

AN IMPORTANT MOVEMENT.

The recent International Workingmen's Congress held in Brussels was an important movement, and deserves careful attention and consideration. Diversity of opinion as to its effects upon the interests of labor is to be expected. The adverse action of the French and Prussian Governments, having for their purpose the defeat of the movement, will, as all such action must, react upon the working classes in those countries, and tend to foster a spirit of discontent and to stimulate emigration.

For ourselves we can see how such an association could be made the instrument of good, but the history of similar movements does not encourage the hope that much good is to be expected from the action taken. The fact that in this congress the policy of maintaining large standing armies by any government, as opposed to the interests of labor, was discussed, shows the tendency of all such organizations to run into politics, and thus defeat any good that might otherwise be derived from them.

The question of strikes seemed to be one which such an assemblage might have discussed satisfactorily and intelligently; but we are sorry to say that any reports that have reached us fail to show that the real gist of the question was comprehended. The most diverse opinions prevailed, some regarding strikes as an unmitigated evil, others esteeming them an unqualified blessing, while a minority seemed to think them only admissible in extreme cases. On the whole, we fail to see that any result commensurate with the importance of the movement has been derived from the International Congress.

INVENTORS AND THE PATENT OFFICE.

The excitement incident to a Presidential Election always deranges trade and paralyzes business in a greater or less degree. It seems even to be a bar to the progress of science and an obstacle in the development of genius. The decrease in the business of the Patent Office for the last few weeks indicates this effect. The election of Grant and Colfax to the two highest offices in the gift of the people, insures peace, and we trust, harmony and prosperity to the whole country. Inventors and the men of genius will, we trust, receive their share of the good things hoped for by others under a new administration.

Inventors, as a class, have been greatly prospered during the past few years, and the demand for good improvement in all departments of manufacture is constantly increasing. The condition of the Patent Office under the new Commissioner is favorable for early examination of cases, and we advise those who contemplate applying for patents and are prepared, to have their business proceeded with and not to defer it. In the same reverse degree as the days shorten, evenings lengthen, and cold strengthens—all favorable to working out inventions—the hours of work at the Patent Office decrease, and before next spring it is likely that the office will be overcrowded with cases, and examinations greatly delayed.

Such has been the workings of the Patent Office in past years. We believe Commissioner Foote will try to guard against a recurrence of such a condition of affairs, but the difficulty of obtaining competent assistants may render it beyond his ability to keep the work of the office up. All persons who are prepared should not delay in making application if they wish careful examination and early decision. A more favorable time will not occur.

ADVANTAGE GAINED WITHOUT COST.

Applicants for patents should remember that all patents taken by us are specially noticed in the reading columns of the SCIENTIFIC AMERICAN at the time the claims are officially published. A description of a new invention just patented, in a paper of as large circulation as this, although brief, is often the means of selling a patent, and putting the patentee in possession of a handsome sum of money before he has scarcely received his document from the Patent Office. If no other advantage were gained in applying for patents through the Scientific American Patent Agency, this alone is a good reason why every inventor who wishes to realize, immediately, by the sale of his patent, should do his business through this office.

CAREFULNESS IN THE MANAGEMENT OF FIRE-ARMS.

In this country almost every boy, before arriving at his majority, has opportunities for becoming acquainted with the use of fire-arms. This is proper, as one of the rights of American citizens is that to bear arms, and the republic depends upon her citizen soldiery to repel invasion, or to quell internal troubles. But some plain directions in regard to the proper care of fire-arms, and especially rifles or rifled pistols, seem to be demanded by the increasing use of these arms. We do not allude, in our heading, to absolute carelessness in the handling and use of fire-arms, but simply to the means of keeping them in order for use. Too many words of caution have been wasted, and too many serious and fatal accidents have occurred by the careless handling of guns and pistols, without ending, and possibly without abating this carelessness, for us to hope that anything we may add in the way of caution would be of benefit. If people will not be convinced that a loaded fire-arm is more dangerous to handle than a poker or broomstick, we wash our hands of any blood-guiltiness that may accrue from their carelessness, and leave them and their victims to the result of their folly.

But, as it is the fact that our people have already become accustomed to the handling of these instruments, and their use has become general, it may not be amiss to give a few

simple and plain directions as to their care. The smooth bore may be used with impunity until it becomes so foul as to clog the passage of the flame from the nipple to the charge. The only difficulty will be this obstruction, except in case the barrel becomes so foul near the breech that a deposit of the unconsumed powder may take fire. We have known two or three such cases, and the result was a bursting of the barrel in one case loaded with ball, and in others with bird shot. In each case the deposition of the unconsumed portions of the charge of powder on the walls of the barrel had been allowed to dry. But the smooth bore can be relied upon much longer when foul than can the rifled barrel, as it affords less chances for a deposition of the unburned powder; still, the generation of moisture produced by the combustion of gunpowder and the failure of burning the whole charge at each explosion will result in a deposition of gunpowder paste on the walls of the tube, which, when moderately dry, is, to all intents and purposes, true gunpowder, and as such will surely explode. Bursting of barrels from this cause is not uncommon, although frequently attributed to some mysterious cause. The cure for this is, first, a proper proportioning of the charge of the powder to the weight and resistance of the shot or of the bullet, and second, the frequent cleansing of the gun tube. All excess of powder beyond that which is consumed at the discharge is worse than waste. This for smooth bore fire-arms, as fowling pieces, etc.

Now, as to the treating of rifled arms. None are now made except with a "gain twist," and if a deposition of unburned powder is made, it will be near the muzzle, rather than near the breech. Of course the danger of explosion from this deposition is thus greatly lessened, as the course of the ball, impelled by the combustion of the powder, extends through a longer, although an inappreciable period, than that in the smooth bore. Yet, accidents happen even with these arms. Our experience may have been peculiar, but we believe it correct; and we have noticed the bursting of heavy rifled barrels which could have occurred only by want of care of cleanliness where too large charges of powder were used. The unconsumed powder was deposited in the "lands" or grooves, and remained to be ignited by the first discharge, after it had become sufficiently dry; and here we may remark that the popular idea that gunpowder cannot explode except when perfectly dry, is not borne out by the facts. The intense heat generated in a confined tube, as a gun barrel, bears very little analogy to the heat of a flame in the open air. The spire of flame from the percussion of a common gun cap will project itself with a rapidity and force to be likened to nothing but a stroke of lightning, and will throw its stream of fire in a direct line, from the diminutive lozenge of fulminate, at least twenty-four inches. Such a force, accompanied as it is with intense heat, is sufficient to ignite even more resistant material than damp gunpowder.

Almost all these rifled pieces are now built by firms who have made their construction a study, and calculated, to the minutest fraction of a grain, the amount and quality of the powder necessary to the propulsion of the projectile. Most of them furnish their cartridges so that no mistake may be made between the relations of powder and ball. Yet, even here mistakes may occur, except when the cartridge is inclosed in a metallic case. For instance, the Colt's revolver, so favorably and deservedly appreciated, was formerly, if not now, furnished with paper cartridges, or it might be loaded with open powder and ball. In the latter case, possibly not all of the powder might be placed in the chamber, especially if there was a stiff breeze blowing, or the operator was careless, and in consequence the ball would not be propelled through the barrel. This fact might not be known to the marksman, and he would continue to fire the round, each ball lodging just behind its predecessor, until he had filled his barrel with undischarged bullets. Such a case we knew where a pistol of six inches barrel burst and contained no less than seven bullets wedged one upon the other.

It is evident from these statements that the proper use of fire-arms demands care, not only to prevent accidents, but to make them effective in their legitimate use.

RISE AND FALL OF THE NORTH AMERICAN LAKES.

The theory, put forth some few years since, by Prof. Mather, of West Point, to account for the rise and fall of water in the North American Lakes, it again being discussed. Most of those who write upon the subject seem to coincide with the theory mentioned, but we must dissent from it, and propose to show cause for our dissent.

The waters of Lake Superior rise often from eighteen to twenty-four inches. The rising of the water is sudden and without apparent cause, and the subsidence is the same. The other lakes exhibit similar phenomena to a greater or less degree. No uniformity is observable in the times at which the water rises, hence they are not tidal phenomena. The cause or causes of these occurrences have hitherto eluded investigation. We say, have eluded investigation, because we believe that any of the theories which have been thought by their authors to account for them, will not bear scientific scrutiny. Especially we regard the theory of Prof. Mather as one which has not a leg to stand upon, and as we find this theory circulating not only among popular journals, but those claiming to be scientific we propose to show up its faulty character.

The theory may be thus fairly stated:—The water in any of these lakes, extending over a wide area, the air over their surfaces, is subject to considerable variations in density from different causes; as variations in temperature, hygrometric condition, etc. These changes of density produce differences in pressure upon different parts of the surface, therefore, the water will rise in those portions sustaining the lightest pres-

ure. Thus the lakes are considered as huge barometers which indicate by their rise and fall, variations in the weight of the atmosphere at different locations on their surface.

This is wholly faulty. If the water rises at a distance from the point of greatest pressure, it does so by virtue of pressure transmitted through the mass; but the air is also a fluid of much greater mobility than water, and will, at least, transmit the pressure as quickly over the surface as it can be transmitted beneath it. The pressure being thus transmitted through the air would become equalized upon the surface and under it; how then could this pressure tend to raise the water above its usual level? It could not.

A barometer indicates differences in the weight of the atmosphere, because a portion of the mercurial surface is excluded from the pressure of the atmosphere. This is its essential feature. Open the end of the tube so that air may rest upon the upper end of the column, and the mercury sinks to a common level, and will remain there in spite of all variations in atmospheric density. For these reasons we maintain that the theory cannot be true, and that the rising and subsidence of the waters in the North American lakes yet remain unaccounted for.

IMPROVEMENT IN PAINT.

The hydro-carbonate of lead or white lead, and the oxide of zinc, known as zinc white, are the two principal bases now generally used throughout the civilized world for the manufacture of paints. By their use our houses are preserved from decay and adorned with cheerful colors to gladden the eye. The majority of all articles produced by the industry of mankind depend for preservation, and, to some extent for beauty, upon the protecting and coloring qualities of paint. It ranks next to food, raiment, and shelter, among the necessities of life, while the labors connected with its numberless applications give daily employment to thousands of people.

We are led to these remarks from an examination lately made by us in the quiet old elm-shaded town of Stratford, Conn., of some of the work done by a young practical painter of that place, by name Frederick Lillingston. He has made a discovery in connection with paints which appears to be of great value and ought, we think, to be made public. It is the result of long study and experience. The improvement consists in taking any of the ordinary paints of market, whether having the lead or zinc base, and subjecting them to a chemical treatment by which their tendency to chalk or to scale off or to change color, is prevented, and an increased body is imparted; the practical result being that the cost of paint is reduced, about 33 per cent, while the painter finds himself supplied with a greatly improved article, reliable and durable in its nature. It flows with more ease than the ordinary paints, has a good body, dries readily with a fine gloss, endures the tests of time and weather, and gives satisfaction under all circumstances. It is well adapted for use in connection with the various pigments: capable of a peculiar transparency, coupled with excellent body, it is well suited for fine effects in graining and other ornamental work. For blind painting it is of unusual value, as it covers well, gives a superior finish, and the color will not run. For the lack of this quality many a painter of mind loses his labor and is compelled to go over his work.

Any mere trick of adulteration by which the quality of paint is impaired, or its value diminished, should be frowned upon and ignored by all who love honest dealing. On the other hand, any discovery whereby an article of such universal consumption can be really improved in quality, and cheapened in price, is a matter of the first importance, deserving every encouragement.

The Lillingston paint is no new experiment, but has been in actual use for a long time. Its qualities have been ascertained by experience. Some of the painting which we examined had been exposed to the weather for three years; but, we found it hard, fresh looking, and entirely free from chalkiness.

THE DEVICES ON OUR COINS AND STAMPS.

Many of the papers have contained notices of the new devices for our postal stamps, almost always accompanied with laudatory remarks. Among these devices are pictures of a mail carrier on horseback, a railroad train, a steamer at sea, a copy of Trumbull's "Signing of the Declaration of Independence," and of his "Burgoyne's Surrender." No doubt all these are very fine specimens of the engraver's art, but we would ask, why attempt to reproduce a large historical picture on a space of seven-eighths of an inch by three-quarters? Are we all to carry microscopes, or is there such a fear of vignettes of heads of patriotic men as to prevent us from using these representations as insignia of our national coins and stamps? It is evident that the devices on our coins and stamps would subserve their purpose better if simple and suggestive than if complex and without significance. No style of stamps can be imagined more appropriate and useful in teaching lessons of patriotism than our old-fashioned postage stamps bearing the effigies of Washington, Jackson, and Franklin. The symbolical bird of the republic, or the national shield, are also appropriate emblems, and we can see no reason why the likenesses of our great statesmen and soldiers should not be employed as decorations to our coins and stamps. "Hero worship" is not to be deprecated if it excites emulation to copy their examples, and reminds us of our duty to the country by keeping alive the memory of the great and good whose lives and public services are a portion of our nation's history. Microscopic copies of the painter's art, which can never approach the original, appear to us to be entirely out of place on our national coins and stamps.