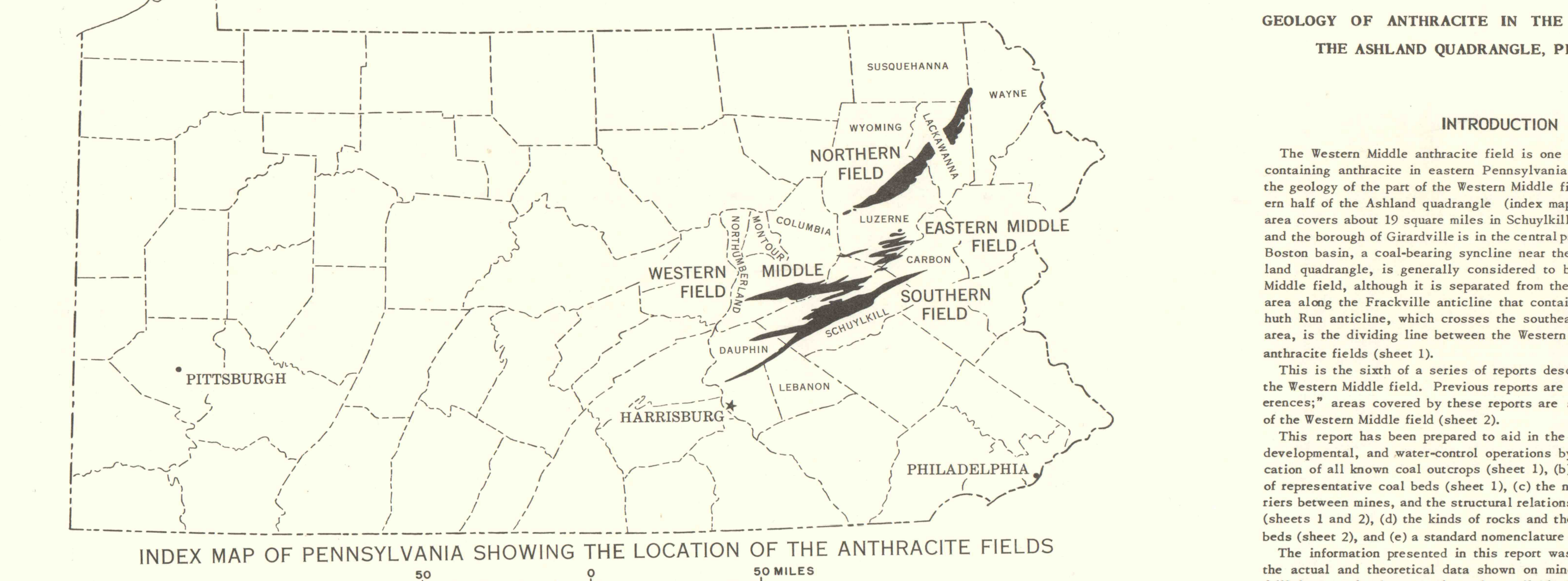
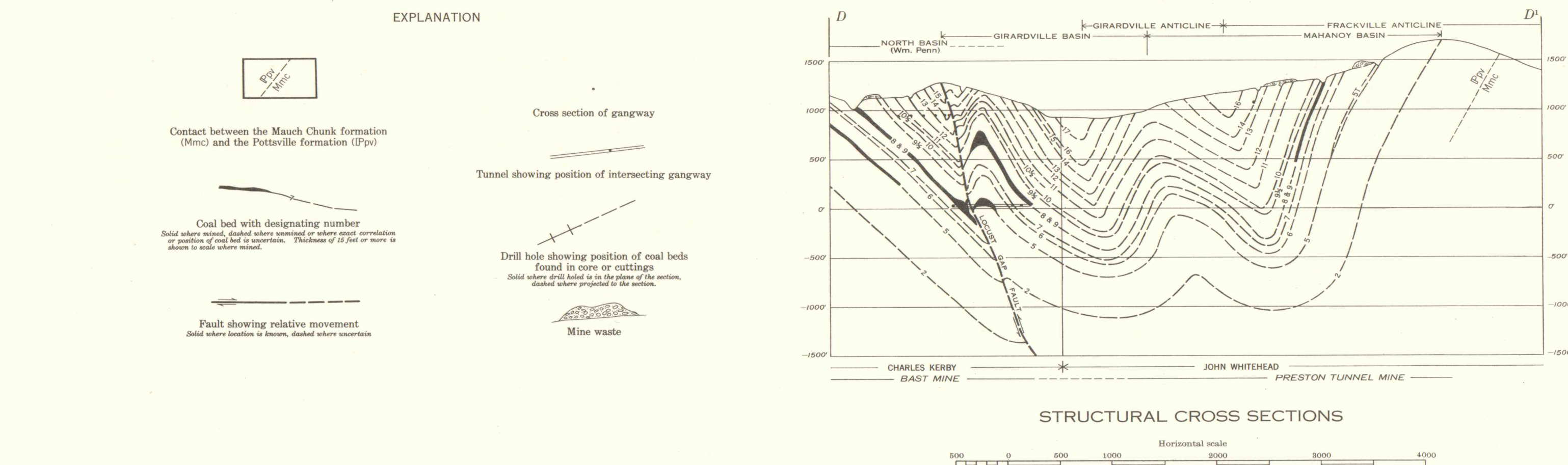
FOLDS
In the northern part of the mapped area the Western Middle field consists of a large syncline and in the southern part a small syncline. The syncline consists of several complex basins, faulted segments of basins, and the intervening anticlines. The principal basins are the Louisa Mountain, Centralia, North, William Penn, Grandville, Mahanoy, and New Boston basins. The maximum structural relief of these features is about 1,100 feet as measured on the Lykens Valley (No. 7) coal bed (cross sections, sheet 2).

FAULTS
Most faults in the mapped area are thrust faults that dip southward and are the result of compression. They may be classified as longitudinal faults or as oblique faults. The longitudinal faults are the result of the amount of displacement and are generally parallel to the strike of the major folds. The most important longitudinal faults are the Centralia, Locust Gap, and Suffolk faults. The Centralia fault is along the north limb of the Centralia basin and extends across the mapped area and into the adjoining areas. The Locust Gap fault extends into the area from the west and east along the north limb of the William Penn basin near Conerston. The displacement on the Locust Gap fault decreases westward and is taken up by small movements on several small longitudinal faults, such as the Grandville and Lost Creek faults, by bedding slips, and by close folding of the beds. Movement on the Locust Gap fault may have been partly transferred to the Suffolk fault in the eastern part of the mapped area.

COAL BEDS
NOMENCLATURE
In the Western Middle anthracite field the coal beds of the different mines are designated by a number, a name, or both. This nomenclature has not been standardized between the different mines because (1) coal beds in isolated mines were named before they could be correlated, (2) gaps exist between adjoining workings, (3) the structure and lithology are complex, (4) outcrops are scarce, and (5) it is difficult to change established mining records.

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| System | Strata | Thickness | Centralia Basin | | William Penn Basin (North) | | Mahanoy Basin (Eastern Part) | |
|---------------|------------------|-----------|-----------------|-----|----------------------------|-----|------------------------------|-----|
| | | | Name | No. | Name | No. | Name | No. |
| Carboniferous | Little Tracy | 17 | | | Little Tracy | 17 | | |
| | Tracy | 16 | | | Tracy | 16 | | |
| | Little Diamond | 15 | | | Little Diamond | 15 | | |
| | Diamond | 14 | | | Diamond | 14 | | |
| | Little Orchard | 13 | | | Little Orchard | 13 | | |
| | Orchard | 12 | | | Orchard | 12 | | |
| | Top Split | 11 | | | Top Split | 11 | | |
| | Bottom Split | 10 | | | Bottom Split | 10 | | |
| | Seven-foot | 9 | | | Seven-foot | 9 | | |
| | Four-foot | 8 | | | Four-foot | 8 | | |
| Pennsylvanian | Little Buck | 7 | | | Little Buck | 7 | | |
| | Buck Mountain | 6 | | | Buck Mountain | 6 | | |
| | Whites | 5 | | | Whites | 5 | | |
| | Little Buck Mtn. | 4 | | | Little Buck Mtn. | 4 | | |
| | Buck Mtn. Ledge | 3 | | | Buck Mtn. Ledge | 3 | | |
| | Buck Mountain | 2 | | | Buck Mountain | 2 | | |
| | Lykens Valley | 1 | | | Lykens Valley | 1 | | |
| | Lykens Valley | 2 | | | Lykens Valley | 2 | | |
| | Lykens Valley | 3 | | | Lykens Valley | 3 | | |
| | Lykens Valley | 4 | | | Lykens Valley | 4 | | |



ROCKS OF MISSISSIPPIAN AGE
The Mauch Chunk formation crops out in the northern part of the area on the Red Ridge and Centralia anticlines and in the southern part of the area on the Frackville anticline between Ashland Mountain and Broad Mountain. Only the upper 1,500 feet of the formation is exposed in the mapped area.

ROCKS OF PENNSYLVANIAN AGE
The rocks that comprise the Mauch Chunk formation are mainly red claystone, shale, siltstone, and fine-grained sandstone; but green siltstone and fine-grained sandstone, red or green mudstone or conglomerate, and scattered lenses of gray or green conglomerate are also present. Most of the strata are quite lenticular. The Mauch Chunk appears to grade upward into the overlying Potsville formation.

ROCKS OF CARBONIFEROUS AGE
Rocks of Pennsylvania age consist of lenticular beds of conglomerate, sandstone, siltstone, claystone, and shale, interbedded with 12 persistent coal beds and several local coal beds. The lower part of the Pennsylvania in the mapped area is predominantly conglomeratic, and the upper part is chiefly fine-grained. The coal beds, some of which extend throughout the Western Middle field, are the most persistent of the lithologic units, whereas the other strata exhibit so many variations that they are of minor value for use as reference or key beds.

Potsville formation.—The Potsville formation, which includes the oldest rocks of Pennsylvania age in the area, overlies the Mauch Chunk formation and underlies the Allegheny formation. The Potsville consists chiefly of resistant clastic strata that form all the mountains and