

been put in operation in any other theater, and which would seem to afford every facility for the elaborate setting and changing of scenes without necessitating long "waits" on the part of the audience.

Our illustration affords a view of two theatrical stages, one above another, to be moved up and down as an elevator car is operated in a high building, and so that either one of them can easily and quickly be at any time brought to the proper level for acting thereon in front of the auditorium.

This immense contrivance is suspended at each corner by two steel cables, each of which would be capable of sustaining far more than the whole load, and these cables pass upward over sheaves or pulleys set at different angles, thence downward to a saddle, to which all are connected.

In combination with each of these movable stages are borders and border lights arranged to throw light down upon the stage, and so connected with flexible gas tubes as to be readily turned on and off; each stage has its trap floor, with traps and guides and windlasses for raising the traps—the space for this, and for operating the windlass under the top stage, being about six feet.

Independent of the peculiarity of the movable stages, there were many innovations on former practices in the fitting up of this, one of the pleasantest of New York's theaters, some four years ago. Fresh air is forced over steam radiators and through pipes to every part of the floor of the auditorium, or it is cooled and sent through the same pipes in the summer, but under such a system that it can conveniently at any time be shut off from any section; there is also a ventilating shaft in the roof through which the vitiated air is carried off, so that the whole atmosphere of the house is renewed, it is claimed, six times in every hour.

Not a little fun was made of Mr. Steele Mackaye, in 1879, when he obtained his patent for and proposed to build the first movable stage, as here represented. The details of Mr. Mackaye's patent were not as completely worked out, although the idea was there, as they subsequently were by Mr. Nelson Waldron, the stage machinist, who elaborated the system and obtained a subsequent patent therefor, under which these movable stages have since been so successfully and satisfactorily operated at the Madison Square Theater.

The architecture of this theater, by Messrs. Kimball and Wisedell, and the decoration, by Mr. Louis C. Tiffany and Mrs. Wheeler, have received wide and deservedly high praise; many features were novelties, but there was nothing inappropriate or commonplace.

The Phonograph in Africa.

It is said a Congo traveler will invite the natives to talk into one of these devices, the tin foil negatives to be sent to Berlin and studied by experts. Why would not this be a good way of obtaining explicit information as to the views of the natives upon the differences between De Brazza and Stanley? We believe the phonograph is now tolerably successful in reporting spoken words—that is, provided the hearer already knows what has been said into it, and what he may, consequently, expect to hear—so that on a subject of this character the confusion of tongues at the tower of Babel would probably be simplicity itself compared with what the machine might be made to report.

Clothing and Food for Arctic Explorers.

There will be, in all, three vessels and 140 men, of whom 20 are officers, shortly starting on the Greely relief expedition. Every precaution which former experience has pointed out is evidently being taken to provide for the safety and, so far as possible, the comfort of these Arctic voyagers. In the clothing, which is made to measure for each one, officers and men are to be fitted out alike except as to the badges of rank.

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PROBABLE DEFEAT OF THE BAD PATENT BILLS.

The vigorous efforts made during the past few weeks by the friends of industry and invention to enlighten the minds of their representatives in Congress concerning the evils likely to follow the proposed patent legislation have been attended with good results.

In the SCIENTIFIC AMERICAN for March 15 we summarized the nature of the evils that would follow if the bills then under consideration were passed—naming the Anderson bill, for reducing the lifetime of patents to five years; the Voorhees bill, for giving to anybody who wished it the free right of any patent; and the Calkins bill, for diminishing the value of property in patents by obstructing the patentee in appealing to the courts. This article was quoted at some length by the Associated Press, and sent by telegraph to all parts of the country. It had an immediate effect in arousing individual action in many places, which took shape in the organization of public meetings, the passage of resolutions, the sending of hundreds of public and personal petitions to Congressmen, and the presentation to them of a large mass of valuable evidence, all tending to show how wrong and unwise the proposed enactments were likely to be.

That the information thus furnished to Congress has had weight with some of the members is seen in the rejection by the Patent Committee of the Anderson five year bill, and the further postponement of the other bills. The chairman of the House Committee on Patents, on March 22, read the following:

"This bill (H. R. 3,617) proposes to amend section 4,884 of the Revised Statutes by striking out the word 'seventeen' and inserting the word 'five,' and thereby make a most radical and unjust change in the patent laws of this country, its effect being to limit the life of a patent to five years. Such a change is not consistent with the spirit of our Constitution and laws made for the benefit and encouragement of inventors, and would be an act of gross injustice to the great mass of inventors of this country, who have done so much to develop the growth, wealth, and prosperity of the country. As to the right of property which the inventor has in his inventions, a recent and learned writer on patent law says: 'The right of property which an inventor has in his invention is excelled in point of dignity by no other property right whatever.' Contrasted with him who acquires property by inheritance or devise, contrasted with him who acquires property by marriage or donation, contrasted with him who acquires property by revenue from the barter of merchandise or from the yield of money loaning, he who acquires property by invention, by bringing into being things which before were not, stands pre-eminently and confessedly on a higher foundation.

"The same learned writer again remarks: 'The inventor is not the pampered favorite or beneficiary of the Government or of the nation. The benefits which he confers are greater than those which he receives. He does not cringe at the feet of power, nor secure from authority an unbought privilege. He walks everywhere erect, and scatters abroad the knowledge which he created. He confers upon mankind a new means of lessening toil, or of increasing comfort, and what he gives cannot be destroyed by use or be lost by misfortune. It is henceforth an indestructible heritage to posterity. On the other hand, he receives from the Government nothing which costs the Government or the people a dollar or a sacrifice. He receives nothing but a contract which provides that for a limited time he may exclusively enjoy his own.'

"The committee are unanimously of the opinion that the present limit of seventeen years is a reasonable limit, and therefore recommend that the accompanying bill do not pass."

Nothing could be more satisfactory than the promulgation in Congress of sentiments like these, which, it is safe to say, are earnestly shared by the mass of the people of the United States.

This excellent report was followed on the 24th of March by a resolution of inquiry, which we hope will be promptly passed. It was read by the Hon. Mr. Vance, and referred to the Patent Committee of the House:

"Whereas, Information has been obtained, from sources entirely trustworthy, which indicates that the full, thorough, expeditious, and accurate administration of the laws and regulations which pertain to our great American patent system is being obstructed and impeded on account of a deficiency in the room and an insufficiency of force at the disposal of the Department of the Interior; therefore,

"Resolved, etc., That the Secretary of the Interior be, and he is hereby, requested to report to this House such information as he may have touching the deficiency of room and the insufficiency of force in the Patent Office, and to what extent, in his opinion, the rights of inventors and the public interests are affected by the present want of room and additional force in that department; and that he be requested to make such suggestions as he may deem proper as to what legislation is necessary to remedy the grievances indicated."

In respect to the other bills, their immediate consideration has been postponed, and their passage looks somewhat doubtful. It is, however, desirable that all who have views to express or information to furnish should send the same to Senators and Representatives—who in this way become informed as to the true needs of their constituents, and are enabled to govern their legislation accordingly.

The convention of the National Association of Inventors assembled at Cincinnati, Ohio, on the 25th of March, and was

quite largely attended. Mr. James S. Zerbe, of Ohio, was chosen permanent president, Charles M. Travis, of Indiana, and G. Burleigh, of Mass., secretaries. Some very stirring speeches were made, and resolutions passed, touching the rights of inventors and the duty of Congress to aid and encourage them. We give in another column a brief report of the organization and resolutions.

One of the contributions sent to the convention was an able and important letter from the Hon. Benjamin Butterworth, the present Commissioner of Patents. He shows how greatly the country is indebted to our men of genius, who as inventors and patentees are the leading spirits in the development of industry and progress. We give extracts from the Commissioner's letter elsewhere. We also give quotations from the proceedings of various other meetings, from letters and contributions sent to us, which speak for themselves and require no comment. We greatly regret our inability to give all these in full.

EXTRACTS FROM THE LETTER OF THE HON. BENJAMIN BUTTERWORTH, COMMISSIONER OF PATENTS, TO THE CINCINNATI CONVENTION OF INVENTORS.

UNITED STATES PATENT OFFICE,
WASHINGTON, March 23, 1884.

I feel a deep interest in the proceedings of the meeting. I realize the possibilities for good which wait upon its action. Careful investigation has made me more fully to realize how greatly this country is indebted to the inventors, and their practical coworkers the manufacturers, for its unexampled prosperity. A study of the facts warrants me in saying that no equal number of men have contributed more, if so much, as the inventors in building up our great industries, and yet no equal number of men have exerted less influence in the political field, where the needs of various interests are discussed, and the legislation in that behalf suggested and moulded.

I want to notice for a moment the objection urged against the patent system by some of those who are most interested in sustaining it. I refer to the agriculturists.

I submit that no man need use an article of modern improvement, unless he finds it to his interest to do so. We may still plow with a wooden mouldboard. We may still drop corn with the fingers, and cover it with the hoe. We may still sow wheat 'broadcast,' and eschew the drill. And we may cut grain, wheat, and oats with the sickle, or, if our opposition to improvements is not radical, we may use the cradle. We may leave the reaper and mower, the raker and binder, severely alone if we choose. We may then resolutely thrash the grain with the flail or tramp it out with horses. We are under no obligation whatever to use a thrasher, and not the slightest to use a cleaner and separator.

We may still haul our crops to market in jolt-wagons. There rests upon us no legal obligation to utilize the railroad. None of us are compelled to use the telegraph. We may in case of sickness send fifty miles by messenger on a horse for a doctor, and bring him back in the same manner; and if the patient dies before he arrives, the relatives and friends need not be summoned by telegraph, nor come by railroad; they can be advised by the postman, and come in the old way, if at all. And in the mean time the corpse can be kept on ice, provided the ice is not manufactured by one of those patent ice machines. It is the right of the citizen to drown, if he prefers it, to being saved through the instrumentality of one of those patent life saving contrivances which are in common use along the coast. It is my lawful right, if I own a coal mine, to draw the coal up with the old fashioned windlass, instead of using steam power and modern appliances. I have an equal right to toil up seven stories in a hotel, instead of riding up on one of those patent elevators. I can pay a dollar a rod to fence my farm with posts and boards, instead of using barbed wire at half the cost.

What I want to show is, that the blood-bought privileges of sticking to the old way remain to us in spite of the patent law.

Had we better do this? Better stick to the old way, or encourage the genius of invention, and improve our methods, lighten our labors, increase our comforts, embellish our homes, and add thus to the sum of our happiness?

But those patents levy on the people. Yes, they levy a dime, and in return give a dollar, and often ten. I can mention half a dozen inventions which alone have saved more to the people of the United States than our whole population have paid in the shape of tax and royalty to inventors since the foundation of our government, and more than they will pay in the next century. I may name the cotton gin, the spinning jenny, the power loom, the locomotive, the telegraph, the reaper and mower. Then let me add the power printing press. All except one, with their aids and auxiliaries, produced and perfected in less than a generation—less than fifty years. By the old method there are not adult laborers enough in all the Southern States to prepare the present cotton crop for the loom. By the old methods it would take all the adult laborers of the North to plant, tend, and gather the crops. Not a shop or factory could be spared a man or woman.

These assertions are not guesses nor wild assumptions, but the result of careful investigation.

I am astonished at the continual complaint made, that the agriculturist is oppressively taxed and burdened by our patent system; and this in the face of the fact that but for

the hives of industry, the busy marts of our great cities, which have their origin and growth in the production of the machines, implements, tools, and appliances which are the fruits of the inventor's study, research, experiment, and labors, the business of farming would not be worth following—there would be no market.

The Cincinnati Convention.

The convention of the National Association of American Inventors was called to order by Mr. J. S. Zerbe on Tuesday afternoon, March 25, at 8 o'clock, in Music Hall, about 250 delegates being present, duly accredited. He explained the object of the association to be a united organization to work for the interests of inventors as regards legislation in Congress and for their mutual benefit. Hon. C. P. Leshar, of Lansing, Mich., was appointed temporary president of the meeting, and in his remarks, thanking those present for the honor conferred, he referred to the demagogism now exercised by certain members of Congress in regard to the subject of invention. Mr. G. Burleigh, of Massachusetts, was appointed temporary secretary. He tersely remarked that the object of the union of inventors was a noble one, and he trusted it would meet with grand success.

The roll of States was called, and the following were found represented: New York, Massachusetts, Wisconsin, Nebraska, Missouri, Iowa, Illinois, Indiana, Ohio, Pennsylvania, Kentucky, Tennessee, Georgia, and Mississippi.

The evening session was opened by President Leshar, in Dexter Hall, who announced that the first order of business was to read the report of the Committee on Permanent Organization. It was announced as follows:

For President, James S. Zerbe, Ohio; Secretaries, Charles M. Travis, Indiana; G. Burleigh, Massachusetts; John G. Gaghan, Ohio, Sergeant-at-arms. Vice-Presidents, John W. Lane, Maine; John F. Wood, Massachusetts; Fred. Grinnall, Rhode Island; Frank Pratt, Connecticut; Leonard Hinkle, New York; Wm. Goddard, New Jersey; A. J. Nellis, Pennsylvania; John Fehrenbatch, Ohio; Chas. P. Leshar, Michigan; C. P. Jacobs, Indiana; J. T. Donguir, Illinois; J. E. Baker, Wisconsin; John. E. Buckston, Minnesota; John Zerr, Iowa; C. F. Hyde, Kansas; Dr. N. N. Horton, Missouri; W. F. Evans, Arkansas; L. L. Heeber, Kentucky; J. C. Ogletree, Tennessee; C. D. Campbell, Mississippi; George R. Platt, Louisiana; O. J. Parker, Florida; E. V. Caldwell, Alabama; K. D. Davis, Georgia; Miss Georgie Fay, Virginia; Irvin M. Scott, California; O. H. Cornelius, Oregon; Walcott Boardwell, Nevada; General F. M. Cass, Colorado; W. E. Wood, Texas; L. Deane, District of Columbia.

President Zerbe was escorted to the chair, and in taking his seat, expressing his thanks, took the opportunity of making a long speech, which touched upon the history of patents in England and in the United States, and explained at length the objectionable laws which were being legislated upon by the present Congress, two having been passed by the House, and one by the Senate.

The following resolutions were unanimously adopted:

"Whereas, The incentive and rewards given inventors by the Constitution of the United States and the laws of Congress passed thereunder have done more perhaps than any one cause to advance our whole country to the front rank in wealth, resources, and industries, among all nations of the world; and

"Whereas, Any material change in those laws would, in the opinion of this association, seriously retard our material progress as a people. Therefore,

"Resolved, That our Senators and Representatives in the United States Congress are respectfully requested to oppose the passage of any bill which would have the effect to discourage inventions by impairing the value of patented property or imposing any conditions on the owners of such property in prosecuting and maintaining their rights to the full value of their said property, which are not equally applicable under the laws of Congress to the rights of all property and the remedies provided to protect the same for all citizens of our entire country.

"Resolved, That the inventors, patent owners, brain workers, hand workers, and citizens of the United States, in convention assembled, where patent interest antagonize no other, but benefit all classes of the community alike, demand the continued protection of our present patent system unimpaired by Congress.

"Resolved, That, since the money derived from the fees paid by the inventors to the Government is ample to pay all the cost and charges, it is the imperative duty of Congress to provide sufficient force in the Patent Office to do the work well, and to keep it up to date, and in all details and particulars to thoroughly equip the Patent Office for its work, by providing sufficient accommodations for its force, an ample library of books and publications pertaining to patent and scientific matters, and full and complete digests of inventions in all the classes, and rooms and means to enable the inventor and patentee to search into the novelty of any device, or the state of the art in any given direction.

"Resolved, That the dignity and importance of the business of the Patent Office demand that it should be severed from the Interior Department and made a department by itself, with a head duly recognized as a member of the Cabinet.

"Resolved, That since the matters adjudicated in the Patent Office are in a very large degree legal in their scope and bearing, it is the evident necessity of the case that there

should be a distinctly legal bureau or division of this office, clothed with the authority to hear and decide said matters and enforce its decisions.

"Resolved, That though there have been nearly 300,000 patents granted, there have been scarce a score of patents which the public has objected to, and no patent based on a wrong, which the courts have not finally held invalid."

We shall continue the report in our next.

Resolutions of the Erie, Pa., Board of Trade.

A meeting of manufacturers and inventors to take action upon bills pending in Congress which, if enacted, will affect the existing patent laws, was held on Friday evening, March 21, at the Board of Trade rooms. President Adams, after briefly stating the object of the meeting, called upon J. W. Wetmore, Esq., chairman of the committee appointed Thursday night to draught resolutions expressing the sentiment of Erie people concerned in changes of patent laws. Mr. Wetmore read the following:

"Resolved, That we look with alarm at such legislation as is proposed in Congress by House bills Nos. 3,925, 3,934, 3,617, and Senate bill 1,558, relating to patents for inventions, and we, therefore, petition the Senate and House of Representatives not to enact those bills into laws. We believe them to be the embodiment of temporary prejudices, not the result of fair consideration of the constitutional provision on the subject and the true interests of the country. We do not ask for any favoritism in the legislation by Congress. The titles of the entire landed property of the United States and Territories are founded on discovery. Laws have been and are constantly being enacted to make such titles perpetual. The discoveries of inventors received no such favors even from the wise statesmen who adopted the beneficent policy in the Constitution. The title of the author of any book had three times the length of the term of the letters patent. With this early discrimination against inventors they still were stimulated to exertion, not with profit to themselves in the vast majority of cases, but with unbounded advantage to progress in manufacturing, transportation, and agriculture, and all the other elements of our wonderful material prosperity. Their rights as secured are not monopolies in the offensive sense of the term. They have less monopoly than the owners of other kinds of property have secured to them by law.

The inventors have richly returned compensation for the limited protection received, and the disposition to lessen that protection or take it away is an agrarian device held out to flatter people with false hopes of improving their rights and property by destroying those of others. New and unusual laws, specially tending to impair the rights and titles of inventors and manufacturers holding patents and to paralyze the motives to improvement by annulling the patent laws, are but the beginning of a crusade against all rights of property.

We therefore petition the Houses of Congress, that after defeating these attacks on the policy of the Constitution, they increase the scope and efficiency of the patent laws, while placing proper guards against their abuse.

"Resolved, That copies of these resolutions be sent to the Pennsylvania members of the House and Senate in Congress.

Professor Thomson, when the president called for remarks on the resolutions Mr. Wetmore submitted, urged the necessity of making a decided protest at Washington. "If the bills become laws," said he, "I as well as others will be injured; I would not give a whistle for all the patents that can be obtained or all now owned. The proposed patent law changes authorize the stealing of the results of brain work. They are as bad as if a law were to be made prohibiting a man who worked ten years to pay for a farm from owning it longer than five years. The effect will be to destroy talent. We should employ every means to defeat these abominable bills."

The Electric Light and Gas.

When the electric light was introduced the city of Boston was paying \$2 per 1 000 feet for gas, and private consumers were paying \$2.80. Now the city pays \$1.30, and private consumers \$1.80. Boston has been a liberal patron of the electric light. Its streets have probably been lighted more brilliantly, for the past two or three years, than those of any other large city. And the police department of Boston has borne testimony to the value of this extra lighting as tending to prevent crime. But the gas has not been entirely crowded out of the streets, and it is now proposed to light the city again with gas, on the ground of its being more economical. It is suggested that large gas lamps, using about 100 feet per hour, be substituted for the former small ones. But the electric light folks show that such a lamp would cost the city \$496 a year, against \$237 now charged for an electric light of greater power. It is stated, however, that the gas folks only measure the large lamp at 26 feet per hour, in order to make it cheaper than the electric light, so that, with such cutting of rates on both sides, Boston is likely to be well and cheaply lighted. But neither the electric light nor any other cause seems to have any effect on the managers of New York gas companies. The latter are at liberty to use naphtha in making water gas at a cost of about fifty cents a thousand feet, while the Boston gas men have been compelled to make their gas of coal at a higher cost, but still the New York monopolists charge \$2.25 a thousand feet.