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## PRODUCTION OF IRON AND STEEL IN AMERICA.

The semi-annual statistical statement of the American Iron and Steel Association is of particular inter- bling and finishing of the parts at the Frankford Arseest, as it shows an unprecedented activity in both of nal, Philadelphia, and at the Weshington Navy Yard. these industries. During the first six months of the year, the product of pig iron amounted to 2,954,209 tons Ohio and Alabama, the production of each having a greater productivity, but in Virginia, Kentucky, Missouri, and Georgia, the output is less than in former vears.

The most noticeable feature of this half year's increase in Pennsylvania is the lead taken by the Lehigh Valley district. For some time this has been second only to Allegheny County in its pig iron production, but fuel rapidly taking its place. Less anthracite, too, is half year are 22,446 net tons of spiegeleisen, indicating a product for the entire year of at least 50,000 tons. On the 30th of June, 1886, there were 470,421 net tons

of iron remaining unsold in the hands of the iron masters or their agents, a slight increase over the stock in hand at the first of the year.

The statistics of steel production show a similar activity. During the six months just past, the production proportion than during 1882.

The report concludes with the very gratifying statement that this country will produce more Bessemer when war is actually at hand. In urging an extensive

# HEAVY ORDNANCE FOR COAST DEFENSE.

The Senate Committee on Appropriations has given much consideration during the present session of Congress to the question of our coast defense and the proper method of securing the requisite armament. The report of the board appointed to examine the national resources in the matter of the production of steel guns made it very plain that the fortification of not be accomplished in less than from one and a half to before any private firms could be induced to undertake metallurgical confidence.

ry numerous. Many of these have naturally been ill of the Cowles process in Europe.

WHI. METROLOGY.—Comparative Size of Metric and Old Units with Reference to Convenience.—By First Brooks.—A Comparative standards.—The superiority of the metric system and its increasing use in this country.—Tables and 6 diagrams.

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A NATICE LIANY.—The Paris Exposition of 183.—The plans submitted by Messrs. Eiffel & Sauvestre, for which a prize of \$30 was advantage. As passed by the Senate, the have been induced by feasting on the refuse from the tion to put it off with very inadequate legislation. As stills. In time they come to have the dull, stupid appearance characteristic of an opium eater. It is hardly much to commend it, and deserves favorable consideration bill has pearance characteristic of an opium eater. It is hardly much to commend it, and deserves favorable consideration bill has pearance characteristic of an opium eater. It is hardly much to commend it, and deserves favorable consideration.

A side from the cown to find the tion to put it off with very inadequate legislation. As stills. In time they c sive works. The conditions under which this sum is to be expended have been considerably modified, in accordance with the suggestions of Senator Hawley. 

determined to contract with private firms for the manufacture of the rough steel, and provide for the assem-

It is now provided that the Secretary of War and the Secretary of the Navy are to be authorized jointly to of 2,000 pounds. In a similar period of time, the coun-make contracts with responsible steel manufacturers, try has never before produced such a large amount of after suitable advertising, for the supply of rough pig iron. Prior to 1879, indeed, the output for the bored, rough turned, and tempered steel in forms suitwhole year never reached these figures. During the able for heavy ordnance for army and navy purposes. first half of 1885, the product was 2,150,816 net tons, and Its quantity is not to exceed 10,000 gross tons. In during the latter half 2,379,053 net tons. The greatest quality and dimensions, it must conform to specificaabsolute gain in production this year was made by tions, and be subject to inspections and tests at each Pennsylvania, but the greatest relative gain made by stage of manufacture. It is provided that no money any of the important iron-producing States was in | shall be expended, except for steel accepted and delivered, and that each bidder shall contract to largely increased. A number of other States also show erect a suitable plant in the United States. Such establishments must be empped with the best modern appliances, and capable of making all the steel required, and of finishing it in accordance with the contract. The bidder must also agree, in case of an ordnance contract, to deliver yearly a specified quantity of each caliber. The time of delivery as now stipulated for the smaller calibers is to commence at the this year it has exceeded it, having produced 320,568 net expiration of not more than eighteen months from the tons in six months, against 301,014 tons in Allegheny date of the execution of the contract, and for the larg-County. The output of pig iron in either of these disest calibers at the expiration of not more than three tricts is greater than in any State in the Union except years. It is also provided that all the forgings must Ohio. The statistics also show that the amount of pig be of American product, and manufactured in the iron produced from charcoal is on the decline, mineral, United States. One-half of the material purchased is to be for the use of the War Department, and the being used alone, a mixture of anthracite and coke other half for the Navy. Six million dollars have been being substituted. Included in this aggregate for the appropriated for this purpose, to be available during six years from the date of the execution of the contract.

Four hundred thousand has been apportioned for the thorough equipment of the Frankford Arsenal, and two hundred thousand for additional tools and machinery for the Washington Navy Yard. Minor sums were also appropriated for the construction of cast iron mortars and other purposes.

The full discussion which this question received in of Bessemer ingots reached 1,073,663 net tons, against Congress has shown that under the most favorable 938,418 tons in the second half of 1885 and 763,344 tons conditions it will take several years to provide for the in the first half of that year. These figures include also adequate protection of our seaport cities. In the inthe Clapp-Griffiths metal, of which 24,810 net tons have terval, they are left at the mercy of circumstances. been produced during the present half year. The pro- It is true that we are now so fortunate as to be at duct of Bessemer steel rails during this period has been peace with all the world, but it is impossible to have 707,447 net tons, an increase over last year, but less in any guarantee that this condition of affairs will continue for any length of time. It is at such a period that defensive preparations should be made, and not steel more Bessemer steel rails, and more open hearth and complete system of fortification, we have that a steel in 1886 than in any previous year of our history. higher civilization will prevent the processity of ever testing its efficiency in battle. It is, however, quite well recognized in international history that as proved armament is fully as valuable in prevention war as in gaining victories when hostilities have ence been declared.

## DISEASE GERMS IN MILK.

It is a well recognized fact that the mother who is nursing her child is obliged to be very careful about even two or three of the more important seaports could her diet, for whatever she eats or drinks has its effect upon her milk, and consequently upon the health of three years' time. It also showed that substantial on- her child. The most acute symptoms, and even death, couragement would be required from the Government, may be produced by dietary indiscretion. But it is less appreciated that similarly alarming results may be the manufacture of guns of the larger sizes. So great | produced in both children and adults by the was the hesitancy of even the best equipped iron works milk taken from improperly fed cattle. There have reto attempt the fabrication of guns of over 12 inch cently been a number of mysterious poisoning cases, caliber, that it appeared at one time as if the question | that after a great deal of random speculation have would have to be held in abeyance until experience in finally been traced to diseased milk. In spite, howthe production of the smaller sizes had induced greater ever, of these warnings, the subject has not yet received the sanitary attention to which it is entitled. Par-An appreciation of the difficulties of obtaining suit-ticularly is the danger of such contamination great able arms has aroused the Committee on Coast in the neighborhood of large cities, where the ab-Defenses to the necessity of prompt action. They sence of wholesome pasturage is a temptation to the have now secured, if not all possible, at least all requirless scrupulous to substitute all grades of organic refuse, site information, and are in a position to act advisedly the most of which should properly be consigned to the in urging Congress to appropriate an adequate garbage crematory. In addition to this danger, howamount, and provide for its judicious expenditure, ever, it is discovered that even in the presence of The propositions and amendments offered for the con- abundant and suitable food, cattle are not discriminatsideration of the Committee and the Senate have been ing in their selection, but exhibit frequently the most depraved tastes. In the neighborhood of large distildvised. The fault in most cases has been a failure to leries, it has been observed that the cattle become utrecognize the importance of the subject and a disposi- terly demoralized by feasting on the refuse from the

nicious food. Aside from the disgust which the practice excites, it is a source of actual and grave danger. When it is remembered that the fatal plague at Ply-Even if there be no patriotic sentiment to prohibit mouth, Pa., was directly traceable to the careless dissuch a course, it is now found that it is impossible to posal of the excreta of a single typhoid fever patient, purchase guns of Krupp or any other foreign estab- it can readily be seen that milk may become in this lishment, as they have already more orders than they manner a vehicle for the distribution of the most ma-