

## SCIENTIFIC AMERICAN

ESTABLISHED 1845

MUNN &amp; CO., - - Editors and Proprietors

Published Weekly at

No. 361 Broadway, New York

## TERMS TO SUBSCRIBERS

One copy, one year for the United States, Canada, or Mexico ..... \$3.00  
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Scientific American (Established 1845) ..... \$3.00 a Year  
 Scientific American Supplement (Established 1876) ..... 5.00  
 Scientific American Building Monthly (Established 1885) ..... 2.50  
 Scientific American Export Edition (Established 1878) ..... 3.00

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 MUNN & CO., 361 Broadway, New York.

NEW YORK, SATURDAY, APRIL 26, 1902.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

## RECONSTRUCTION OF WEST POINT ACADEMY.

The decision of the Military Committee of the House to favor the appropriation for new buildings and plants at West Point is a welcome evidence of the fact that Congress is at last awakening to the great value of that too-much-neglected institution. The elaborate plans for what is practically the rebuilding of the Academy have for some time been ready for active construction, and the three million dollars which, if everything proceeds favorably, will be available for the work, will clothe the beautiful and historical promontory on which West Point is located with a collection of buildings, which will not only form an admirable architectural group in themselves, but will adequately represent the national importance of the great military school.

Every well-wisher of his country will hail with positive delight this tardy appreciation of the claims of West Point. From the days of George Washington, who gave the initial impetus that led to the foundation of the Academy, throughout the first century of its existence, not merely has it failed to receive the encouragement from Congress which its importance and the splendid character of its work deserved, but it has been the subject of an indifference and neglect which posterity will find it extremely difficult to understand. Twice in the early period of its existence it was without graduates; in 1819 it was deprived of supplies of any kind whatever and was under the command, if you please, of a lieutenant; and in 1812 it was without either students or instructors, and remained in that condition some time thereafter. It was only the exigencies of the war of 1812 that saved it from extinction at the hands of the Secretary of War, who sought to strangle the already-enfeebled institution. Congress showed its hostility a few years later in an endeavor to extinguish the Academy altogether, and again it was the exigencies of war, in this case the war with Mexico, in which the graduates of West Point so greatly distinguished themselves, that prevented the closing of the institution. It is scarcely necessary to add that the great struggle of the civil war gave such indisputable proof of the value of West Point training as to insure the perpetuity of the Academy. Nevertheless, it is a fact that after the war Congress was so well leavened with men whose brilliant military records had been obtained in spite of the fact that they had no West Point advantages, that the hope of obtaining much-needed appropriations was destined to disappointment. However, now that Congress has decided to recognize the claims of the Academy, it is preparing to do so with no niggardly hand; and it is our conviction that generous as is the contemplated appropriation, it will ever be considered as among one of the most judicious and thoroughly merited distributions of the national funds ever made.

If the value to the nation of West Point needed any further demonstration, it is surely sufficient to point to the splendid service rendered by the officers of the Regular Army during and subsequent to the Spanish war. Had the entirely novel and extremely complicated problems that presented themselves with our acquisition of foreign possessions been left for their solution to the tender mercies of the political "carpet-bagger," the results in damage to our national prestige and in misery to our various new possessions would have been untold and irremediable. Fortunately, at the close of the war (in which the service of West Pointers was of that high character which the nation has always learned to expect and has invariably received), our Army officers displayed marked executive ability in the various, most complicated, and untried duties which presented themselves. The demonstration of West Point influence during the war, and in the solution of the problems which that war bequeathed to the nation, is an endorsement of our great military institution which, we venture to think, will insure for all time its generous treatment by Congress.

## THE FLEETS OF THE WORLD.

The latest records of Lloyd's Register show that the fleet owned by the United States Steel Corporation has grown to such proportions that it now ranks as the fifth among the great steamship companies of the world. Considerably the largest of these is the Hamburg-American Company, which owns 134 vessels of an aggregate gross tonnage of 668,000 tons. The next largest is the North German Lloyd Company, whose 120 vessels aggregate 556,000 tons; the third company is the British Elder Dempster Company, which owns 153 vessels, aggregating 431,000 tons. Then follow the British India Steam Navigation Company with 122 vessels and 384,000 tons, and the United States Steel Corporation, with 113 vessels aggregating 343,517 tons. From the same source we gather that in point of total number of vessels owned and of their gross tonnage, the fleets of the United States stand second among those of the world. Great Britain and her Colonies, out of a total for the whole world (including countries possessing over one million tons of shipping) of 29,091 ships, aggregating 30,600,510 gross tons, possesses 10,869 with a total tonnage of 14,708,206 tons, one-seventh of which is composed of sailing ships. The United States owns 3,286 vessels with a gross tonnage of 3,077,344 tons, of which two-fifths are sailing vessels; and then follow Germany with 2,905,782, of which one-sixth are sailing vessels; Norway with 1,627,220 tons, one-half of which are sailing vessels; France with 1,406,833 tons, a quarter of which are sailing vessels, and Italy with 1,117,538, of which two-fifths are sailing vessels. While the lead shown by Great Britain is so great, strenuous efforts are being made by competing countries to reduce, by means of judicious subsidies, this great preponderance. Germany and France subsidize many of their lines heavily, and the policy has proved to be, particularly in the case of Germany, a wise one. The Ship Subsidy Bill now before Congress would very materially assist in the development of our merchant marine, discourage the purchase of foreign-built vessels and stimulate the shipbuilding industry on our own sea-coast. Contemplating the figures we have given above, there is much food for thought in the fact that about the year 1840, Great Britain possessed under 800 vessels whose aggregate registered tonnage was less than 150,000 tons, and that during this period the aggregate-tonnage of the steamships owned by the United States was about 155,000 tons, or 5,000 tons more than that owned by Great Britain. That was in the days of wooden shipbuilding, and before the advent of steel, and more particularly before Bessemer steel, had given that wonderful impetus to British shipbuilding, the influence of which still enables her to maintain such a commanding lead.

## THE COST OF AMMUNITION AT MANILA AND SANTIAGO.

An echo of the thrilling days of the Spanish war has recently been heard in a most interesting return made by Rear-Admiral O'Neil, Chief of the Bureau of Ordnance, U. S. N., in which he gives the total cost of ammunition in the decisive battles of Manila and Santiago. At Manila Bay the ships under Admiral Dewey fired at the Spanish ships and batteries at Cavite, \$50,045 worth of ammunition, a remarkably low figure if we consider the momentous effect which that conflict had upon the operations of the war at large, and the fact that it was mainly instrumental in bringing the valuable Philippine Islands within United States control. At the battle of Santiago, the main batteries of the United States vessels fired 1,300 shots, and the secondary batteries 8,174 shots; the cost of the ammunition being about \$80,000. The total cost of powder and projectiles of the naval operations in the Spanish war was only \$175,000. As we showed in a recent article in the SCIENTIFIC AMERICAN, the gunnery practice of the North Atlantic Squadron costs considerably more in a year than the whole cost of ammunition expended in either of the important battles of the campaign, and herein is clear evidence of the great importance attached to good gunnery in the United States Navy.

## REPORT OF THE PRUSSIAN COMMISSION ON AMERICAN RAILROADS.

Some two years ago the Prussian government sent to this country a committee of experts to investigate the methods of construction, equipment and management followed by the railroads of the United States. The investigation was carried out chiefly on the Pennsylvania system, which was taken as being thoroughly characteristic of the best methods in vogue. The chief of the Prussian Ministry of Railroads has stated that much has been learned from this scientific study of railroad conditions which are so fundamentally different from those upon which the Prussian system has been slowly built up. With regard to locomotive construction, the commission were favorably impressed with the American plan of building to standard sizes and using interchangeable parts—a method which is being gradually adopted on German roads. On the question of freight and passenger cars, the minister stated that, while the

commission was favorably impressed with the large freight cars of from 40 to 60 tons capacity which are common in the United States, the existing traffic conditions were so different in Germany that such changes as were contemplated would have to be considerably modified to suit both the nature of the merchandise carried and the method of its distribution. The commission believed that while these huge cars were highly economical in the United States, where freight was moved in unbroken bulk over great distances, in Germany, where the total amount of freight and the bulk of each shipment is smaller, and the distances proportionately shorter, cars of 40 to 60 tons capacity would be out of proportion to the demands of traffic. This would be understood when it was borne in mind that, where a large number of small shipments have to be left at numberless local freight stations, it would be poor policy to drop a 40 or 60-ton car at a way station to unload a consignment of 8 or 10 tons of freight. At the same time, the standard 10-ton German freight car is to be advantageously replaced by double-truck cars of a maximum capacity of 30 tons. Enlargement beyond that limit would necessitate changes in track, platforms, and in the yard arrangements of mines, furnaces and other manufacturing plants that would be costly and generally inadvisable. It is probable that American practice in passenger cars will have less effect upon Prussian methods of the future than freight car practice is likely to have. The present model for long-distance service in Prussia is a vestibule car about 60 feet in length, which is divided into separate compartments and has a corridor extending along one side of the carriage. Although three standard Pullman American cars were brought to Germany for trial, and ran with great smoothness and absence of noise, they are not liked by the German public, who prefer their own system of smaller compartments with accommodations for six or eight passengers, in each of which a certain privacy, not obtainable in a Pullman car, can be secured. It is probable, therefore, that the Prussian state railways will continue to build their own type of standard passenger car and sleeper. The most popular type of the latter in Germany is divided into compartments, each containing an upper and lower berth and a separate wash bowl and water supply.

In the opinion of the German commission the American system of railroads is admirably adapted to the needs of a country like the United States, where vast distances are to be traveled, where there is the keenest competition between parallel and independent lines, and where the restrictions of caste do not exist. On the other hand, it is evidently considered that, in the main, the Prussian system, which has grown up through long years of development under state control, is pretty well suited to the needs of the German people. It has been slowly developed into an organization which pays over and above its operating expenses the entire interest on the Prussian debt, and also turns over an annual surplus of several millions to the public treasury. At the same time it must be remembered that the rates for freight and the first-class passenger fares are very high; the freight rates alone constituting a heavy handicap on agriculture and on many of the inland industries.

## WIRELESS TELEGRAPHY AND THE PROMOTER.

There is one form of activity of our modern commercial life which, unfortunately, is as omnipresent as it is harmful and humiliating. We refer to that peculiar practice or calling, familiarly known as "promoting." Not that promoting is essentially an evil; for honestly conducted, and with a true regard for veracity, it is one of the most essential elements in the complex machinery of everyday commercial life. Without the promoter, indeed, many of the most valuable inventions would probably never have got beyond the theoretical stage, nor would our industrial development have reached its present marvelous proportions.

Unfortunately, the introduction of important inventions, and the securing of the necessary capital to exploit them, opens a lucrative field for the professional and none too scrupulous exploiter. So vast have been the fortunes realized from the great inventions of the past, such as the telegraph, the telephone, and the electric light, that the general public is strongly attracted, and properly so, to any invention which promises to have a wide field of application and to return generous profits to investors. It is unquestionable that there is a vast multitude of people, with a limited amount of money to invest, who, being naturally anxious to secure the very largest possible returns upon it, are powerfully attracted by any opportunity of acquiring interest in a new device that promises to be, to use the favorite term of promoting literature, "revolutionary" in the particular field that it covers; and it is upon the eager credulity of these people that the bogus promoter raises rich harvests of profit—for himself. We believe it may safely be said that the victims of this kind of fraud are rarely to be found among the people whose wealth entitles them to rank among the