GEOGRAPHY.

General relations. The Ringgold atlas sheet is bounded by the parallels of latitude 34° 30’ and 35°, and the meridians of longitude 85° 30’ and 86°. It embraces, therefore, a quadrant of a square of 1,000 miles on a side, or a surface of 1,562,500 square miles. The adjacent atlas sheets are Chattanooga on the north, Dalton on the east, Rome on the south, and Stevenson on the west.

The Ringgold sheet lies mainly within the State of Georgia, but has a narrow strip about a mile in width along its northern edge in Tennessee. It embraces portions of DeKalb, Cooke, Walker, Whitfield, Chattooga, Floyd, and Gordon counties in Georgia, and portions of Hamilton and James counties in Tennessee.

Topography. The country embraced within the atlas sheet is marked by three distinct types of topography. These are determined both by differences in the character of the underlying rocks, and by geologic structure or the relation of the strata to the surface. The three types of surface are (1) plateaus, (2) sharp ridges, (3) undulating or level surfaces.

The plateaus are confined to the western third of the sheet. They include Lookout and Pigeon mountains and a series of low, flat-topped ridges which form the escarpment along the axes of the streams. The Pigeon mountains is simply a spur of Lookout, separated from it at its northern point by McAmore cove, but merging with it toward the south. The plateaus have an altitude of about 2,000 feet above sea level, though numbers of points over the edge rise from one to two hundred feet higher. The surface is generally level or rolling with a slight inclination from the edges toward the center, giving the plateau the form of a shallow trough. They are usually bounded by abrupt escarpments rising from 1,000 to 1,200 feet above the surrounding valley. The escarpments are mantled by a deposit of slack sand and pebbles, derived from older rocks, or the remains of plants and animals which lived in the area when it was in a state of being last formed. The bed of the streams are mostly of black, fine-grained sand and gravel, which must have been washed down from the plateaus and transported to the sea on the western side, and against this fault strips of the older rocks appear. These are followed by the later formations in successive parallel bands toward the southeast.

The eastern third of the sheet is a low country, characterized by rolling or undulating surfaces, forming large areas of level land. It is by far the most important part of the sheet. The name of the formation is taken from the Chattanooga ridge, which is a belt of low land similar to the one on the western side, and against this fault strips of the older rocks appear. It is bounded by the escarpments to the western and the eastern sides of the sheet. The extreme eastern part of the sheet is marked by several series of rolling or undulating surfaces, forming large areas of level land. It is by far the most important part of the sheet. The name of the formation is taken from the Chattanooga ridge, which is a belt of low land similar to the one on the western side, and against this fault strips of the older rocks appear. It is bounded by the escarpments to the western and the eastern sides of the sheet.

The second type of surface is confined to the east, or third of the sheet. The sharp ridges by which it is characterized are, like the plateaus to the west, produced by hard sandstones which offer much greater resistance to erosion than the rocks above and below. The difference between the plateaus on the west and the ridges on the east is due to the fact that the former are the result of erosion of the latter, and that the ridges are more highly eroded than the plateaus. This is especially true when the upper part of the Ridge contains the ridge tops. The ridges are composed of the rocks of the lower part of the sheet, and they lie at the ends of the ridges of the Chattahoochee range, the Rockwood formation reaches the thickness of about 1,000 feet, and here the rocks are capable of further subdivided into three parts, and is represented on the map. The upper portion of the rock unit consists of thick sandstone and yellow sandy shales. The middle portion of the section, of shale and greenish gray sandstone which probably contains a considerable amount of coal.
The sandstones are mostly confined to the synclines into the Bangor limestone, but east of Taylor ridge they form the lower portion of the mountain slopes. It is often composed almost entirely of fragments of crinoids and of fine grained, flaggy sandstone, which approach limestone in character. The principal cliff about the edge of Lookout and Pigeon mountains, and its absence from the western portion of the sheet, together with the changes already noted in the Rockwood formation, makes it certain that some uncertainty is thus introduced into the strata. The position and thickness of the various beds of coal will be described under the head of Mining resources.

At the close of the Carboniferous period this region was elevated permanently above sea level, and the rocks of this region were deposited upon the broad plateau of Sand mountain. The axis of the structural sheet represents the strata as they would be thrown up in a line which occupies at every point the highest position in the synclines and at angles of depression with each other, which vary from the horizontal is called the pitch of the axis and is the characteristic feature of the axes of synclines and anticlines. It is measured by the change in the angle of dip of the beds from their position as observed in the sections that the strata form a series of number of overlapping synclines whose axes pitch to the right and to the left. Several faults of lesser importance occur north and south of Tunnel Hill, and one of even greater extent, the Oglethorpe of Chattanooga, is represented in the southern portion of Lookout valley. The strata are stepped over or moved in its opposite sides.

The eastern side of the Taylor ridge syncline, except for a short distance where it appears as Dick ridge, is sheared off by a fault which extends for many miles north and south of this locality. The fault brings the oldest rocks of the region in contact at different places with all the younger strata. The area of Chattanooga extends to the southeast corner of the sheet. The latter is shown in section SE, and it has been found in some places on which the ridge from John mountain to Rocky Face are formed by a number of overlapping synclines whose axes pitch steeply toward the south. The valley on the north side of this series of ridges are deeply eroded anticlines, while those on the southeast are synclines, which carry the ridge-forming stratum below the valley. It is often made up of a mass of crinoid stems imbedded in a silicious cement; on weathering it forms the principal cliff of Lookout and Pigeon mountains, usually forming, with the Rockwood shale, a narrow ridge parallel to the mountain escarpments. In the eastern part of the sheet the formation covers somewhat larger areas, occupying the gentle eastward slopes of the high Rockwood ridges. The formation is made up of black carbonaceous shales, and of fine grained, flaggy sandstones, and some of blue limestones with nodules of chert. The sandstones are mostly confined to the synclinal east of West Ringgold and Parker gaps. In Ameeville valley and in the region east of John and Horn mountains the formation is made up of black carbonaceous shales, which approach limestone in character. The large eastern portion of this region is composed of crinoids and of fine grained, flaggy sandstone, which approaches limestone in character. The Lookout sandstone includes 450 to 550 feet of conglomerate, thin bedded sandstone, limestone, building stone, red stone, brick clay, and tile clay.

The productive coal-bearing formations are the Lookout and Walden sandstones, which have already been described. They occupy, on this side of Lookout mountain, the southern portion of Lookout sheet, and a small portion of Sand mountain, a total area of 116 square miles.

The coal measures contain from three to five rich seams, and considerable quantities are frequently obtained by trenching along the outcrop. The coal measures contain from three to five rich seams, and considerable quantities are frequently obtained by trenching along the outcrop. The coal measures contain from three to five rich seams, and considerable quantities are frequently obtained by trenching along the outcrop.
in workable quantities south of the Tennessee-Georgia line.

Mineral deposits.—A subordinate though locally important use of the red hematite is as mineral paint. Only the poorer grades of soft ore, from which the lime has been thoroughly leached, are employed for this purpose. Considerable quantities are mined in Lookout valley and ground on the spot. Mills in Chattanooga area supplied with chert and red clay which result from the de­
m retardation of the ore, probably by affording an
mation the area of the corresponding soil. Where a stratum is nearly horizontal, as in the whole of the Knox dolomite, it is the most abundant area. Alluvial soil deposits or horizons are made up of the clays and sandstones in the valley west of Rocky
n the soils and that of the underlying geological for­

The Knox dolomite is quarried extensively at

Graysville, near the Tennessee line, and burned for

Geologist.