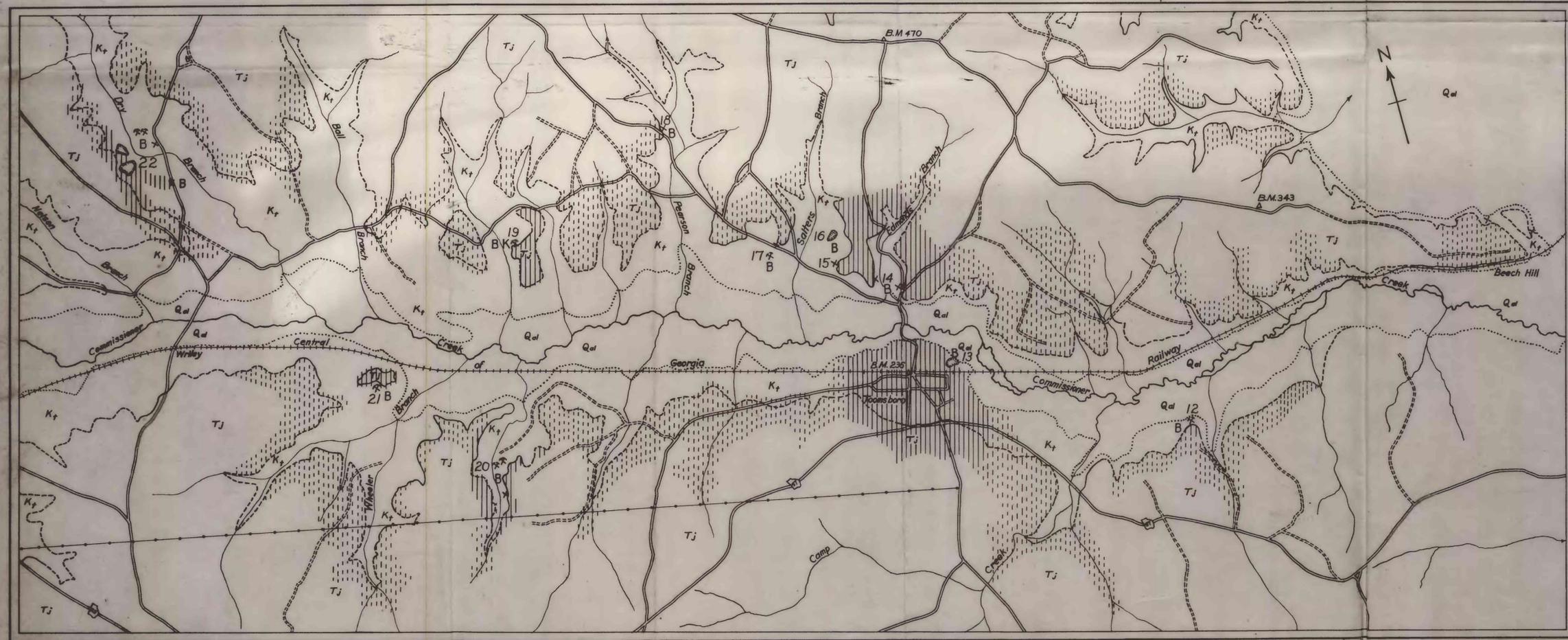


by W. C. Warren and R. M. Thompson
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BAUXITE PROSPECTING MAP OF BIG SANDY CREEK, WILKINSON COUNTY, GEORGIA

BAUXITE AND KAOLIN DEPOSITS OF WILKINSON COUNTY, GEORGIA

By Walter C. Warren



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BAUXITE PROSPECTING MAP OF COMMISSIONER CREEK, WILKINSON COUNTY, GEORGIA

Wilkinson County is in the center of the Georgia kaolin district. Small deposits of bauxite are found in some of the clay bodies, and in the past some bauxite has been mined and shipped. The Geological Survey and Bureau of Mines made preliminary examinations of some of these deposits in 1942, but no reports were published. These maps are the result of a more detailed study by the Geological Survey in 1943 and are intended as a guide to future prospecting.

This county lies along the inner margin of the Coastal Plain and is near the geographic center of the State. The total relief is less than 400 feet, but the region is so well dissected by numerous streams that the resulting topography is rough and hilly.

The oldest sediments exposed are light-colored gravels, micaceous sands, and clays belonging to the Tuscaloosa formation, of Upper Cretaceous age. The Tuscaloosa is overlain unconformably by sands and clays of the marine Jackson formation (Upper Eocene). The base of this formation is a coarse-grained, more or less pebbly red sand from 6 inches to 10 feet thick. The sand is overlain by yellowish-green fuller's earth with occasional lenses of limestone near the base. The fuller's earth grades upward and laterally into sand, so that locally the entire formation is sand. The Jackson has a maximum thickness of 150 feet.

The upper surface of the Tuscaloosa is cut by channels that are filled with cross-bedded red sands similar to those at the base of the overlying Jackson formation. These sands contain small pebbles and clay balls. Some of the clay balls are bauxitized. The relation of these channel sands to the Jackson is not clear. In some exposures they appear to grade into the basal sand of the Jackson, whereas in others there seems to be evidence of a slight break, suggesting that the channel sands are somewhat older.

The entire sedimentary series dips gently southeastward at the rate of about 15 feet to the mile.

The kaolin deposits of Wilkinson County occur in the Tuscaloosa formation. Most of those found in the upper part of the formation are small, rarely covering more than 2 or 3 acres, but some are much larger, covering as much as 200 acres. Bauxite has been found only in the small and medium-sized kaolin lenses and, for the most part, in those lying within 20 feet of the unconformity at the top of the Tuscaloosa. This erosion surface appears to be the landward continuation of the surface developed on the Ridgeley formation farther southwest—the surface on which the bauxite deposits of the Andersonville and Bufala districts accumulated. Most of the bauxite deposits found are in the lower part of the valley of Commissioner Creek and along Big Sandy Creek. A few have been found at the same horizon in other parts of the area.

The bauxite bodies in the kaolin range from a few inches to 10 feet in thickness and from a few square feet to 5 acres in extent. They are found near the top of the kaolin lenses and are usually capped by several feet of "chimney rock," a local term for a rough-textured, light-colored rock, which is chemically similar to kaolin but hardens sufficiently upon exposure to be used for chimney blocks. The contact between the bauxite and "chimney rock" is sharp but may be irregular, whereas that between the bauxite and kaolin is always gradational. Because of the unconformity at the top of the Tuscaloosa, the Jackson formation may overlie bauxite, "chimney rock," or kaolin.

The bauxite is usually pisolitic and occurs as domes of high-grade material in a matrix of low-grade bauxite or bauxitic clay. The best bauxite occurs as small root-shaped fragments or as shells of hard material. Few of the soft pisolites found in the kaolin contain a large amount of gibbsite. Channel and grab samples taken during the course of this investigation and analyzed by the Federal Bureau of Mines at Tuscaloosa show Al₂O₃, 55.0 to 50.4 percent; SiO₂, 15.9 to 21.0 percent; Fe₂O₃, 1.4 to 1.0 percent; TiO₂, 1.4 to 2.0 percent; and loss on ignition, 27.4 to 24.2 percent.

Reserves of bauxite of commercial grade may be as much as 25,000 tons; and there may be 800,000 to 500,000 tons of material containing 48 percent or more of Al₂O₃ and 30 percent or less of SiO₂. Reserves of high-alumina clay are very large.

Drilling for bauxite should be started slightly above the Jackson-Tuscaloosa contact. Where the slopes are steep, the thickness of the overburden increases so rapidly that wildcat drilling is impracticable; where the slopes are gentle, there are large areas in which clay and bauxite may lie within 60 feet of the surface. Some of these areas are shown on the large-scale prospecting maps. Solid ruling indicates areas where there are numerous outcrops of bauxite; broken ruling, areas where there are few exposures. Some areas that are geographically favorable are not recommended because they are probably underlain entirely by sand.

Drilling in the favorable areas should be on a checkered pattern with holes spaced at 200-foot intervals. These intervals should be halved and then quartered if bauxite, "chimney rock," or kaolin is discovered in the upper 25 feet of the Tuscaloosa formation.