shows the production, in tons, of coal in this country for each census year since 1850 :

. 9	Anthracite.	Bituminous.
· · · · · · · · · · · · · · · · · · ·	• • • • • • • • • •	7,173,750
1000	9,398,332	5,775,077
1070	15,664,275	17,199,415
1000	28,649,872	42,776,624
1890	45,544,970	94.495.000

The output of England in 1888 is estimated at 169,935,219 tons, so that the United States is now the second largest producer, and at its present rate of increase will soon stand first.—*Bradstreets*.

# REMARKABLE MAGNETIC ORE.

About half a mile below the lower fall of the Kootanic River, British Columbia, on the north bank and near the water's edge, is a remarkable occurrence of magnetic iron ore. The ore is found in large, loose masses, weighing several tons, but owing to the want of good exposure, its actual relations to the rocks adjacent could not be ascertained. The place of its occurrence is near, if not on, the line of junction of the granites with the here highly altered rocks of the stratified series. It appears to be associated with a dyke about forty feet in width, of green-gray augite—porphyrite of somewhat peculiar appearance, which crumbles down easily under the action of the weather. It seems probable that the iron ore, which in situ may form large, irregular masses along the borders of this dyke. The ore is finely granular in texture, and generally free from rock matter or other impurities, but in some places contains silicious kernels, with epidote and brown garnet. A fragment of the ore, comprising one of these kernels and rusty in appearance, was examined for gold and silver, but proved to contain

# STREET SURFACE RAILWAYS.

JOHN N. BERKLEY, in a report to the American Street Railway Association, refers as follows to the growth of the industry repre-

Five years ago the only street surface railways which were in successful operation anywhere in the United States were horse and cable railways. Within that five years more than  $4,\infty$  street cars have been electrically equipped, and to-day more than  $3,\infty$  miles of track in 300 cities and towns of this country have been constructed, on which these electric cars are run with satisfaction to the people, and, in the main, with profit to the companies operating them.

The development of the street railway has had as much to do. with the growth and prosperity of the towns and cities of this coun-try as, or, perhaps, more than, any other one thing. The transportation of people by street railroads is most intimately connected with the social and business life of the people. Nearly 500 cities in the United States have street railway systems in operation. More than 800 corporations are operating street railways in such towns and cities. As many as 30,000 street cars, horse, cable and electric, are to-day running upon the 8,000 miles of street railroads in this country. In these cars, and on these tracks, are carried 3,000,000,000 of people yearly, or fifty times the entire population of the United States. When we consider that the number of people carried by all of the steam railroad companies in all of the States of this Union last year is estimated at less than 500,000,000, and that more people are carried on the street surface railroads in the City of New York in a year than are carried by all the steam railroads of the State in the same period, we come to have some conception of the immense importance to the people of the rapid, efficient of the infinitese inportance to the people of the rapid, encient and safe service of street cars in the rapidly growing cities and towns of this wonderfully prosperous country. Think for a moment of the daily loss to the people of any city where horse cars are run at from four to six miles an hour, as compared with the operation in the same city of electric or cable cars running from six to twelve miles an hour. Consider the immense increase in the value of property in our municipality caused by the introduction of rapid transit. Consider the wholesome influence upon the people of every com-munity, where the husband, or other head of a household, is able, by means of facilities of quick transportation, to take his mid-day mean with the members of his family. The best thought of this time may be well expended upon this great question of furnishing quick, safe, cheap and comfortable transportation to the people whose lot it is to dwell, as dwell they do in such vast numbers, in the towns and cities of this land.

# BELGIANS SECURING IRON ORE LANDS.

A BELGIAN syndicate has secured the right to explore a large tract of mineral lands on the north shore of Lake Superior, with the privilege of leasing the same for mining purposes if they should prove rich in mineral. The lands are owned by capitalists of Superior, Wis. M. Macquet, a civil engineer of Brussels, and the agent of the Societe General pour favorisier l'Industre Nationale, a banking and investment concern under the control of the Belgian Government, which was the real lessee of the mines in question, secured the option for his principals on the basis of a royalty of 40 cents per ton, after the United States duty of 75 cents per ton on Canadian iron shall be removed, and 25 cents per ton until that time. The options run until November 1, 1893, for the purpose of making explorations, and one year thereafter will be allowed in which to build the necessary fifty miles of railway, if the Belgians conclude to confirm the lease. The option also covers one-sixth of the fee at a price in cash to be agreed upon by appraisal, if the lease shall be confirmed. The leases have been drawn in duplicate and copies forwarded to Belgium to be approved and signed. The property leased lies on the Stiko-Kan River, and is said to be practically a solid mountain of anti-titanic magnetic ore, running 69 per cent. of metallic iron.

### STAVELESS BARRELS.

IT is doubtless a matter of general knowledge that the bodies of casks and barrels are composed of a number of tapered staves, which are assembled together, held in position and hooped up. By a novel and ingenious method of manufacture casks are now being manufactured from one piece of wood, and therefore without any staves, or, it may be said, with only one, the body constituting in itself a long, single stave. The method of preparing the body of the cask may be likened to the sharpening of a lead pencil by a pocket sharpener. The stem of the tree is first cut up into pieces or logs of a length according to that of the barrel required, and is then boiled for two or three hours in a closed vessel to soften the wood, a current of electricity being passed through the water the whole time. From the boiler the log of wood is taken to the machine, where it is held at each end horizontally between two points, much in the same way as a piece of wood is held in the lathe. Rotation is given to the piece of timber, which is advanced towards a broad blade fixed on a frame having a slot in it in a line with the edge of the blade, just as in a plane, which the cutting part of the machine may be said to resemble. As the trunk of the tree is revolved against the blade a continuous sheet of wood is produced of any desired thickness. The wood is drawn out flat from the rear of the machine by hand onto a table. The sheet of wood thus obtained is cut transversley into pieces each of the required length for one barrel. The pieces are then passed through a grooving machine, which cuts the groove in which the head is eventually fitted. Another machine cuts V shaped pieces at intervals out of the edges of the pieces of wood, which are then easily bent round into a cylinder and firmly hooped, the V shaped slots enabling it to assume the necessary conical form at each end. There is thus only one joint in the body of the cask or barrel. The casks are afterwards dried in a special apparatus, after which they are ready for use. A factory is in operation in Germany manufacturing these casks, some of which we recently examined at the offices of the Oncken Patents Syndicate, 10 Old Jewry Chambers, London. We were also shown a model of the machine and some samples of wood of various thicknesses, including some exceedingly thin veneers.-London Times.

### **RECENT ENGINEERING TRIUMPHS.**

SOME facts brought out in an address by the new president of the British Institution of Civil Engineers, Mr. George Berkley, regarding recent advances in engineering, are worthy consideration and congratulation. In paragraphic form we note a few of the striking statements adduced :

The introduction of the electric light on the Suez Canal has reduced the time of passage from 38 hours to 22½ hours and has increased the carrying capacity of the canal, 2,832 vessels having passed through the canal at night in 1890

The rapid advance in the introduction of metal railway ties is shown by the fact that, on the Great Indian Peninsular Railway there are now 2,600,000 pairs of cast iron sleepers, only 840,000 wooden ones remaining on the track, and experience has suggested