

consensus of usage among operators and to the nomenclature of the previous report of this series. These names do not necessarily agree with those used in the reports of the Second Geological Survey of Pennsylvania, which conformed to local usage

DESCRIPTION OF THE COAL BEDS THICKNESSES AND OUTCROPS OF COAL

The coal thicknesses shown in this report were selected chiefly from very numerous underground measurements made by the operators. They were chosen to indicate the normal thickness of the bed and its included coal in unit areas 1000 eet square. Wherever possible, at least four measurements were averaged for each unit area. Measurements that were considered to be abnormally affected by strutural deformation, such as faulting, pinching, or swelling, were not used; hence, extreme dimensions of the beds are not included. The following table shows the averages and ranges of these unit-area figures in the mapped area. The ranges in thickness shown in this table, however, may be less than the ranges shown on the columnar sections on sheet 3 because those in the table represent thicknesses mined areas, whereas those in the columnar sections represent thicknesses through-AVERAGE THICKNESSES AND RANGES IN THICKNESS OF COAL BEDS

9 4 7 5 0 7 - 16 2 6 7 3 8 - 12 6 7 29.4 5 10 " 1 6 " - 11 10 " 4 11 " 1 6 " - 10 10 " 15.7 4¹ 7¹¹ 0¹ 6¹¹ - 12¹ 0¹¹ 3¹11¹¹ 0¹ 6¹¹ - 7¹ 6¹¹ 14.5 3 6 1 1 10 1 - 10 1 1 2 10 1 0 6 1 - 9 11 1 19.0 6 8 0 10 - 23 4 5 7 0 7 - 16 4 16.2 6¹8ⁿ 1¹4ⁿ-16¹7ⁿ 5¹8ⁿ 1¹4ⁿ-15¹7ⁿ 15.0 7'0" 0'8"-16'4" 6'3" 0'2"-13'7" 10.7 3¹4¹¹ 1¹0¹¹-11¹5¹¹ 2¹7¹¹ 0¹4¹¹-8¹3¹¹ 22.5 3 10 " 0 10 " - 13 6 " 2 10 " 0 5 " - 9 4 " 26.0 4'7" 1'4"-10'4" 2'11" 1'0"-5'8" 36.4 5¹ 5¹¹ 1¹ 0 ¹¹ - 13 ¹ 10 ¹¹ 4 ¹ 2 ¹¹ 0 ¹ 1 ¹¹ - 11 ¹ 7 ¹¹ 23.0 4¹7ⁿ 1¹0ⁿ-10¹0ⁿ 2¹11ⁿ 1¹0ⁿ-5¹5ⁿ 36.4 6 2 1 1 7 - 12 6 5 8 0 5 5 - 12 6 8.1

Coal beds less than 1-1/2 feet (18 inches) thick are generally not recorded in his report. Coal beds that have thicknesses of 18 inches or more for only short istances up and down, dip or across it are herein termed "local" beds and are shown on sheet 1 for short distances only. Outcrops of the more persistent beds are indicated, in some places, for long distances beyond any known point of occurrence. They give the authors' estimate of the position of the horizon of the bed in order to serve as a guide for prospecting, but do not signify that the bed is necessarily minable throughout this extent. The outcrops shown on sheet I indicate the positions that the coal bed's would cupy if they were projected to the surface of the ground. The beds rarely crop out in this manner because they are generally covered by a mantle of soil, and where they appear in the soil as weathered coal or bloom they occur down the slope at various distances from their original positions because of creep of the weathered soil. Exploration for the unweathered outcrop, therefore, should be started at the position of the outcrop shown on the map and extended in the direc-

cally above the contact of the Mauch Chunk shale and Pottsville formation, is the most widely mined bed in the Pottsville. It has been mined extensively underground in the Reliance mine, and subsurface mining and surface stripping oper-Margie Franklin mining areas in the southern part of the mapped area. The bed has been found in tunnels and by exploratory drilling in other mines of the area, but it has not been worked in them. The bed is usually found at the base of an abrupt slope if the outcrop occurs in the side of a mountain. The Lykens Valley (No. 2) coal bed normally is a single bed of hard, dense widely. The bed contains a parting of gray sandstone 7 feet thick in one of the strippings on the south side of Mahanoy Mountain. A notable example of the detri-mental effect of faulting occurs near the boundary of the Reliance and Alaska mines, where a bedding-plane fault has made mining unprofitable. formation. One of these is indicated by the waste beside a single prospect pit in the southwestern part of the mapped area, where it is approximately 140 feet below the No. 2 bed. Three other local beds, found by diamond drilling and surface prospecting, occur above the Lykens Valley (No. 2) bed. The oldest of these beds lies about 20 feet stratigraphically above the No. 2 bed and consist of 1'6" of sheared coal. About 110 feet higher in the stratigraphic column another local bed, containing 3'2" of coal and refuse, was found. The youngest of these beds lies about 480 feet above the No. 2 coal bed and was found to have a bed thickness that ranged from 7'6" to 1 8", of which 2'7" to 1'8" was coal.

The authors believe that these local beds represent the margins of beds that attain minable thicknesses to the west in the Shamokin and Trevorton quadformation. One of these is indicated by the waste beside a single prospect pi that attain minable thicknesses to the west in the Shamokin and Trevorton quadrangles, and to the southwest in the Southern anthracite field where as many as eight beds within the Pottsville formation have been mined.

The Little Buck Mountain coal bed, approximately 30 feet below the top of the Pottsville formation, is the uppermost coal in the Pottsville. It was mined only in the Enterprise mine, where it was reached by short rock holes from the Buck Mountain bed. The Little Buck Mountain bed does not crop out in the mapped area because it is cut off by faulting. Immediately west of the mapped area, however, it crops out along the north flank of the Locust Mountain anticline. Drillhole records show the presence of coal at the horizon of the No. 4 bed in the BUCK MOUNTAIN (NO. 5 AND 5T) COAL BED

The Buck Mountain coal bed marks the base of the Allegheny formation. It lies 330 feet stratigraphically above the Lykens Valley (No. 2) coal in the northern part of the mapped area and 685 feet above it in the southern part. Generally the Buck Mountain is a single bed, but in the western part of the area it consists of two units, or splits, called No. 5 and No. 5T coals in this report. In the Excelsior-Corbin mine, where both splits were worked, they are separated by 10 to 30 feet of shale and sandstone. The No. 5 bed crops out along both the north and the south sides of Locust Mountain and along the north side of Mahanoy Mountain. The Enterprise fault, a strike fault along the north limb of the Locust Mountain anticline, has cut the Buck Mountain coal for a distance of about 2-1/2 miles, repeating the bed in places and eliminating much of the outcrop in the western part of the area. (See sheets 1 and 2.) The Buck Mountain bed has been mined extensively in the Scott, Alaska, Excelsior-Corbin, Enterprise, and Locust Gap mines and locally in the Reliance, Pennsylvania, Maysville, and Locust Spring mines as shown on Sheet 2 by the relative abundance of solid as compared with dashed contour lines. The thickness of the coal decreases southeastward from about 7 feet in the northern part of the mapped area to 3 feet in the southern and eastern parts of the mapped area. Mining of the Buck Mountain bed in the Locust Spring mine has been very local, possibly owing to the irregularity in thickness of the coal. The average thicknesses of the bed and its included coal in the mined areas were 5 5 " and 4 2 ", respectively.

The coal in the Buck Mountain bed is typically bright in luster and often breaks to small cubical or rectangular fragments whose faces usually exhibit conchoidal fracture or contain whitish deposits that the miners call "bird-eye." At several places it has been noted that the bed has a high fusain ("mother-of-A local coal bed, which lies approximately 50 feet stratigraphically above the Buck Mountain bed in the Locust Gap mine area, was exposed in two prospect trenches where it is from 3"0" to 2'4" thick but contains a large percentage of

The Seven-foot coal bed, which lies about 90 feet stratigraphically above the No. 5 bed, has been found in tunnels and by exploratory drilling throughout the mapped area. Extensive mining in the bed, however, was done only in the Alaska basin portion of the Enterprise and Alaska mines and in the north basin of the Locust Gap mine. Correlation of the bed with its equivalent in the west-central part of the Mount Carmel quadrangle is not positive because the workings in the In most of the mapped area the Seven-foot bed contains such a high percentage The most of the mapped area the seven-tool bed contains such a migh percentage of interbedded carbonaceous claystone that mining is unprofitable.

The coal content of the No. 6 bed averages only 2 feet where mined in the central and southern parts of the mapped area, but increases to 5 feet at the eastern border. In the mined areas the average thickness of the bed was 3 '10", and the average coal content 2 '10", the waste being 26 percent. On the north dip of the Alaska basin, in the area between the Alaska and Enterprise mines, mining suggests that the Sampafort had consistent of the coality with a prochast of the coality of th that the Seven-foot bed consists of two splits with as much as 40 feet of rock SKIDMORE (NO. 7) COAL BED

The Skidmore bed was mined in the Locust Spring and Locust Gap mines only. Elsewhere its presence in the mapped area was verified by crosscut tunnels and diamond drilling. The Skidmore bed crops out along the north side of Mahanoy Mountain and on both the north and south sides of Locust Mountain. It has been strip-mined in the extreme southwestern part of the mapped area, where the Mahanoy basin "spoons out." In mined areas the average thicknesses of the bed and its included coal were 3 '4" and 2 '7", respectively, but wide ranges above and below

called splits, except in the North basin where there are two. The splits join or divide abruptly as shown on the correlation diagram on sheet 3.

These principal beds of the Mammoth coal zone are called the bottom, middle, and top splits and are designated in this report as No. 8½, and No. 9, respectively. In addition to these beds, a split off the top split, designated as the 9B, occurs locally below the top split in the southeastern portion of the mapped area. The bottom split (No. 8) generally is a distinct bed separated from the other splits by 30 to 50 feet of rock, but this parting or divider thins to only a few inches in places. The parting between the middle and top splits consists of hard, gray, medium to coarse-grained sandstone that is interbedded with 1 to 10 feet of silt-stone. The sandstone is conglomeratic in places. It ranges from 10 to 40 feet in thickness but over considerable areas is so thin that the middle and top splits can be mined together.

Bottom split (No. 8) of the Mammoth coal zone. The No. 8 bed, or bottom split of the Mammoth coal, is a very persistent bed and is generally easily recognized. It crops out in many places in the mapped area and has been mined extensively both underground and on the surface. Because of its persistence, the ease with which it is recognized, and the widespread mine workings in it, this bed is often used as a reference datum or key bed in determining the stratigraphic positions of other beds or in depicting the structure of the area. A thin, black, carbonaceous claystone, underlain by brown siltstone that characteristically contains large ironstone concretions, underlies the No. 8 bed in most of the mapped area.

The coal content of the No. 8 bed averaged 6'3" in mined areas and was found to have its greatest average thickness of nearly 9 feet in the eastern part of the Alaska mine area. The bed thickness in all mined areas averaged 7 '0". In the mapped area the coal of the bottom split consists of approximately equal amounts of bright and dull coal in variable layers from 1 to 2 feet thick. It is a very hard bed and cannot, except with much difficulty, be mined with a pick but must usually be blasted.

Middle split (No. 8%) of the Mammoth coal zone. The middle split of the Mammoth coal zone is present throughout the mapped area except in the Locust Gap mine. The absence of the No. 8½ bed in that mine may be due to lensing out of the coal or to merging into either the top or the bottom splits. Coal thicknesses do not appear to verify the latter hypothesis, hence it is assumed that the bed has lensed out. The average thickness of the bed in the mined areas was 6'8", of which 5'8" was coal.

Local (No. 9B) coal bed. A fourth coal bed in the Mammoth zone occurs locally in the Locust Spring mine, where it splits from the bottom of the No. 9 bed and is as much as 25 feet below it. This relationship is the basis for the authors' designation of the bed as No. 98, although operators have called it a Mammoth leader. It was mined both underground and by surface stripping on the northern side of Mahanoy Mountain, where it consists of 3'6" of coal.

Top split (No. 9) of the Mammoth coal zone. The top split (No. 9) of the

FOUR-FOOT (NO. 91/2) COAL BED The Four-foot coal bed, one of the poorer coal beds in this area, is mined raphic position between the top split of the Mammoth coal zone and the Holme of the bed and the coal in mined areas were 3'6" and 2'10", respectively.

The Holmes coal bed, at the base of the Conemaugh formation, occurs in many places in the mapped area, and has been mined in all the mines. It is over-lain, at vertical distances ranging from 2 to 20 feet, by a persistent stratum of The Holmes bed is not only one of the most persistent coal beds in the area but it is also characterized by low percentage of waste (14½%). The average thickness of the bed in mined areas was 4 '7", of which 3 '11" was coal.

Two coals of less than minable thickness were found between the No. 10 and 10½ beds in the eastern part of the area. One of them may correlate with the No. 101/4 bed, but the relationship between these three beds is not completely ROUGH (NO. 101/2) COAL BED

Reliance mines only, and was locally strip-mined in the Locust Gap mine. high percentage of waste in the bed (27%) made only the thicker portions of the bed minable. In mined areas the bed averaged 4'7" in thickness, of which only and No. 11 beds in the North basin. One of them may correlate with the No. 103/4

The No. 1034 hed, which is locally present in the northeastern part of the area, does not crop out but is found in workings of the Pennsylvania mine about 30 feet above the Rough coal. The average thickness of the bed in mine workings was waste. Minimum and maximum thicknesses of 1'4" and 10'2" have been

The Primrose coal bed is found approximately 220 feet stratigraphically above the base of the Conemaugh formation. It has been designated by various he thickness of the Primrose bed in the workings averaged 5'10", of which 4'1

above the Primrose (No. 11) coal, but the interval increases to as much as 150 feet. This bed crops out in the deeper parts of the Shamokin, Mount Carnel, Mahanoy, and New basins. It has been mined in the Scott, Maysville, Pennsylvania, and Locust Spring mines. The bed averaged 9 4 " in thickness, but it contained a high percentage (29%) of waste. DIAMOND (NO. 14) COAL BED

mined locally in the Shamokin basin area of the Maysville mine and in the Locust Spring mine. Available measurements indicate that the Diamond coal ranges from LIST OF REFERENCES

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