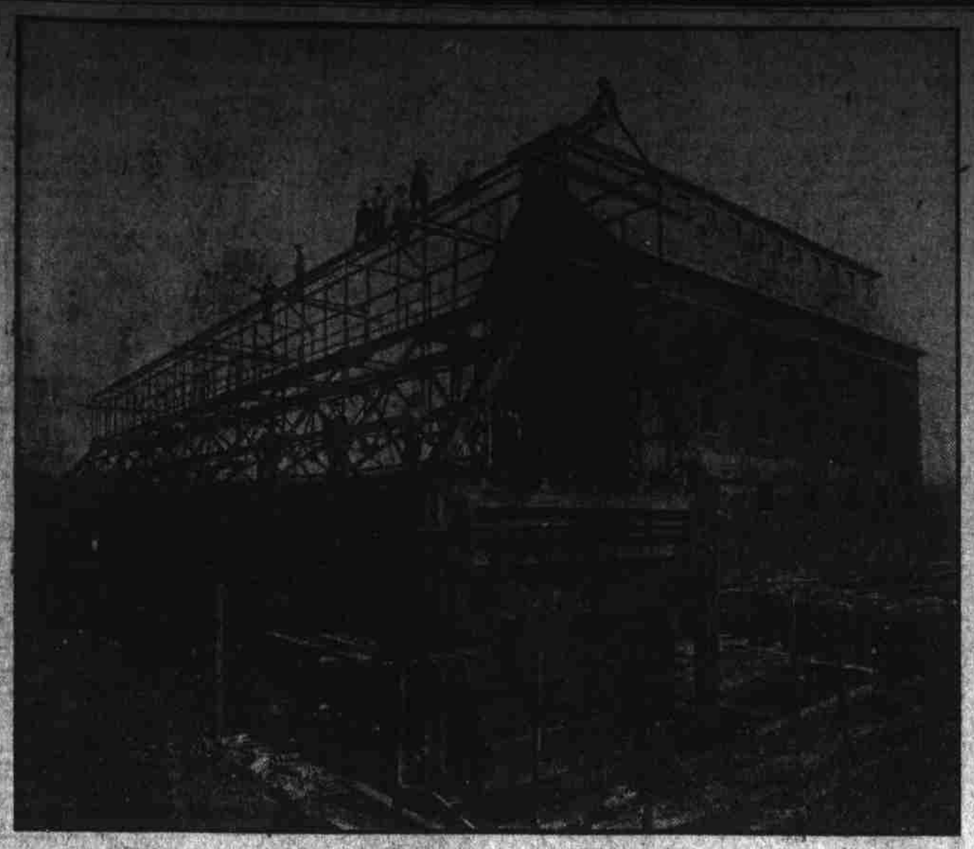


Automatic Coal Bin Over the Boiler House. Coal is Elevated Into This and Then Passes to the Boiler Tubes.

# Champion Fibre Company's Big Paper Mill a Gigantic Enterprise

## Story of the Great Undertaking in Haywood County and Views of the Plant.

BY E. B. JEFFRESS.

What is to-day the site of probably the greatest pulp mill in the United States, only three years ago was a flourishing field of corn, wheat and hay. The whole is now covered over with brick, concrete and railroad tracks. This vast mill is located at Canton, on the Murphy division of the Southern Railroad, about 18 miles from Asheville. This enterprise, styled the Champion Fibre Company, is financed chiefly by Peter G. Thompson, of Hamilton, O., who is also a large holder in the Champion Coated Paper Company, of that place.

Mr. Thompson, who visited this country several summers ago, saw the vast possibilities of a large pulp mill in this vicinity and after looking over many locations, he finally decided upon Canton as the most favorable place for his plant, because the timber could be easily gotten down the Pigeon river from his vast tracts, and also from the west; and on account of the large supply of pure water that could be secured from the Pigeon river, and because he recognized that Canton possessed greater possibilities for new lines of railroad, particularly up the Pigeon river from Tennessee, which would put his plant nearer the coal fields, and at the same time open up vast timber tracts hitherto untouched.

The land on which the plant is located was purchased chiefly from Mayor J. N. Mease, and his willingness to accept a fair price for his home property had much to do with securing this great enterprise for Canton. Since the location of this company here, the town has grown wonderfully. In 1905 the taxable property in the whole township was valued at only $314,826, while in 1907 the valuation was $1,015,547. The population of Canton was only about 300 three years ago and now there are between 2,000 and 3,000 people in Canton and its suburbs. The citizens of the town have almost unanimously voted $65,000 of improvement bonds upon themselves.

The Champion Fibre Company will not only manufacture paper pulp, but will also manufacture tannic acid from chestnut wood. It will only manufacture enough paper bags to ship its tannic acid, which will be evaporated to dryness, to the tanneries, and to ship its pulp, also in dry state, to the other plant of Mr. Thompson's at Hamilton, O. The Champion Coated Paper Company, where it will be manufactured into all grades of paper, from the cheapest wrapping paper to fine grades of writing paper.

### THE PULP MILL.

There will be two processes used in the manufacture of the pulp; the soda process, requiring soft woods, such as poplar, chestnut; and the sulphite process, using the spruce, balsam, and other pine woods. Each of these processes requires large digesters in which the chipped wood is cooked for many hours under pressure, and with superheated steam. Before coming to the chip bins above the digesters, the wood has to be finely chipped, and have all the knots removed, and also the bark. This is done in a large building near the digester building, called the chipping and barking building.

The sulphite digester building is 123 feet high, and is probably one of the tallest buildings in North Carolina. It is eight stories high and built out of red pressed brick. There are three large steel digester tanks in this building which are 16 feet in diameter, and 54 feet high, with 7,040 cubic feet capacity each.

The soda digester building, which is near this one, is about 100 feet high with 6 large digesters, 9 feet 9 inches in diameter and 47 feet high.

It is in these digesters that the chipped wood has to cook with steam and calcium and magnesium bisulphite, in the sulphite process, and with caustic soda in the soda process, for from ten to eighteen hours at a time. These large digesters are then emptied into large concrete tanks where the pulp will be washed free from acids. It will then pass into the bleaching tanks, where it will be bleached by chlorine gas, and then it will go to the beater room, where it will be re-ground and screened. From this room it will pass to the hollanders and then on to the drying rolls where the pulp is made into a mat, and gotten in dry form for shipping to the Champion Coated Paper Company, at Hamilton, Ohio.

The main building of the Champion Fibre Company is about 850 feet in length, and is the longest one of the buildings. This building contains the soda digesters, the blow tanks, the screen room, the machine room, the bleaching room, the chemical reclaiming room, the evaporating room, and the drying room, and pulp storage rooms.

The sulphite digester building is the highest building in the plant, being 123 feet high. This building has the acid plant joining it, where the sulphurous acid is made. This acid is used in the sulphite process to decompose the ligneous matter in the wood. It will take several car loads of sulphur to run this plant daily, and several cars of lime, to absorb this acid, making bisulphate of calcium, which digests or decomposes the wood when heated with steam under pressure.

Between the two digester buildings is located the boiler house and the gigantic smoke stack. The boiler house is the most modern in the country, and will contain twenty 316-horse-power water tube boilers. These boilers are all connected in system, and they are automatically fed by the best system known. The coal will be crushed up, and elevated from the cars to the top of the coal bin, where it will be fed into the boilers by tubes which run to each of the boilers. The ashes will all be carried out in cars and dumped out on the ash heap without handling with the hands at all. The steam of these gigantic boilers will be used to generate electricity, to run machinery, and to be used in the large digesters, for aiding in the decomposition of the wood. The top of the coal bin, which is made of steel is 42 feet high. The automatic carriers take it up to this point directly from the coal crusher, which puts the coal directly from the cars.

### THE SMOKE STACK.

The smoke from this boiler house will be carried directly out in large flues to the gigantic smoke stack. This was built by the Alphons Custodis Chimney Construction Company, of New York. The material used in the construction of this huge chimney is reinforced. The elevation of this smoke stack above the foundation is 253 feet high. The stack is built upon a foundation of concrete which is laid upon 400 piles. These piles are about 14 to 18 inches in diameter and 28 to 32 feet in length and are driven below the surface of the ground. They are cut off 6 feet below the ground and the cement foundation laid upon that.

The inside diameter of the smoke stack is 14 feet for the first 85 feet, and the thickness of the wall is 14 inches, being made up of 5 inches of concrete, a 4-inch air space and another 5-inch wall of concrete. From the 85 feet mark up to the top there is no air space, and the wall is about 8 inches in width. The outside diameter is the same throughout, being 15 feet, 2 inches. At the top the stack widens out slightly, and then narrows again. The stack has been constructed about 5 feet a day, the cement being packed in a mould which is slipped up again each day.

### BLEACH ROOM.

There are 24 bleaching tanks, 30 feet high, and about 12 feet in diameter each, in the bleach room, which is located near the soda digester building. Here the pulp is bleached by chlorine gas. These tanks are constructed of the best grade reinforced concrete, and will hold both water and chlorine gas. The capacity of these tanks is several thousands of gallons each.

The screen room is the next room adjoining and contains between 25 and 50 screening machines which grade the pulp, and get out all the pieces which have not been ground up fine enough. The pulp then passes into the "hollander" room, where it is washed and reground, and gotten in final shape for the drying rolls. The "hollanders" are machines which have rapidly revolving parts, to wash the pulp and grind it.

The next adjoining room to the "hollander" room is the drying room where the pulp passes over screens and is made in the form of mats and passed into the hot rolls. These rolls are large copper ones, and are heated from the exhaust steam from the engines in the machine room, which is just below the drying room. There are four sets of drying rolls in this mill, each of which contain about 25 revolving rolls, which are over two feet in diameter.

The next room adjoining is the large storage warehouse which has a fine hardwood floor in it. Here the pulp is stored and gotten ready to ship, and can be placed on cars, just off the platform.

### MACHINE ROOM.

The machine room is situated on the ground floor of the main building just under the drying room. Here it is that the largest engines, probably, in North Carolina, are located. There are two 1,800-horse-power each Hamilton-Corliss cross-compound engines, which will run two 1,500-horse-power generators. There will also be a number of other engines in this room varying in size. The only use of steam in this plant is to generate electricity, and to run the machinery which will have variable speeds, and for use in the digesters.

### ELECTRICAL DEPARTMENT.

The generator building is located near the boiler room, and will be equipped with the finest electrical machinery to be found in western North Carolina. The generators will be alternating current, 3 phase machines, running at 440 volts pressure. They will be 1,500 K. W. capacity, and running at 100 revolutions per second. They are in direct connection with two 3,500-horse-power Hamilton-Corliss cross-compound engines. These generators will run in multiple with 1,800-horse-power transformers, which receives current at 2,200 volts from the Haywood Electrical Company, at Waynesville.

The total current to run the machinery of this plant will be 7,000-horse-power, with 1,800 to possibly be added in a year or so.

The current will be supplied directly to the mill through 15 panel switch boards, 60 feet in length. This will be distributed to 139 induction motors, varying from 50 to 200 horse-power. There will be over 100 motors connected directly to the machines which they run. This is a most modern and up-to-date plant and is accepted by the insurance companies having jurisdiction in this territory.

### ELECTRIC LIGHTING.

The lighting of this plant will consist of 60 Adams-Bagnall and General Electric arc lights in unison with 4,000 incandescent lights. For the outside lighting, modern frame arc lights will be used. This is the most up-to-date system of electric lighting to be found in the State, and is being installed under the superintendency of Mr. Thomas Judge, of Biddeford, Mass.

All the machinery in the pulp mill will be driven by motor except the variable speed machinery, and the beater machinery.

The generators for this plant will be 21 feet in diameter, 1,800 horse-power, each weighing 62 tons. The revolving part weighs 32 tons.

There will be three systems of lighting. Lighting can be taken at a moments notice from either of three circuits, the Haywood Electric Company's circuit, the large generators, or direct from the exciters. There will be about 120 miles of electric wiring in this plant when all the work is completed. There has already been over 100 miles of wiring installed in the buildings. The Haywood Electric Company, of Waynesville, is under contract to furnish 1,000 horse-power to this plant and they hope to furnish 1,800.

In addition to the electric work at Canton, the company is also installing a 50-horse power station in connection with its woods department at Addie. This current will be distributed at 23 volts to saw mills, within a range of 3 to 5 miles from the plant. Something of this kind will probably be installed at their works at Sunburst when they begin to get out the timber in that section.

The Champion Fibre Company will reclaim all the possible chemicals they can, and to accomplish this they are installing a fine chemical department in connection with the plant. This plant will be equipped with 4 and 4 large boilers. These furnaces traverse furnaces, 4 rotary furnaces, are lined with chemical fire-brick, and will be used to heat up the chemicals.

There are also 4 large evaporators, which work on the multiple system. They evaporate the liquids from the digesters to dryness, and the residue is then placed in the furnaces, where it is roasted. Large lime, bleach, and other chemical storage rooms are being constructed.

### TANNIC ACID PLANT.

In addition to the pulp mill, the Champion Fibre Company is also constructing a large tannic acid plant for getting out the tannic acid from the chestnut wood before it is used for making paper. The length of the acid plant is 688 feet, and contains a boiler house, a regrinder room, a rough bleaching room, a chipping rooms, pulp bleaching room, and evaporator rooms.

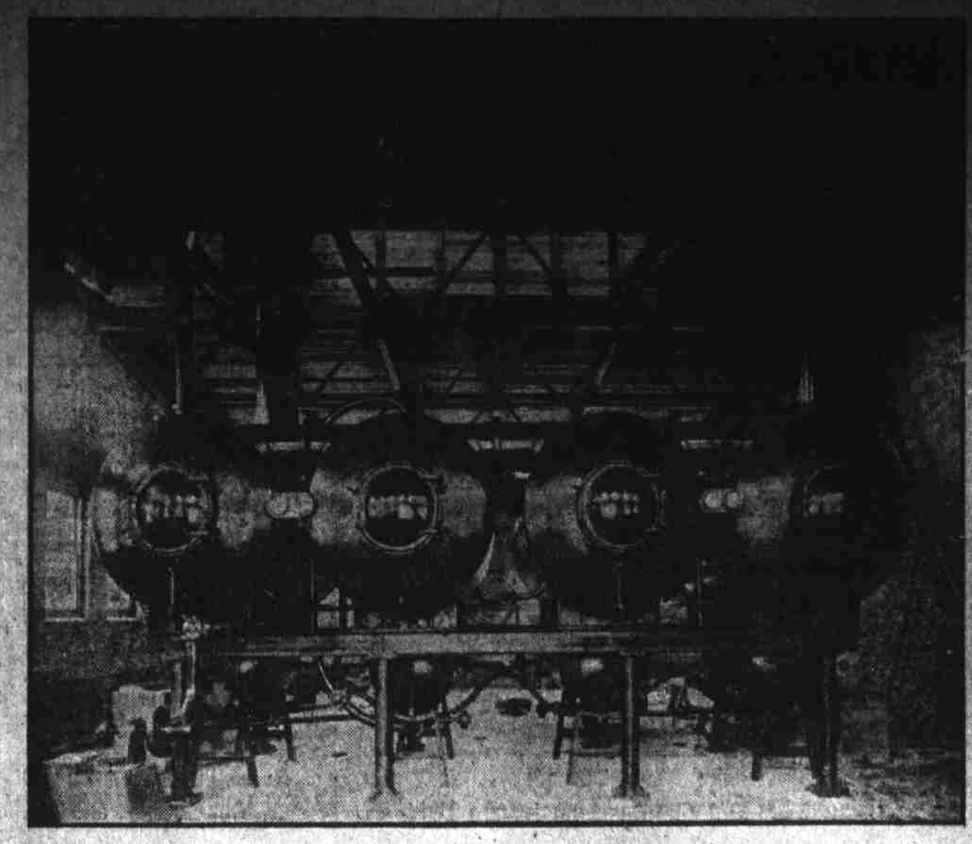
The wood will be ground up into fine shavings, and put in the large concrete bleaching tanks where the tannic acid will be bleached out. There are 72 concrete tanks in this plant, which have several thousands gallons capacity each.

The extract will then be concentrated and evaporated to dryness in large copper evaporators. These evaporators are made out of solid copper and cost about $30,000 each and freight. This making the four copper evaporators cost about $150,000.

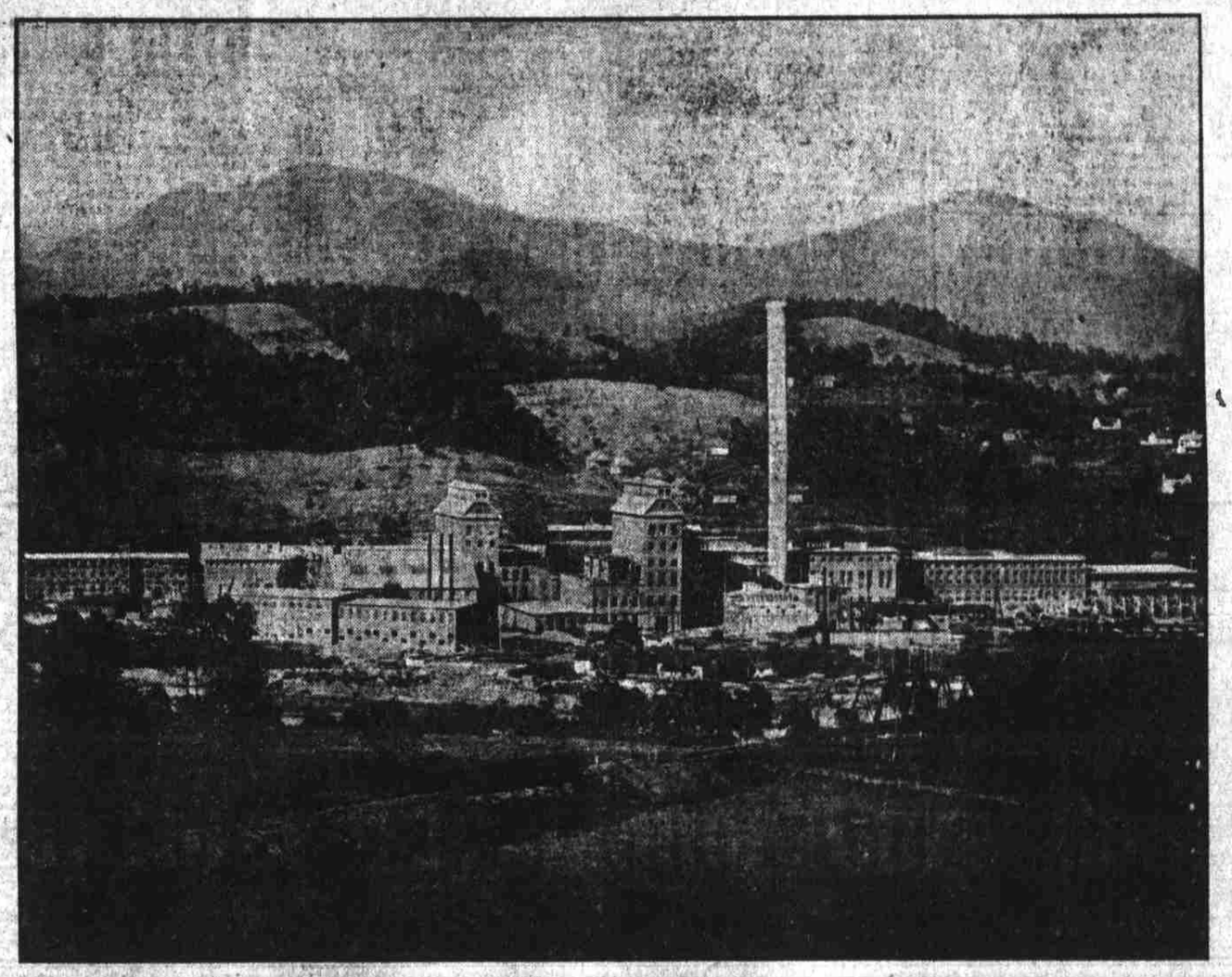
The tannic extract will be shipped entirely in dry form to tanneries in various parts of the United States.

### MATERIALS USED.

Brick and concrete have been the chief materials used in the construction of this plant. The construction of the plant will require 10,000,000 brick, most of which have been already laid. These brick came from Alex A. Scott & Co., Knoxville, Tenn. There has already been 160,000 bags of cement used in the plant besides 20,000 bags used in the acid plant and 3,000 in the smoke stack. There is only one plank floor, in the building and that is in the storage department. All the other floors are made of re-

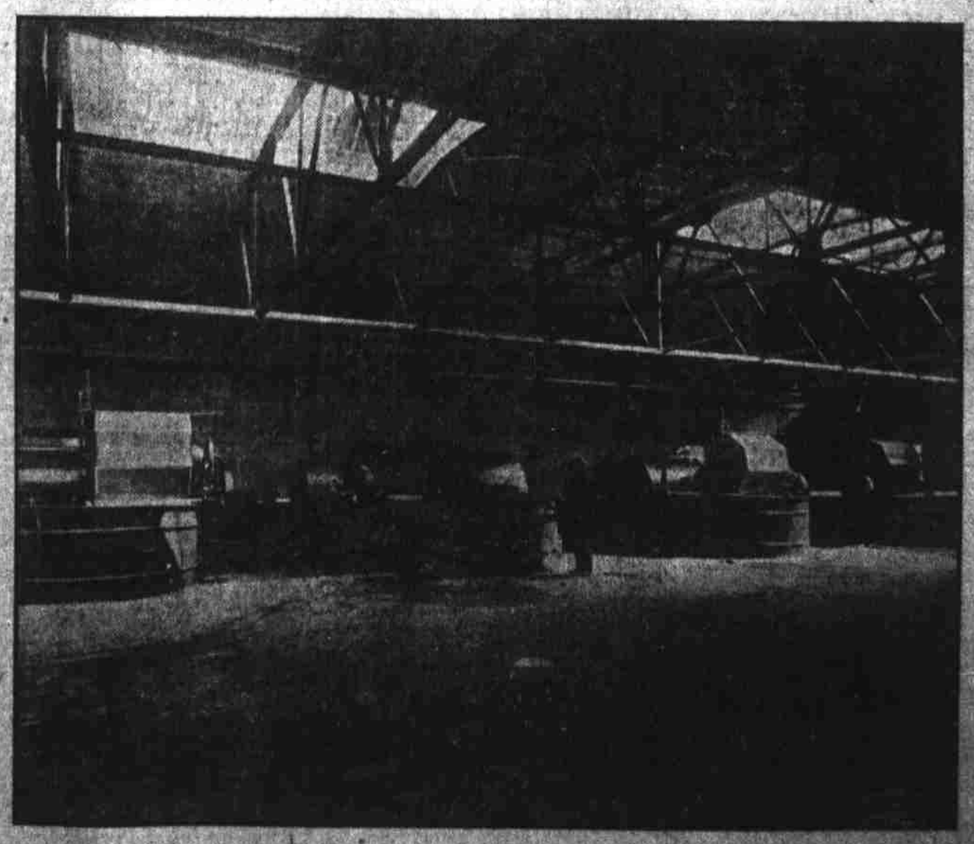


Solid Hammered, Triple Effect, Copper Evaporators in the Tannic Acid Plant, Where the Extract is Evaporated. Its Cost Was Over $100,000.



General View of the Champion Fibre Company's Plant, Taken Nearly a Half-Mile Distant and Looking to the North.

Drying Rolls, Where the Pulp is Dried After Coming From the Beater Room. Rolls on Right Make Coarse Paper Mat.



Machinery in Beater or Hollander Room, Through Which the Pulp Passes Before Going to the Drying Rolls.