were built by the government to supply nitrates for war purposes, and one of them was actually operated for two months previous to the armistice. A Muscle Shoals the American consumer will save 50 per cent over the cost of the Chili produet.

South Sees Big Things in Power and Nitrate Project

might be constructed did not appear great, still it was obviously the part of wisdom to prepare for the eventuality of the war lasting long. The construction of the dam was made possible by a presidential order signed by President Wilson under the vast war-time powers granted him by Congress.

The building of the nitrate plants and the partial construction of the Wilson Dam are matters with which the general public has become only vaguely familiar.

Two nitrate plants, No. 1 and No. 2 were built. With a 90,000 horse power steam plant and a quarry, which was opened, the cost of these approximated $80,000,000.

This cost brought one of the inevitable post-war investigations. Whether the cost was extravagant will always remain a matter of partisan debate. The fact remains unchallenged, however, that the two great plants were completed and made ready for use in eight months and that Plant No. 2 was actually operated for two months. This operation was subsequent to the armistice.

The Wilson Dam, however, is not completed. About $17,000,000 out of an expected cost of $50,000,000 was expended before the recent economy program of Congress caused the cessation of the work.

The nitrate plants were built for the obtaining of a constituent of high explosives in war-time.

Their operation depends on the demand for a constituent of fertilizer for peace-time agricultural purposes.

Of the two plants, No. 2, which cost in the neighborhood of $70,000,000, is the one to which the government officials devoted most attention. It was built for the utilization of the cyanamide process of extracting nitrogen from the air, a process involving the use of coal, coke and a carbide of nitrogen under electric, liquifying and hydrating processes, until ammonium nitrate is formed.

The manufacture of ammonium nitrate at Plant No. 1 was to have been through a German process. This plant has not passed the experimental stage, however.

The government officials at the nitrate plant figured on an annual production of 110,000 tons of ammonium nitrate.

In 1919 the United States imported from Chile 1,346,679 long tons of nitrates, which cost when delivered at American ports $110,000,000. Scientific investigations have led to the belief that the manufacture of nitrates under conditions similar to those at Muscle Shoals will enable American consumers to save 50 per cent of the cost of Chilean products.

The Ordnance Bureau of the War Department after an exhaustive investigation recommended the development of the Muscle Shoals nitrate plants and in addition urged that the government arrange for the establishment of at least five other huge nitrate plants as a measure of protection for the country in event of war.

The building of the Wilson Dam affords striking evidence of the lack of heed which the general public pays to the nation's resources.

For a century the vast possibilities of the Tennessee River, fourth in size within the United States, passed without attention.

Yet, according to Colonel W. J. Barden, of the United States Engineers, the potential water power of this undeveloped stream, is second only to Niagara.

In beauty and grandeur of its falls, Niagara must always remain the mecca for world tourists. In the concentration of its power possibilities within a narrow area, too, it cannot be surpassed. But considered from the viewpoint of possible utilization of the resources, however, the Muscle Shoals project ranks high.

There really are three dams in contemplation. Dam No. 1 is small and is simply for navigation purposes at one of the little islands in the river. Above it is Dam No. 2, which is known as the Wilson Dam, and several miles farther up the river will be Dam No. 3.

The Wilson Dam when completed will be next to the Assuan Dam across the Nile River in Egypt, the largest dam in the world. There are higher dams and wider dams, but in length and in the amount of concrete poured, the Wilson Dam will have no other peer. From its base to its top it is 110 feet in height, 80 feet of which are above the apron, or shield, at the base. The pool elevation of the dam is 98 feet. The Wilson Dam is unquestionably the largest piece of masonry in the United States. When completed more than one and one-quarter million cubic yards of concrete will have been poured into its structure. Its length will be 4,152 feet as against 4,600 feet, the length of the Assuan Dam which has the same pool elevation. The Keokuk dam has a height of 53 against 97 for the Wilson structure. The amount of concrete in the Wilson Dam would build a two-foot sidewalk around the world.

The amount of power which can be generated by a dam depends on the volume of water flowing, a condition which on rivers that have their rise in the mountains naturally depends on the season of the year.

The water power from the Wilson Dam has been variously estimated at 100,000 to 600,000 horse power. It should be taken in connection with the steam power plant built in connection with the nitrate plants, which has a capacity of approximately 90,000 horse power.

This power is easily available for use within a radius of 250 miles.

Muscle Shoals lies almost equidistant from Chattanooga, Memphis, Nashville and Birmingham, four of the largest industrial centers of the South. It is in a district now inadequately served with power. Iron and coal are close by, and cotton fields surround it.

During the last few years of the industrial awakening of the South, there has been much eagerness displayed over the establishment of manufactories close to the cotton-producing districts. Freight costs enter largely into the question of economical manufacture and southerners argue strenuously that to the North as well as the South the benefit of bringing the factories to the cotton rather than the carrying of the cotton to far-away mills and back again should be immeasurable.

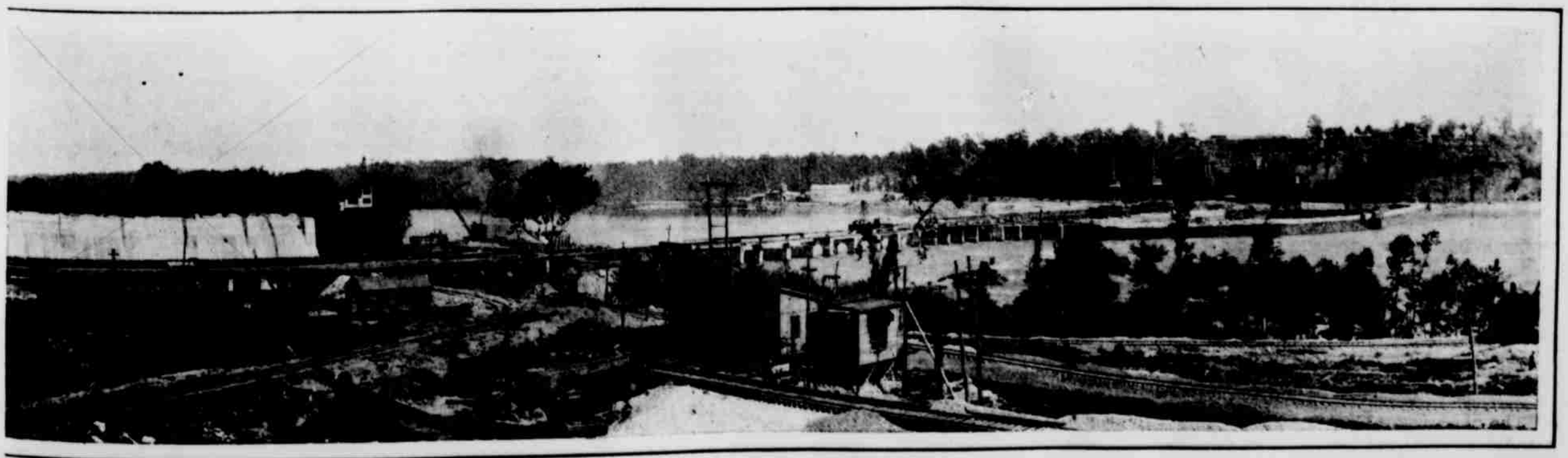
The conservation of coal has become a great national question during recent years. Scientists have determined that the coal supply, far from being inexhaustible, may not, with its increasing demands, last the world a century. One of the points urged for the immediate completion of the Wilson Dam has been the estimate that its water power will save the country from 3,000,000 to 6,000,000 tons of coal annually.

The United States Government has always been strict in its prohibition against any obstruction of navigation. Therefore it has been with some surprise that advocates of the Wilson Dam have watched the marking time on its construction. Muscle Shoals lies at about the midpoint of the 639-mile course of the river, which is formed by a junction of rivers in the foothills of the mountains of Eastern Tennessee, and which flows southwestward through Tennessee, west through Alabama, cuts the corner of Mississippi, and flows thence northward through Tennessee and Kentucky to its mouth at Paducah.

Above Muscle Shoals, in Northern Alabama, therefore, the river with its tributaries is navigable for about 350 miles. The partial construction of the dam destroys this navigation.

With $100,000,000 invested in the Muscle Shoals project, with the vast potential commercial power the river offers, the possibilities in the conservation of coal, and the greater possibilities in the stimulaton of agriculture and the cheap manufacture of the district's raw products, the wisdom of completing the dam is a proposition which has stirred the imagination and energy of the South.

For years the awakening of the industrial South has been the occasion of much discussion. In no single project has its feasibility been more strongly urged than in this very proposition.



About $17,000,000 has been spent on it. When the government authorized the work, it was estimated that the dam program of the present Congress, work on it has stopped.