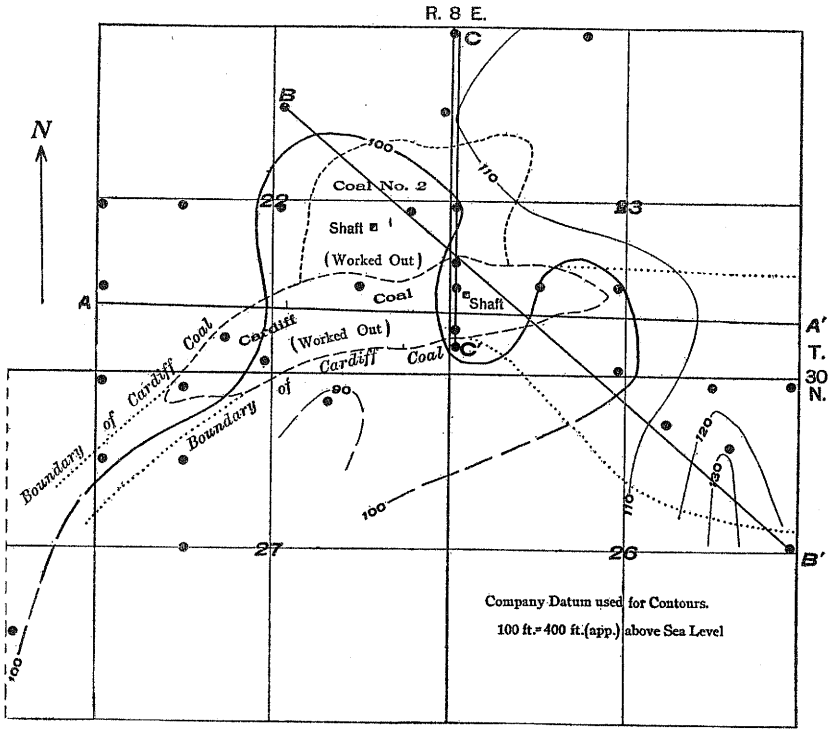
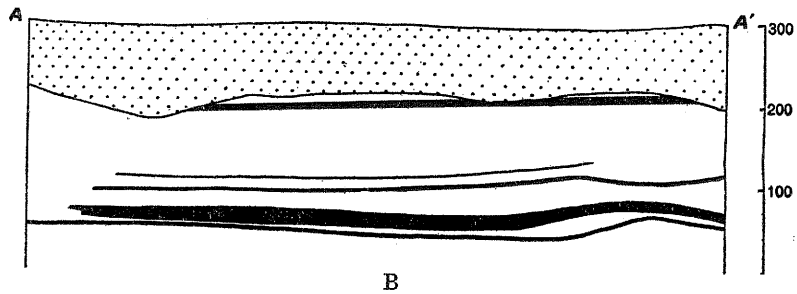


A



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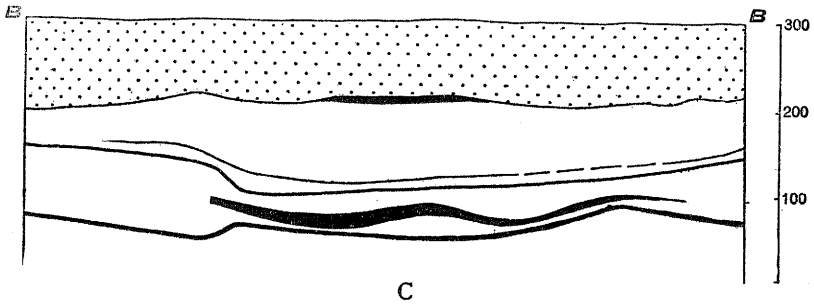

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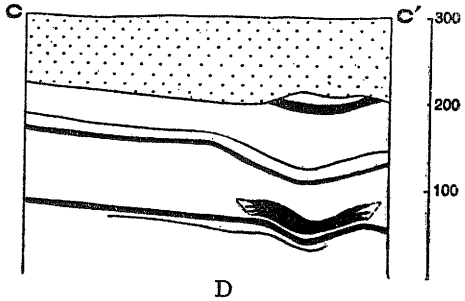

D

Map and cross-sections of the Cardiff field. Contours in A are on Coal No. 2

local mine along Vermilion River about three-fourths of a mile below Lowell. In the Coal City and South Wilmington field and in the Cardiff field thin stringers of coal have been observed in the underclay of coal No. 2.

Local and Thin Coal Beds Between Coal No. 2 and Coal No. 7 (Not Including Coal No. 5).

CARDIFF COAL

The coal bed between coals No. 2 and No. 7 except for coal No. 5, that is of economic importance is the "big vein" in the Cardiff field, which we will call the Cardiff coal. The exact correlation of this coal with others in this district or in the State has not been determined. It has already been suggested that this coal may be about the same age as the fossil-insect and leaf bed along Mazon Creek in Grundy County, which was deposited soon after the accumulation of the peat of coal No. 2.

In order that the relationship of the Cardiff coal to the other strata in the section may be made as clear as possible, a map showing the location of the various holes and cross-sections of the field is presented in Plate V. The contours are drawn on the base of coal No. 2 and to that extent represent an enlargement of a portion of the map of the Longwall District (Plate I). The positions of the three cross-sections is indicated by the heavy straight lines on the map. The details of the sections are not shown, but the thicknesses and intervals between coals are drawn to scale so that the relations are apparent. The thickest core of the Cardiff coal was 150 inches, though this was not all good, clean coal. The coal thins to 5 or 6 feet and becomes dirty toward the eastern end of the field and to the west is split up by bone and shale. The coal stops abruptly north and south.

The shape of the coal bed is strikingly lenticular and crescentic in cross-section. The edges of the bed dip strongly toward the trough, possibly even more so than is indicated by the drawing. The feathering of the bed at the edges as shown in cross-section Plate V, *D* represents the conditions as shown in the drilling records; it is reported however that the bed tapers out on either side rather than feathers out, the bottom of the bed rising toward the top. There was possibly about 600 to 1000 feet of relatively flat-lying coal north and south along the axis of the trough. The coal is reported to contain more impurities toward the southeast and to be divided by a layer of clay. The shale which forms the floor of the Cardiff coal and the roof of coal No. 2 is commonly a thin sandstone and pebble conglomerate overlain by a thin black shale or hard underclay which locally merges with the bottom part of the upper bed and makes it bony and unmarketable.

The sections presented in Plate V show graphically the relation of the Cardiff coal to coal No. 2 and to the overlying strata. Plate V, *C* and *D* both show how the upper coals decrease in altitude where the Cardiff coal lies below. It is thought probable, as has already been suggested, that the relatively greater shrinkage of the strata containing the Cardiff coal as compared with the amount of shrinkage of a corresponding original thickness of shale would account for this decrease in interval between coal No. 2 and the coals above the Cardiff bed. There seems to be some response on the part of coal No. 2 where the Cardiff coal is present above. The sections suggest that this coal rises toward the Cardiff bed, but not all the profiles bear this out.

The coal bed that lies from 40 to 85 feet above No. 2 coal at Cardiff has already been described as possibly being coal No. 7. This coal has about the same distribution as the Cardiff bed, but is of little or no economic importance.

In the vicinity of Lowell a thin bed of cannel coal less than a foot in thickness is exposed along the Vermilion and its tributaries. The coal lies below the heavy sandstone underlying No. 5 coal. It is associated with 2 or 3 feet of black, carbonaceous shale into which it grades, and which locally becomes more like coal. This bed is of no economic importance, at least at present.

COAL NO. 6 AT STREATOR

In the Kangley-Henanville field and possibly along the south edge of the city of Streator, a coal is locally developed a few feet below or immediately below coal No. 7. The mine at Henanville is reported to have worked both beds where they were together and measured about 9 feet thick. At present the lower bed is worked in local banks east of Kangley at Spring Hill. It is thought that this coal bed is confined to about the same basin as is the Henanville-Kangley No. 7 coal, and lies at a lower horizon in this basin, and that it is not found generally outside of the basin. On the other hand, certain records of drilling south of Streator in Livingston County show at the horizon of coal No. 7, a thick split bed of coal which suggests the presence of two beds of coal in close proximity. The characteristics of these local beds are not well known, but so far as can be determined none possesses the "blue band," or has the *Fusulina*-bearing, limestone cap rock.

COAL NO. 6 AT SPARLAND

Coal No. 6 at Sparland lies about 25 feet below the "upper vein" or coal No. 7. In the immediate vicinity of the town it varies from a very thin bed to about 2 feet. Farther south certain drill records in T. 29 N., R. 9 E., show the lower coal from 30 to 50 feet below coal