

SCIENTIFIC AMERICAN

ESTABLISHED 1845

MUNN & 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
 One copy, one year, to any foreign country, postage prepaid, 24 lbs. 5d. 4.00

THE SCIENTIFIC AMERICAN PUBLICATIONS.

Scientific American (Established 1845).....\$3.00 a year
 Scientific American Supplement (Established 1876)..... " "
 Scientific American Building Monthly (Established 1885)..... 2.00 "
 Scientific American Export Edition (Established 1875)..... 3.00 "
 The combined subscription rates and rates to foreign countries will be furnished upon application.

Remit by postal or express money order, or by bank draft or check.
 MUNN & CO., 361 Broadway, New York.

NEW YORK, SATURDAY, SEPTEMBER 24, 1904.

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.

THE FORLORN HOPE OF THE BALTIC FLEET.

In view of the utter wreck of Russia's naval strength in the Far East, and the probability of the early capture of Port Arthur and blockade of Vladivostock, there was something almost pitiful in the elaborate ceremonies attending the recent departure of the Baltic fleet for the Orient. There can be no doubt about the official character of the dispatch of the fleet, for it was witnessed and sanctioned by the Emperor, attended by the High Admiral and other noted officers of the Russian navy. The Admiral commanding the fleet, with due ceremony, boarded the imperial yacht and bade his farewell to the Emperor. Then, with destroyers ahead and abeam, the "Kniaz Suvaroff," one of the brand-new battleships, led the way down the Gulf of Finland to the tune of booming guns, the shouts of the populace upon the water fronts and piers, and the fluttering of many signal flags wishing good luck to the fleet on its long voyage.

In the press dispatches speaking of the event it was announced that the fleet would merely touch at Libau, where it would be joined by twelve transports, colliers, and supply ships, and that it would then proceed direct to the Orient. The fleet reached Libau. It is there at the present writing; and the latest dispatches have conveyed the inevitable tidings that for the present, it will remain there, its departure being dependent upon the development of events at the seat of war.

As for the fleet itself, it is certainly formidable, if only for the reason that it contains four new battleships, just completed, which are practically sister ships to the "Czarevitch," and, therefore, are to be reckoned as among the finest battleships afloat to-day. It is these ships, with the "Oslabya," and they alone, that could have any serious effect upon the issues of the naval campaign in the Far East; for the situation out there is such that the two out-of-date second-class battleships "Navarin," launched in 1891, and "Sissoi Veliky," of the same speed, launched in 1894, would be more of a hindrance than a help to the newer ships in any engagement against the seasoned, powerful, and victorious battleships of Japan. The same may be said of the odd assortment of cruisers that make up the balance of the fleet. There is the old "Admiral Nakhimoff," nineteen years old and good only for 17½ knots at her best, and the "Dmitri Donskoi," launched twenty-one years ago, and steaming well if she can make 15 knots an hour. These are armored cruisers; but the armor is of the old compound type, soft as butter to the high-velocity guns mounted by the modern Japanese armored cruisers. It is true there are three fast, unprotected cruisers, the "Oleg" and "Aurora," sisters respectively to the "Bogatyr" and "Palada," and the "Almaz," sister to the "Novik;" but in the present stage of Russia's fortunes in the Far East, which can be retrieved only by the most desperate kind of fighting in line of battle, unprotected cruisers are merely "food for powder."

Let us suppose, however, that the Russians should have the fatuity to send this hastily-gotten-together and heterogeneous collection of ships out to the Far East, and that it should arrive there. Where would it rendezvous? Port Arthur would in all probability be in the hands of the enemy; while, if the siege were still in progress, the Russian fleet would have to fight its way through Admiral Togo's line of battle before it could gain the harbor—a line of battle composed of five of the most powerful battleships and eight of the best armored cruisers afloat; a fleet trained to the hour, manned by crews that are seasoned and expert, thoroughly familiar with their ships, knowing exactly what they can do. What the Russian fleet at Port Arthur, more powerful and fresh from its base, failed utterly to accomplish, will never be accomplished by a less powerful fleet that makes the same attempt at the end of a long and exceedingly trying voyage of several months' duration.

If the Baltic fleet should leave Libau and actually start for the Far East, it will mean, in the judgment of the naval experts of the world, that Russia, after

losing the flower of her navy in the first campaign of the war, is merely sending the remnants to a similar and very certain fate. The damage already wrought by the prowess of Japanese arms has moved Russia down from third position among the navies of the world to fifth position. If the Baltic fleet should ever reach the Far East, the venture would in all probability end in Russia's losing what claims she now has to be reckoned a first-class naval power.

A GRAVE RESPONSIBILITY.

During the last administration the Municipal Art Commission of this city was called upon to pass upon a set of plans for a city bridge, to be known as the Manhattan Bridge, for which an appropriation of \$7,600,000 was asked by the Bridge Commissioner.

Realizing the great importance of the bridge, and the necessity of securing a structure that was perfectly fitted for its work, Mayor Low appointed a commission of disinterested bridge engineers to pass upon the merits of the structure. This was done; and the commission of engineers, all being of international reputation, indorsed the plans. The appropriation of \$7,600,000 was passed by the Board of Estimate and Apportionment; but when it came before the Board of Aldermen, that body refused the appropriation, without giving any logical reasons for their reprehensible action in delaying such an urgently-needed work. The expert testimony (if such it can be called) before the aldermen was given by an employee of the Bridge Commissioner, who left his desk to go to this meeting and condemn the plans of his superior, who, by the way, is recognized among engineers both in America and Europe as the leading authority on the design of long-span suspension bridges.

For this gross act of insubordination the employee was promptly and very properly discharged.

At the change of administration, the Commissioner was succeeded by a gentleman, who has not and does not profess to have any knowledge of bridge engineering, and he promptly installed the discharged employee in the responsible position of Chief Engineer of Bridges, a post which under the former administration was filled by the Commissioner himself.

The first act of the Commissioner and his new chief was to discard the plans, which, designed by the leading expert on such structures and indorsed by a disinterested commission of experts, had been passed by the Art Commission.

The next step was to draw up a preliminary sketch of a bridge costing \$2,500,000 more than the discarded bridge, and taking one and a half years longer to build, and submit this raw proposal to the Art Commission for their approval.

It was at once pointed out to the Art Commission by the engineering and technical press that, before they passed upon these plans, they should, following the precedent set by Mayor Low, request the present mayor to appoint a commission to inspect the new plans, and decide whether they were preferable to the accepted plans.

The latest protest against the action of the Bridge Commissioner was made by the Merchants' Association of New York, during a hearing granted by the Art Commission to that body, in the course of which it said:

"There has been and still is very serious difference of opinion between the present Bridge Commissioner, unsupported by outside engineering ability, and the former Bridge Commissioner, supported by the findings of the expert commission to which his plans were submitted, as to the relative effectiveness, cost, and speed of construction under the respective plans.

"In view of these facts, the Merchants' Association, which does not pretend to any engineering knowledge and does not, therefore, favor one set of plans as against the other, most strongly urges upon your Commission that the approval by you of the plans prepared by the present Commissioner of Bridges be withheld until both sets of plans shall be submitted in detail, with specifications and strain sheets, to disinterested engineering experts of at least as high standing as those who passed upon Commissioner Lindenthal's plans. In this way the controversy as to the strength, cost, durability, and speed of construction of both plans would be decided by technical men of standing and reputation, whose decision would command the confidence of the whole community.

"Should your honorable Commission decide to approve Commissioner Best's plans without submitting them to expert engineers, the whole responsibility, both for the successful completion and operation of the bridge, and for any disaster which might occur thereon as a result of inherent engineering weakness, will rest upon your shoulders, because the approval of your Commission is necessary under the law before construction can commence. Your Commission, therefore, is the only body which can compel the submission of the plans to expert engineers for decision as to their relative merits."

In spite of the obvious contradiction involved in the repudiation by the Art Commission of properly-authen-

ticated plans that they had already indorsed, in favor of imperfect plans lacking any engineering indorsement, the Art Commission has seen fit to accept the new plans.

We certainly agree with the Merchants' Association in the opinion that the Commission has assumed a grave responsibility in authorizing this important public work under circumstances that must be very discouraging to the friends of good government in the administration of city affairs.

For what good reason does the Art Commission, after accepting the findings of an expert investigation of a bridge designed by a competent engineer, now refuse to ask for a similar investigation of the undigested plans of a man who was a comparatively unknown subordinate in that engineer's office when those first plans were made?

PROPOSED AMENDMENT PERMITTING THE EXTENSION OF THE TERMS OF PATENTS.

At frequent times, we see many incidents which furnish the best evidences of the high esteem in which the inventors of our country are held, and the duty which the public recognizes of assisting in the perfection of our patent system, to enable inventors to secure the protection which, from the earliest days, our statesmen believed to be their due. It is deemed to be only just that an inventor who has added to the technical knowledge of the public, and has enabled the wants of the many to be better or more economically satisfied, should be suitably rewarded. In giving the inventor, for a time, a monopoly of the device, a knowledge of which he has furnished to the public, the reward is commensurate with the value of the knowledge furnished by the inventor, provided the term of the monopoly is reasonable.

In the several patent laws which have been enacted, the terms for which patents were granted have varied, and it has been evident that there is a difference of opinion on the question of the time during which the inventor should have the exclusive right to the patented invention; but on closer investigation, it will be found that this, in a measure, is because of the facts in particular cases. While, usually, the term of seventeen years, which is the period of the grant of a patent under our present law, is sufficient to recompense an inventor, and the difference in the returns will be in proportion to the value of the knowledge furnished to the public in the Letters Patent, it is found that, in particular cases, because of lack of capital, the necessity of using the invention in connection with another patented device the patentee of which will not make reasonable terms, the difficulty in procuring raw material, or other causes, inventors have been unable to receive the expected return, and that in those cases, to do justice it is necessary to extend the otherwise definite term in which they may reap their reward.

Earlier enacted patent laws of the United States permitted patentees who, through no failure on their part, had been unsuccessful, during the term of the patent, in obtaining a reasonable reward, to have the term extended. The last law permitting such extensions was repealed in 1861, since which time it has been impossible to have the monopoly extended, except by a special act of Congress. The injustice arising under the present law has led to an agitation to create a sentiment in favor of an amendment which will reenact provisions of the law enabling inventors in special cases to have the life of their patents prolonged. The members of the American Bar Association have been communicated with concerning the proposed amendment, and they appear to be unanimously in favor of the change in the law. The question is now being submitted to the patent solicitors and special lists of the United States, and at the meeting of the American Bar Association, to be held shortly at St. Louis, a resolution in favor of the change in the law will be submitted for the vote of the members present. Considering the replies which were received to the letters previously addressed to them, the vote of the members of the American Bar Association will undoubtedly be favorable to the proposed amendment.

As the members of Congress, who have been interviewed concerning the proposed change in the law, seem to be decidedly in favor of extending the privileges granted to inventors, it is likely that the amendment will, at the next session of Congress, be enacted.

TRUNK LINES AND TROLLEYS IN THE EAST.

The announcement that the New Haven road will spend \$8,000,000 for the improvement of its suburban service near New York is of special interest to electricians, for of the six tracks entering the city limits four will be of the third-rail electric type, two for local trains, and two for express trains to run under a fifteen-minute headway. The land for the new tracks has been secured, but plans are not completed either for the installation of the electric lines or for the equipment of the road with electric cars and locomotives. However, the general plan will be to connect local electric trains with the underground electric road of the