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### SIX GOOD REASONS WHY EVERY MANUFACTURER, MECHANIC, INVENTOR AND ARTIZAN SHOULD BECOME A PATRON OF THE "SCIENTIFIC AMERICAN."

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VI. Subscribers who preserve their numbers have, at the end of the year, two handsome volumes of 416 pages each, containing several hundred engravings, worth, as a work of reference, many times the price of subscription.

#### THE END OF OUR VOLUME.

This number will conclude the sixth volume, new series, of the SCIENTIFIC AMERICAN. The progress which has been made in most of the departments of science and art during the past half year has not been surpassed in any equal period of time within our recollection. Our columns offer abundant evidence of the reliability of this statement. No less than 120 new inventions have been illustrated in this volume of the SCIENTIFIC AMERICAN; and 217 cuts, containing 350 figures, have been employed in illustrating these and several other useful subjects. Among these are the Agassiz Lectures, Steam Surface Condensers, Submarine Torpedoes, &c. Thus, our present volume, is replete with evidences of inventive activity and improvement.

The past six months have been happily more prosperous for our mechanics and manufacturers than we could have anticipated, considering the momentous struggle in which our country is engaged. As the term of a large number of our subscribers expires this week, we anticipate and solicit a renewal of their subscriptions, and also hope for a large increase of new subscribers. The SCIENTIFIC AMERICAN is the only weekly periodical on our continent devoted to practical mechanics, inventions and manufactures as a speciality. It is really necessary at this day that all those whose tastes and interests are devoted to science and inventions, should read its pages regularly or they will fall behind the age in a knowledge of those numerous improvements which are now ushered in so rapidly. No less than 1,529 patents have been issued from the United States Patent Office since the seventh of last January, and their claims are all published in the SCIENTIFIC AMERICAN. It is therefore reasonable to conclude, that unless our columns are carefully and regularly consulted by mechanics, manufacturers and inventors, they cannot keep posted up in the improvements of this progressive age.

#### PATENT LAW AMENDMENTS.

The new patent law which went into force on March 2, 1861, although admirable in many respects, was, in others, somewhat crude; and we are therefore glad to see that efforts are being made to remedy the imperfections.

A bill for this purpose has lately been passed in the House of Representatives.

We will briefly state the nature of some of the defects in the present law, coupled with the proposed changes, as gathered from a meager telegraphic report of the bill, received just as we go to press:

1. The new law created within the Patent Office a sort of independent tribunal, called the "Examiners-in-Chief," for the review and amendment of the decisions of the primary examiners. The Commissioner of Patents, although rightfully and legally the head of the department, has no control over the decisions of the Examiners-in-Chief, and he cannot hear any appeal in person, unless a fee of \$20 is first paid to him; nor can an appeal be taken from the Patent Office to the District Court without first going through with the expense, formality, delays, and "red-tapeism" of two prior appeals, to the Examiners-in-Chief and also to the Commissioner.

The proposed amendment gives to applicants the right to take an appeal from the Patent Office to the District Court as soon as the case has been rejected a second time by the primary examiner. The formalities and expenses of the two intermediate appeals are thus saved. This is certainly a change for the better. We also infer, from the nature of the bill, as telegraphed, that appeals from the decisions of the primary examiners are to be taken to the Commissioner in person without any expense to the applicant, and that the Examiners-in-Chief will act as an advisory board to assist the Commissioner in deciding those appeals. We think that this will also prove to be a good change. As the law stands, there is a liability to conflict in the decisions of the various branches of the Office, when there ought to be the most entire unanimity.

2. Under the existing law, an applicant may wait two years after it has been decided to grant his patent, before paying the last installment of the fees, and the Letters Patent will date from the time of such last payment. But under the new bill, although the applicant will be allowed to wait two years if he wishes, still his patent must be dated back to a period not less than six months subsequent to the time when it was decided or passed for issue. This is also a good improvement.

3. The law now requires that when an application is rejected, the applicant shall go through the absurd form of swearing a second time that "verily he believes himself to be the original and first inventor," &c. There is no possible need of this formality; and it is a source of much delay and annoyance to applicants, especially to those who live at a distance. We are frequently compelled to send and procure these worthless pieces of paper, cycled *renewed oaths*, from clients who reside in California, Europe and other quarters of the world. Our readers will readily see that much time is thus lost. We are glad that it is

proposed to do away with this vexatious requirement.

#### ARM THE MISSISSIPPI FORTS.

We trust that Secretary Stanton will not, in the multiplicity of his duties, overlook the vital importance of promptly furnishing Forts Jackson and St. Phillip with heavy cannon. This matter has been urged for several years by the officers of the Ordnance Department, but has been neglected by the cabinet and by Congress. It is most fortunate for the nation that it was neglected, as it was owing to this neglect that Commodore Farragut was enabled to pass the forts and capture New Orleans. But it would be monstrous folly to allow this neglect to continue any longer.

The control of the Mississippi river is the great object for which the rebels are contending, but as long as the two forts below New Orleans are in our possession, we have the command of this great highway; that is, provided the cannon in the forts are able to prevent the passage of vessels. But Commodore Farragut has demonstrated the practicability of sailing up the river between these forts, without exposing vessels to any considerable danger from the guns which they now contain.

It is plain, from recent articles in the London *Times*, that the aristocratic party in England are still hoping for an opportunity to intervene in our affairs, and it is impossible to anticipate what freak of policy the Emperor Napoleon may adopt when he hears of his defeat in Mexico, and there is certainly danger that a fleet of French or English iron-clad ships may, at any time, attempt to pass up the Mississippi and wrest New Orleans from our possession. If we allow the forts to remain in their present feeble condition we hold out the strongest invitation to such an enterprise, while the most powerful argument that we could offer against the undertaking would be a knowledge of the fact that it was impracticable.

It seems to us that whatever else has to be postponed, not one day's delay should be permitted in the task of strengthening, to the very utmost extent, and arming with the heaviest cannon, Forts Jackson and St. Phillip. The whole fleet and army, too, should be searched for a garrison of artillerymen for these forts that are proof, by acclimation, against the attacks of yellow fever.

#### WHAT WE OUGHT TO DO IN RELATION TO IRON-PLATED SHIPS.

It is a curious fact that the long-continued and costly experiments in England, to test the question of the invulnerability of iron ships have taught us exactly nothing. These experiments have all been made with small cannon, and consequently furnish no demonstration of the effects of heavy ordnance.

Now, let our government, in the first place, ascertain the maximum charge which our 15-inch guns will safely bear, and then try the effects of both shot and shells thrown by these charges upon iron plates.

Having ascertained the thickness of iron required to resist hollow shells, and that required to resist solid shot, our inventors will be furnished with the proper data for their guidance in designing vessels to carry either class of armor.

It may be that no sea-going vessel can ever be constructed to carry plates which cannot be penetrated by solid shot, but if ships impenetrable by shells can be built, they will be safe against the most destructive element of naval warfare. Mr. Reid, of England, has designed a vessel which he regards as a good seaboat, and believes to be absolutely invulnerable to the attacks of artillery. But it may be that, though his plates can not be penetrated by cannon shot, the side of his vessel will be crushed in by the impact of a 500-pound ball driven forward by the explosion of 100 pounds of powder. What the effect of such a missile would be we have no means of knowing, and the first step is to ascertain this fact.

The greatest horse show ever known, according to promise, is to be held at Chicago on the 2nd of September next. Fifteen thousand dollars are offered in premiums.

The Amaskeog (N. H.) Company have contracted with the government to furnish 10,000 rifled muskets of the Springfield pattern.