

Scientific American.

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The Old Year and the New.

The Old Year has gone, but not its memories, nor its influences—these are immortal. It has seen science and art advance with stately steps.

Our continent and the Island of Newfoundland have been united telegraphically by the longest submarine cable ever laid down in American waters, and it is anticipated that, by the first of next January, Brother Jonathan and Uncle John Bull will be electrically shaking hands and wishing one another "A Happy New Year."

The company for carrying out this enterprise has been organized; it is composed of American and British capitalists, and the cable to carry messages beneath the billows of the great Atlantic is now in the course of construction; it is one of the grandest projects ever conceived by the mind of man.

The last meeting of the American Association for the Advancement of Science, at Albany, N. Y., was the largest ever held. The most important event connected with it was the inauguration of the Dudley Observatory in that city—the first and only institution of the kind in the State of New York. It has been endowed with gifts to enable its corps of scientific observers to prosecute their researches in the starry heavens with the best instruments, and thus advance the sublime science of astronomy.

The subject which, of all others, excited most general attention, in connection with useful manufactures, was the method for manufacturing fine iron and steel from crude metal by the Bessemer process. Great things were claimed for it; it was asserted that it would revolutionize the whole manufacture; and that the best malleable iron and steel could be made by it nearly as cheap as pig iron. These statements have proven to be exaggerations.

The Birmingham (England) *Journal*, a copy of which we received a few days ago, contains an analysis of some of Bessemer's iron, which proves it to be of an inferior character. It is not fibrous, nor is it ductile under the hammer. We hope that some other inventor will be more successful; there is still great room for improvements in the manufacture of iron.

The past has been an active year among inventors; more patents were applied for and more obtained than during any previous year. This is the best indication we could receive of the material advancement of our country. The useful arts only flourish where encouragement is given to inventive genius; and where they do flourish, peace, plenty, and prosperity generally attend them.

The New Year, we hope, will witness a still greater increase of new improvements; there is no dearth of subjects for exercising the genius of our inventors.

During the past year, disasters on the mighty ocean have been numerous and startling, especially with steamships. Collisions at sea have become more frequent with the rapid increase of commerce; new means of safety in ocean navigation are demanded—especially greater safeguards from fires and collisions.

We regret to state that more steamboat accidents occurred during the past than the previous year; and in our opinion, some of the investigations as to the cause of these disasters, were not creditable to the Inspectors.

In commencing the New Year, we should do so with a high resolve, to act better in the future than during the past. Every man should endeavor to do all the good he can, every day, whether it be in bringing out new and useful inventions, or in disseminating useful and elevating information. Let us all—each in his own sphere—commence this New Year with such intentions, and, if we do not grow weary in well-doing, the year eighteen hundred and fifty-seven will bring forth an abundant fruitage in science, art, and useful invention.

Extended Patents.—The Power of Congress.

A correspondent informs us that a question has arisen, in the place where he resides, which has elicited much discussion as to the results which would ensue if the Woodworth Patent, after having expired and been in public use for a certain time, were renewed and extended by Act of Congress. He says, "It is a question on which there exists a difference of opinion as to whether Congress can pass an *ex post facto* law—and should Congress extend the Patent of Woodworth, what will be the effect on machines running during the interval. The opinion of the SCIENTIFIC AMERICAN, as standard authority, is requested by many among us"

Congress has the power to pass an act to give a patent or extend a patent for a machine or invention which is already in public use; and it has exercised this power on many occasions; and there is one patent now in force under such a retrospective act—we allude to that of Thomas Blanchard, of Boston, for turning irregular forms. Letters Patent were granted to Mr. Blanchard on the 6th September, 1819, which were defective on account of an inaccurate specification: a re-issue was granted on the 20th January, 1820, for fourteen years from that date—which could be done according to the old law. On the 13th June, 1834, Congress, by an act, extended his patent fourteen years from the 12th January, 1834—this was some months after it had expired. This act was somewhat vague and inaccurate. To amend it, an additional act was passed on the 6th February, 1839—above five years afterwards—which corrected the date of the previous act, which was the 12th instead of the 20th Jan., 1834. This act was retrospective so far as it related to the patent, but by a special clause, in its second section, any person who had *bona fide* erected or made a machine for putting his invention into use, between the expiration of the patent, 20th January, and the day on which it was extended by Congress, 13th June—four months and 22 days—was exempted from the claims of the patent. This section said, "he shall have and enjoy the right of using said invention in any such manufacture or machine, erected or erecting as aforesaid, in all respects as though this act had not passed."

In a case for infringement of this patent, which came up before Justice Story—the parties being Blanchard versus Sprague,—the validity of this retrospective Act of Congress was brought into question. The ground was taken by the defendant's counsel that the Act of Congress for extending the patent, was unconstitutional, "because it operated retrospectively, to give a patent for an invention which was in public use and enjoyed by the community at the time of its passage." Justice Story said: "For myself, I never entertained a doubt of the Constitutional authority of Congress to make such a grant, and the objection is fairly put at rest by a decision of the U. S. Supreme Court, in the case of the patent of Oliver Evans. The power is general to grant to inventors, and it rests in the sound discretion of Congress to say when and for what length of time, and under what circumstances, the patent for an invention shall be granted."

This decision settles the question regarding the Constitutional power of Congress to grant a patent for an invention to an inventor, even after it has been in public use.

Such a patent is not retrospective in its effects, as it relates to obtaining damages for the use of the invention during the period when no patent was in existence. This, it may be asserted, relieves such acts from being *ex post facto* law, against which Sec. 1 of Art. 1, of the Constitution, makes provision; but it is a subject worthy of further and deeper consideration.

Let us take a case for example, to show that out of a retrospective patent—such as the Woodworth would be, if extended hereafter by Congress—there might arise a very nice question of Constitutional law. If a person were to build and use a Woodworth Planer in the interim between the expiration and the extension of the patent, would such a person be compelled to stop the use of his machine, or pay toll to the Woodworth heirs or assignees after the patent was extended?

To this question let us answer, "Yes; unless such Bill contains a similar exemption clause to that in Blanchard's Bill," and for the following reasons:—

First, the Act was a Bill of Relief for the patentee's heirs, consequently, if those who erected or used such machines in the interim were to be exempted from the claims of the extended patent, then all those who formerly used such machines as licensees, would be exempted from toll, and thus the very end contemplated by the Bill would be defeated.

Second, the decision of Justice Story in the case referred to is an established precedent.

It is admitted that no damages could be claimed or obtained for the use of the machine while public property; but from the day the patent was re-extended the owners of these machines must cease to use them—they are no longer their property—that is the plain claim set up for the extended patent. Are not such claims based upon *ex post facto* law? Yes, it must be so. It may not be so in name but it is so in reality. These machines were once the legal property of the individual persons who owned and used them. Can any law be other than *ex post facto*, other than unconstitutional, which would take away such property? Surely not, according to the Constitution, which provides that "private property shall not be taken for public use without just compensation."

If a person built a Woodworth Planing Machine to-day, and used it till next January, and then the patent were extended by Congress, would it not be unconstitutional to stop that person using his machine afterwards? It certainly would, in our opinion, amount to confiscation of his legal property—an unconstitutional act.

It appears to us to be a plain constitutional question on which there can be but one opinion, that a machine, or a thousand machines, or other articles once legally the property of one or a thousand persons (such as all the Woodworth machines now in use) are always the property of those individuals constitutionally, and if the decision were based on our interpretation of the Constitution and pure equity, they never can be deprived of their use.

Sulphuret of Carbon.

The article in the SCIENTIFIC AMERICAN of the 20th ult., on the new uses of the sulphuret of carbon—such as for scouring wool, &c., has attracted considerable attention, and inquiries have been made of us respecting its method of manufacture; and whether it was for sale in this city.

Of course any chemical, simple or compound, can be obtained of the chemists in this city, but sulphuret of carbon is not an article of general sale by our druggists. We will, however, give an account of its method of manufacture, so that those who desire to make experiments with it for any purpose, may do so. Its particular chemical name is bi-sulphide of carbon; charcoal ignited to full red heat in an atmosphere of sulphur vapor, combines with that element and forms a volatile liquid when condensed. It is prepared by distilling in a porcelain retort, of the common form, with a tap on its top for the reception of a tube to feed in sulphur, and a pipe attached to its neck to conduct the sulphide vapor through water. About two-thirds of the retort is filled with dry charcoal; it is then raised to a full red-heat in a furnace, and the sulphur in small scraps is gradually added at the top pipe. The sulphur is immediately converted into vapor, and in passing over the incandescent charcoal, volatilizes some of it, with which it combines and then passes out of the retort, and is condensed while being conducted through ice-cold water. The pipe in the neck of the retort to carry off the sulphide carbon vapor, may be formed like a distiller's worm, in passing through the water into the vessel designed to receive it. It is heavier than water, and may be received into a vessel containing water, as it will sink to the bottom. It is colorless, but has a most offensive smell. It is very volatile and combustible—burning with a pale blue flame, and boiling at 108° Fah. It dissolves camphor, essential oils, and resins, and with the latter forms varnishes, which dry with great rapidity; it

therefore promises to be very useful for the manufacture of various varnishes, as a substitute for turpentine, alcohol, and the alkalies.

Annual Award of Prizes.

A New Year has arrived, and agreeable to promise we now make public the names of the successful competitors for the THOUSAND DOLLARS offered for the twelve largest lists of subscribers for this volume of the SCIENTIFIC AMERICAN.

Greater than ever before has been the competition among our good patrons and friends, and we only wish that more might be rewarded for their exertions by being recipients of premiums, but as that cannot be, we trust each unsuccessful competitor will feel that he has been fully compensated for his trouble, in the satisfaction that, by his exertions, useful information is being disseminated among his neighbors and friends, which will help on the march of improvement, and the elevation of mankind in the scale of physical, social, and moral progress.

We tender our congratulations to our friends—the successful competitors—on their good fortune, and would suggest for their consideration the propriety of appropriating some portion of the amount awarded to them to the establishment of new libraries, or to the replenishing of those already established with new scientific and mechanical books and publications. The money, however, is yours gentlemen, and it is not for us to dictate to what uses it shall be applied. Each of you will understand how to make the best application of it to suit your own convenience.

Should any competitor discover a mistake in the number of subscribers accredited to him, he will oblige us by stating in what manner the error exists, that a correction may be made immediately.

Name.	Residence.	List.	Prize.
I. D. McPHERSON,	Louisville, Ky.	315	\$200
II. A. P. HOLLY,	Seneca Falls, N. Y.	227	\$175
III. H. S. BABBITT,	Newark, Ohio.	111	\$150
IV. JOHN GARST,	Dayton, Ohio.	108	\$125
V. W. C. GRANT,	Detroit, Mich.	101	\$100
VI. JOHN CANT,	Hamilton, C. W.	92	\$75
VII. M. KELLOGG,	Buffalo, N. Y.	91	\$50
VIII. J. L. DICKINSON,	Dubuque, Iowa.	87	\$40
IX. S. T. HOLLY,	Rockford, Ill.	62	\$30
X. H. HOPKINS,	Evansville, Ind.	55	\$25
XI. JAMES OLD,	Alleghany City, Pa.	55	\$20
XII. T. R. BAILEY, Jr.,	Lockport, N. Y.	55	\$10

The money will be paid on demand at our office, 128 Fulton street, in gold, or remitted, by express or mail, as the party ordering may direct.

Messrs. Hopkins, Old & Bailey having each furnished fifty-five subscribers are entitled to \$18.33 each, which will make up the full amount of the three prizes.

The Cohesive Power of Public Plunder.

In our last number we pounced upon those dear friends of the public weal, "Lobby Agents." We stated that the public knew very little of what was transpiring in and around the halls of Congress. According to an estimate of a Washington correspondent, the following are the several sums of the stupendous schedule of spoils and plunder projects pending before Congress:—

Pacific Railroad (120,000,000 acres)	\$150,000,000
Other State and Territorial Railroads,	20,000,000
Return of fire duties,	1,000,000
Chaffee, Hayward and Woodworth patent extension,	3,000,000
McCormick's reaper patent extension,	500,000
Hudson's Bay and Puget's Sound Companies' possessory rights,	1,000,000
Private land claims in California,	3,000,000
Bounties to speculators in claims of revolutionary officers and soldiers,	2,500,000
French spoliation claims,	5,000,000
Interest on the same,	15,000,000
Miscellaneous plunder,	10,000,000
Total,	\$211,000,000

We have nothing to say in regard to these schemes only so far as relates to the Patent Extension cases. There are four mentioned in the above list, and we hesitate not to say, that Congress would do violence to the spirit of our entire Patent System—a system of its own manufacture—if it should pass either of these extensions. We are opposed to them all—earnestly and heartily—and we should fail to do our duty as independent journalists if we did not denounce them.