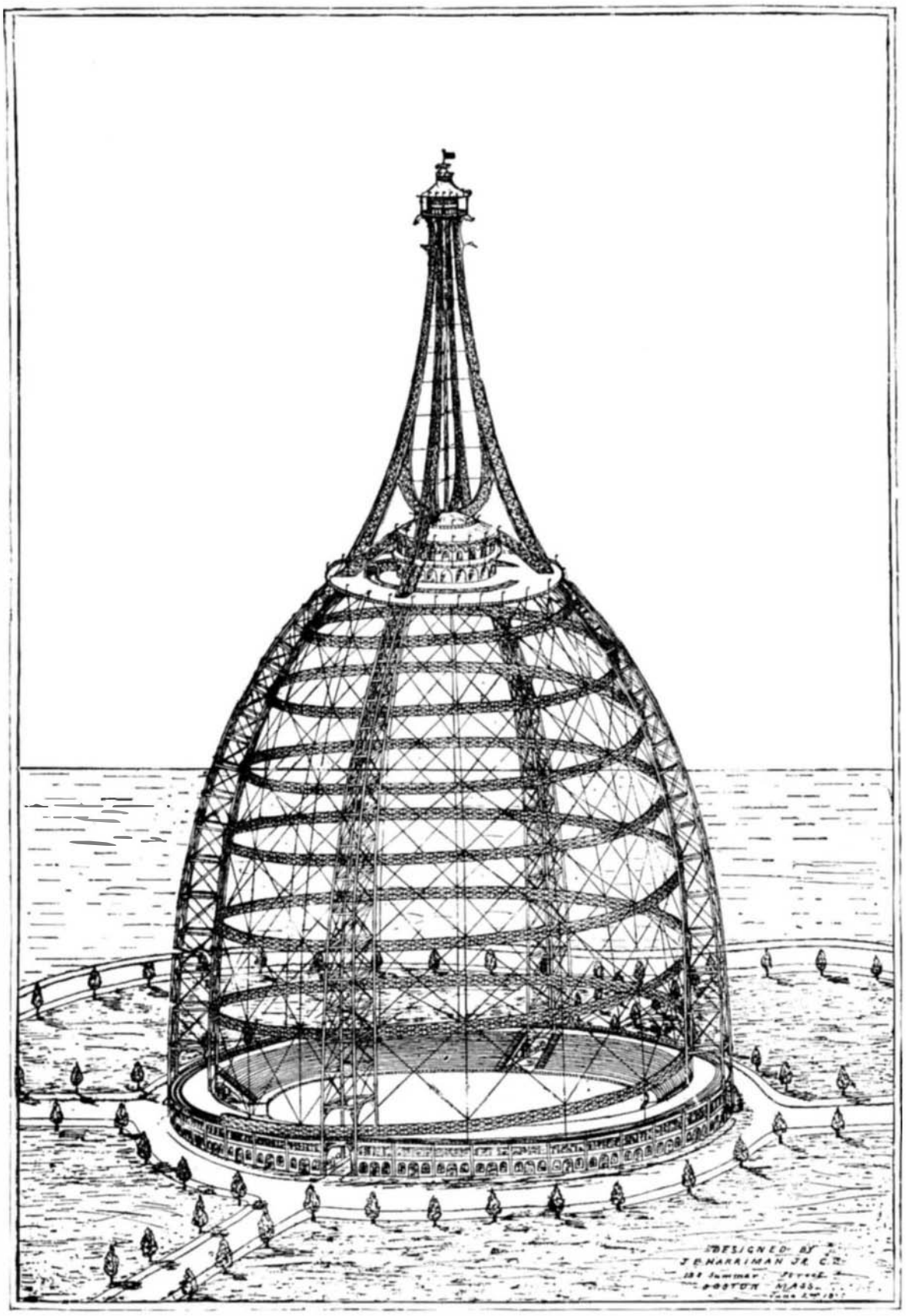
### A PROPOSED WORLD'S FAIR TOWER.

Mr. J. E. Harriman, Jr., a civil engineer of Boston, is the author of the accompanying design for a tower for the Columbian Exhibition at Chicago next year. It is intended not only to serve as an observatory tower, but combined with it is the novel feature of a winding slide "from the bottom to the top of the main tower," which is to be ascended by electrically propelled cars, to an elevated main building, from which another tower is raised as an observatory, and is ascended by elevators which rise perpendicularly in a central shaft to the top. The descent is made by gravitation from the main tower in the same shaft by which the cars run up, as it is a double tunnel, with one floor above the other and open latticework sides, which gives an opportunity to view the scenery both in ascending and descending. The slide itself is to be on about a five per cent grade, and the cars can be controlled by a conductor and automatic brakes and switches. The tower may vary in height from 100 to 1,000 feet high, but in the drawing from which our print is made the main tower is about 300 feet high, and the observatory about 200 feet high, in all about 500 feet. The slide is about 1¼ miles in length. The bottom space of the tower is designed to be utilized for an arena or amphitheater, having a seating capacity of about 10,000, with four large entrances. The whole space under the seats of the theater may be utilized for exhibition stalls, stores, hotel purposes, etc. The area covered by this structure would be about one and a half acres.




HARRIMAN'S PROPOSED TOWER FOR THE GREAT EXPOSITION.

### Coloring Brass Blue.

A cold method of coloring brass a deep blue is as follows: 100 grammes of carbonate of copper and 750 grammes of ammonia are introduced in a decanter, well corked, and shaken until solution is effected. There are then added 150 cubic centimeters of distilled water. The mixture is shaken once more, shortly after which it is ready for use. The liquid should be kept in a cool place, in firmly closed bottles or in glass vessels, with a large opening, the edges of which have been subjected to emery friction and covered by plates of greased glass. When the liquid has lost its strength, it can be recuperated by the addition of a little ammonium. The articles to be colored should be perfectly clean; especial care should be taken to clean them of all trace of grease. They are then suspended by a brass wire in the liquid, in which they are entirely immersed, and a to-and-fro movement is communicated to them. After the expiration of two or three minutes they are taken from the bath, washed in clean water, and dried in sawdust. It is necessary that the operation be conducted with as little exposure to the air as possible. Handsome shades are only obtained in the case of brass and tombac—that is to say, copper and zinc alloys. The bath cannot be utilized for coloring bronze, copper-tin, argentine, and other metallic alloys.—*Chem. Tr. Jour.*

### Distillation of Wood.

The Burrell Chemical Company, working the inventions of Elbert J. Burrell, was organized in 1888, and by the first of January, 1889, it had completed and put in operation its chemical plant at Newberry, Mich. The above mentioned plant consists at present of 64 charcoal kilns, having each a capacity of about 36 cords of wood, and a wood alcohol plant proper, consisting of a large alcohol house, an engine house, and three series of condensers. The kilns operated by the Burrell process of charring yield 48 bushels of charcoal per cord of wood—a gain over the old method of 20 per cent in charcoal. By the Burrell process there is also an additional advantage in the fact that wood is more completely reduced to charcoal, not more than three cords of brands remaining out of 37 cords of wood. In the wood alcohol part proper the smoke—taken from the kilns by means of a chimney and smoke main—is converted into wood alcohol, a perfect substitute in mechanical arts for grain alcohol. The three principles at work successively in converting smoke into wood alcohol are condensation, distillation, and refining. By the Burrell process every cord of wood charred is made to yield more than two gallons of wood alcohol, worth in the United States $1 per gallon at wholesale. At the chemical plant in Newberry, Mich., 7,000 gallons of refined alcohol are made every month. Berry Bros. of Detroit, wholesale dealers in paints, varnishes, etc., take the entire output. Various other by-products are made by the Burrell Chemical Company. From a crude form of the alcohol a valuable coloring material is made which has a ready market. Operated in connection with a charcoal furnace, or with any smelting works where charcoal is used as a fuel, a Burrell chemical plant is a profitable adjunct. A careful estimation by Mr. George W. Sharp, based upon the work done by the Newberry plant, shows that from a 30 kiln chemical plant (50 cords per kiln) 20 per cent net annual profit can be made on an investment of $250,000.

ONE or more belts running independently on the top of another will add much to the transmission of power.

### Artesian Wells for Irrigation.

Census Bulletin, No. 193, the ninth of the series devoted to irrigation in the arid and sub-humid States and Territories, has been prepared by Mr. F. H. Newell, special agent of the Census Office for the collection of statistics of irrigation, under the direction of Mr. John Hyde, special agent in charge of statistics of all branches of agriculture, and relates to artesian wells on farms, especially as used for irrigation. The total number of artesian wells on farms in June, 1890, in the States and Territories forming the western half of the United States, was 8,097, representing an estimated aggregate investment of $1,988,461.26. Complete statistics, concerning the depth, cost, discharge, and other features of 2,971 of such wells, fairly distributed through the various States and counties from which they are reported, have been obtained from the owners, and from the averages derived from such statistics the number of artesian wells used for the purposes of irrigation is computed at 3,930, the average depth per well 210·41 feet, the average cost per well $245.58, the total discharge of water per minute 440,719·71 gallons, or 54·43 gallons per well per minute, the average area irrigated per well 13·21 acres, and the average cost of water per acre irrigated $18.55. Over one-half of these wells are in the State of California, where 38,378 acres of agricultural land were irrigated by artesian water. Utah stands second in the number of artesian wells used for irrigation purposes and Colorado in the area of land thus irrigated, followed, at a long distance, by Texas and other States, as set forth in the bulletin.

### Destruction of Field Mice by Typhus Bacillus.

Professor Loeffler, the originator of the system of destroying field mice by typhus bacillus infection, has returned to Germany, from Greece, where he had gone to put his system to a practical test. The professor reports that his mission has been a complete success, and that within eight or nine days the swarms of field mice which infested the parts of the country visited by him, and destroyed the crops, were absolutely annihilated. The remedy was applied in the following manner:

The peasants in the district to be operated upon were asked to meet at a given point with baskets of odd pieces of bread broken small. This bread was soaked in the solution containing typhus bacilli, and returned to the owners with instructions to spread it in the fields. In this manner large areas could be treated every day. Pieces of bread saturated with the bacillus were eaten by Dr. Loeffler and his assistants to demonstrate its harmlessness upon the human system. Horses and other large animals were also experimentally fed with it, and experienced no ill effects whatever.

### Cloth from Ramie.

In a recent issue of this journal we gave an account of the first experiment in the manufacture of cloth from ramie in the United States. We have since learned that the ramie fiber used by the San Jose Woolen mill at that time was degummed, cleansed, bleached, and supplied by Mr. Walter T. Forbes, of Atlanta, Georgia.

Mr. E. W. Wilgard, of the Agricultural Experiment Station, College of Agriculture, University of California, speaks in highly favorable terms of Mr. Forbes' method of treating the fiber.