and the freedom from smoke will add greatly to the attractiveness of the Exposition and to the comfort of the visitors.

Fifty or more small pavilions are being constructed throughout the World's Fair grounds, convenient to all the promenades and main arteries of travel, for purposes of dispensing soda water, confectionery, and other things. These buildings are constructed under the concessions granted for this purpose.

The arrangements for a corps of guides to do duty during the holding of the Exposition have been completed, and the guides will be appointed at once, in order that they may be properly trained and educated for the work they are to undertake. There will be about 250 of these guides; probably 25 of them will be women. The guides will wear a uniform, and will be systematically organized and officered. Headquarters will be established at different points in the grounds, at which visitors can make arrangements for guides.

Preparations are decidedly evident on every side in Chicago for cleaning up and preparing for the reception of visitors to the Exposition. Railroads are repairing their tracks, renewing and fixing their rolling stock, and painting and otherwise improving the facilities of their stations. The hotels for weeks have been undergoing a thorough renovation, and everywhere similar preparations have been going on. Now the city authorities have begun work in earnest to clean up the streets and alleyways. An army of men, with scores of teams, has been put to work in all parts of the city, and there is every prospect that Chicago will be cleaner on the 1st of May than it has been for years, if ever before in its history. This thorough cleaning up is a matter of considerable importance to intending visitors to the Exposition, because of the increased healthfulness of the city that will result.

Arrangements have been fully perfected for publishing a daily paper at the Exposition grounds. It will be an eight page paper, issued each morning, five pages being made up each from a stereotype of the first page of the five morning papers published in Chicago; the other three pages will contain official notices, programmes, and other important matter regarding the Exposition. The paper will be called the *Daily Columbian.*

An electric transfer table has been installed in the annex of the Agricultural building for the special purpose of installing larger exhibits, such as passenger cars, locomotives and rolling stock of all kinds. The table runs on seven tracks and is of sufficient capacity to accommodate cars eighty feet long and any weight up to about 200,000 pounds. The tracks on which it runs are two feet below the grade of the tracks on which exhibits are shunted, and below the spur tracks in the grounds, but the table itself is on a level with the tracks. This table is operated by a twenty-five horse power electric motor which is placed in the cab in the center. This motor is wired for five hundred volts, and takes current from two trolleys of bare wire placed in boxes near the two rails in the center. The motor can also be attached to a revolving drum, by means of which cars or engines can be hauled on to or off the transfer table by the use of a steel cable. This transfer table was manufactured by the Industrial Works, Bay City, Michigan, the same company that manufactured the locomotive cranes used in most of the other buildings in handling exhibits.

THE KRUPP EXHIBITS.

The steamship Lonquiel lately arrived at Baltimore, loaded with the Krupp exhibits for the World's Columbian Exposition. Our engraving shows three Krupp guns in the hold of the Lonquiel as they came over. The longest gun is one near which the men are. These are Captain Williamson, of the Lonquiel, Mr. Stone, boss rigger, who has charge of the lifting, and Mr. Henry, one of Krupp's men.

Besides the guns seen there are two smaller ones. The piece of steel seen in the foreground is a portion of a ram.

The largest gun is 120 tons weight, 18 feet circumference at the breech, 46 feet long, 22½ inches diameter of muzzle outside measure and 17½ inches diameter of bore.

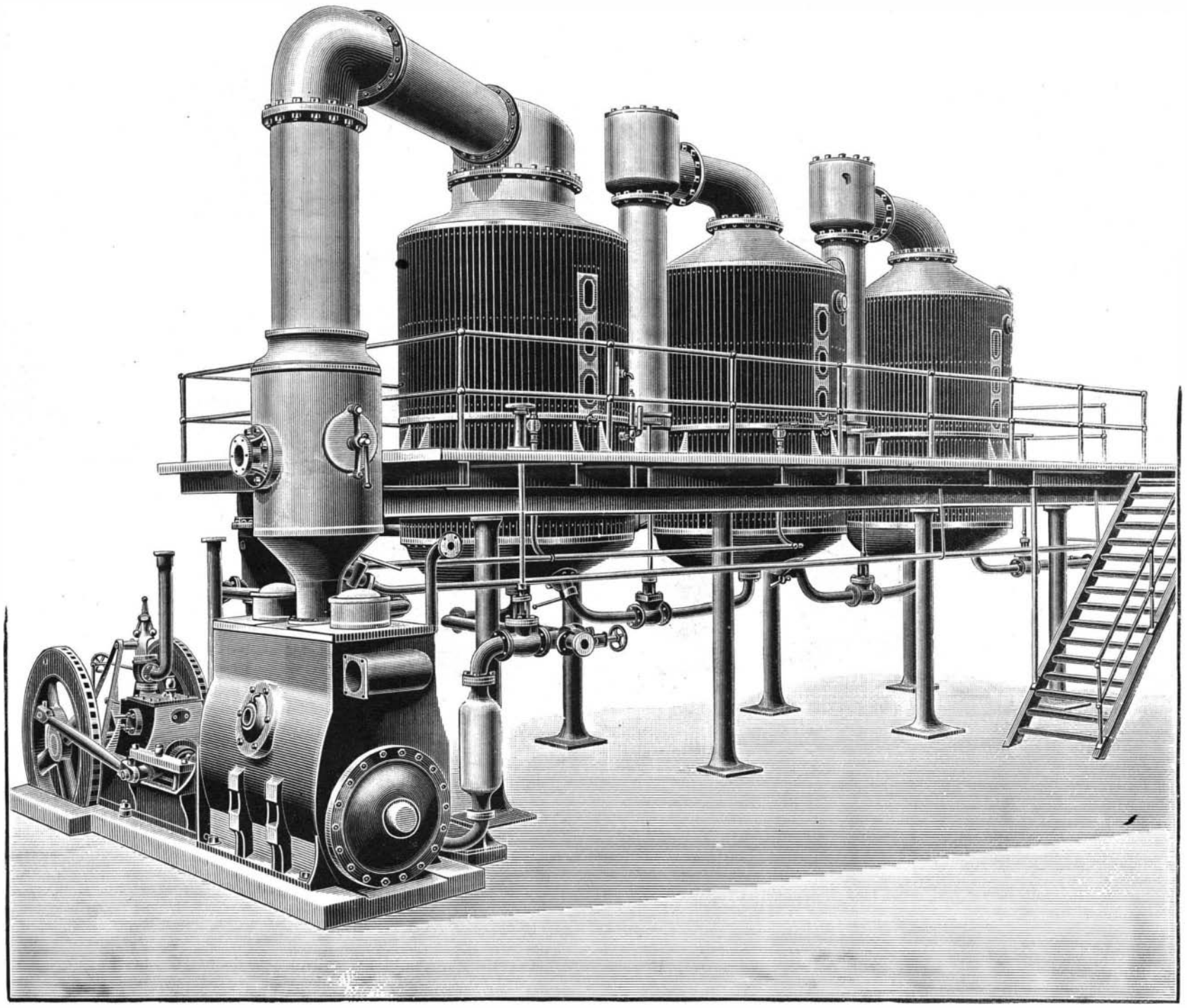
The middle gun in picture weighs 62 tons; the other in the foreground, 43½ tons; the smaller ones, 32 and 14 tons each.

There are besides these in the vessel one shaft, 22 tons, 83 feet long, 17 inches diameter; one gear wheel, 23 tons, 10 feet diameter, 14 inches thick; two armor plates, 16 tons each, 16 inches thick; two 27 tons each, 20 inches thick, and one 65 tons, 22 inches thick. A special railway truck of great strength for the carriage of the great 120 ton gun to Chicago will be illustrated probably in our next.

IMPROVED TRIPLE EFFECT EVAPORATOR.

We illustrate a triple effect evaporator, by Mr. Harvey, a member of the well known firm of McOnie, Harvey & Co., of Scotland Street Works, Glasgow, and given in a recent number of the *Engineer*, London. The general arrangement is very clearly shown in our engraving, the vacuum pump seen on the left being of extra large size. For those of our readers who are not versed in sugar machinery, it will be enough to say that the sirup is boiled *in vacuo*, and therefore at a temperature so low that all chance of charring or discoloring the sirup is avoided. The steam produced in the first "calandria" or vacuum pan is used to heat the second calandria, and that produced in the second heats the third.

The advantages claimed for Harvey's patent evaporating apparatus are complete and rapid circulation of the juice, combined with proper distribution of the steam in the most effective manner for the heating of the juice, by the proper proportion of the various vapor pipes connecting the vessels, also in the form and position of the vapor inlets to the calandrias. The condensed water outlets from the calandrias are made very large, and are connected to patent water and vapor receivers. There is a special arrangement of pipes and cocks connected to the main condenser, by means of which gases of any density lodging in any part of the calandrias are immediately drawn off, the accumulation of such gases being one of the sources of interruption to the free distribution and circulation of the vapor or steam in the calandrias. The usual back pressure or exhaust steam of 3 lb. to 5 lb. per square inch is ample to work the apparatus, which is automatic in its action, and owing to its extreme simplicity and moderate price has given, we understand, great satisfaction to sugar planters in various parts of the East and West Indies, reducing the cost of labor and effecting a very great saving in fuel, so that in some cases no coal is required.



IMPROVED TRIPLE EFFECT VACUUM EVAPORATOR.

SOUTHERN Pacific locomotives will soon use for fuel bricks made of coal dust and asphaltum.