

## THE NEW ORLEANS EXHIBITION.

The great exhibition which was opened with impressive ceremonies on the 16th of December at New Orleans, will doubtless take rank among the most important events of its kind. It was originally proposed in 1882, by the Cotton Planters' Association, as a suitable means of signaling the one hundredth anniversary of the cotton exporting industry, but it gradually assumed the proportions of an international industrial exhibition under governmental sanction and financial support.

Every effort appears to have been made by those in charge of the enterprise to contribute to its success, and the participation of nearly all the nations of the earth has been secured.

The main building, in which the machinery department is also located, covers an area of 33 acres, being 1,378 by 905 feet, or one-third larger than the main building of the Centennial Exhibition in Philadelphia. There are no partitions in this building, and the machinery display occupies a space 300 feet in width—the whole length of the building.

The government exhibit, which is large and varied, is placed in a special building erected for the purpose, 885 by 565 feet in dimensions. Besides loaning the enterprise the sum of \$1,000,000, the government has made a liberal appropriation in order to permit the various departments and bureaus to make a proper display. In this building, likewise, the various State exhibits are located. There are also provided a horticultural department, located in a special building of permanent character, erected by the city of New Orleans, and 600 by 194 feet in dimensions; and an art gallery, 250 by 100 feet, also designed to remain permanently after the exhibition.

The Mexican government has taken much interest in the exhibition, and has erected a national building for the display of its products and manufactures, 300 by 190 feet in size. The contributions of Mexico, Central America and the West Indies are said to be very large and constitute the principal attractions. One of the immediate results of the exhibition will undoubtedly be the giving of an important stimulus to the trade relations of the States of the Mississippi valley with the States of Mexico, Central and South America, which at present seem to afford the most promising field for the growth of our foreign commerce.

Although the participation of European countries will not probably be made upon the extensive scale which made the Centennial Exhibition so attractive and instructive, there will nevertheless be a very large representation. The Great Eastern will bring a large portion of these exhibits over, and the great vessel itself will form one of the noteworthy sights for the visitor.

The exhibition grounds are located in what is known as the City Park, about four miles from the heart of the city. The grounds proper embrace 247 acres. They have a frontage of about half a mile on the Mississippi river, and are readily accessible both by steamboat and rail.

The following classification has been adopted by the administration having charge of the enterprise: 1st. Agriculture; 2nd. Horticulture; 3rd. Pisciculture; 4th. Ores and Minerals; 5th. Raw and Manufactured Products; 6th. Furniture and accessories; 7th. Textile Fabrics, Clothing and accessories; 8th. the Industrial Arts; 9th. Alimentary Products; 10th. Education and Instruction; 11th. Works of Art.—*Ex.*

## STEEL BRIDGE IN SOUTH AFRICA.

The first steel bridge in South Africa, and the first bridge in the Orange Free State, was recently built over the Caledon River between Smithfield and Rouxville. It is of the bowstring type, is in four spans 650 feet long, and the total length, including approaches, is 1,200 feet. It stands 50 feet above low water mark, and the lowest part of the superstructure is 10 feet above the highest water mark ever known. The piers are 12 by 30 feet, are of stone masonry laid in cement, and rest on solid rock. The whole weight of the superstructure is 350 tons including all necessary timber. It was erected on a staging made of steel wire ropes, one inch in diameter, stretched from pier to pier, with wooden trestles on top to make up for the sag caused by the weight of each span. This method worked admirably, and the structure was completed without hitch or accident of any kind. The bridge cost \$160,000, including \$5,500 duty paid to the colonial government for material; it was built by Messrs. Scrimgeour Bros., of Port Elizabeth.—*Ex.*

## IMPROVEMENT IN SHIP BUILDING.

Messrs. Langille & Westover, of Mahone Bay, N. S., are the proprietors of a new patent granted to them, in the United States and Dominion of Canada, for an improvement in the construction of ocean going ships. One of its principal objects is the saving and utilizing of the drainage arising from cargoes of sugar and molasses, which can be saved in its original state, free from extraneous substances, and which, on long voyages, is said to amount to about ten per cent of the entire cargo. It is also claimed that no acids will form in the bilge water, the acids usually acting injuriously on the iron and fastenings in the ship's bottom, and that the generation of noxious air and unpleasant gases will be avoided.

In constructing the hold of a vessel according to this improvement care must be taken in the first place to calk the vessel carefully and make it tight. The ceiling and inside skin is also carefully calked from the keelson up to the air streak and made perfectly water tight, and at the ends of the vessel there are dead woods and timbers fitted to the keelson, the ends of the ceiling being fitted to those timbers and calked, by which the fore and aft parts of the vessel are both strengthened and made water tight.

In the bottom of the hold thick planks are set on edge and extend out to the turn of the bilge. The planks are set at a distance of about twenty-two inches from one another through the length of the hold, and are made tapering on their under side to come to a point at the turn of the bilge. They are held in place edgewise by substantial cleats, which are spiked or otherwise fastened to opposite sides of the keelson and also by cross beams. Upon these beams rest removable flooring planks, which are spaced apart to leave narrow open spaces. When the vessel is used for shipping grain, salt or similar merchandise in bulk, the openings are closed by strips. The top of the thick planks is about three inches above the level of the flooring, which enables the casks resting on their quarter hoops upon the ribs formed by the planks to clear the flooring with their bilge. The planks are cut away on their under side to form apertures, through which the drainage that drops down through the openings in the flooring is permitted to run back to a well. There can be one or more of these collecting wells, each consisting of a hollow block sunk down through the ceiling and timbers—one on each side of the keelson—forming basins or reservoirs to receive the drainage, and from which this may be pumped up whenever desired and filled into empty casks which are carried for the purpose.

With this arrangement should the ship receive a leak or hole in the bottom, it can still be navigated with safety and without damage to the cargo. It will be a great security against loss of ships and cargo in case of stranding, and is not liable to damage her cargo by sea or bilge water. It is an ineffeetual remedy against the choking of pumps and ships becoming water-logged, by which immense losses are so frequently sustained in ordinary built vessels. These are some of the advantages to be obtained by this system of construction.—*Ex.*

## INVENTION OF GUNPOWDER.

In a paper recently read before the Shanghai branch of the Royal Asiatic Society, Dr. Macgowan affirms the claims of the Chinese to be the originators of gunpowder and firearms. This claim was examined in an elaborate paper some years ago by the late Mr. Mayers, and decided by him in the negative. Dr. Macgowan admits that gunpowder as now used is a European discovery. Anterior to its granulation by Schwartz it was a crude compound, of little use in propelling missiles; this, says the writer, is the article first used in China. The incendiary materials stated by a Greek historian to have been employed by the Hindoos against Alexander's army are stated to have been merely the naphthous or petroleum mixtures of the ancient Koreans, and in early times used by the Chinese. The "stink-pots," so much used by Chinese pirates, are, it appears, a Cambodian invention. Dr. Macgowan states also that as early as the twelfth or thirteenth century the Chinese attempted submarine warfare, contriving rude torpedoes for that purpose. In the year 1000 an inventor exhibited to the then Emperor of China "a fire-gun and a fire-bomb." He says that while the Chinese discovered the explosive nature of niter, sulphur, and charcoal in combination, they were lagards in its application, from inability to perfect its manufacture; so, in the use of firearms, failing to prosecute experiment, they are found behind in the matter of scientific gunnery.—*Ex.*