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TRIALS AND TRIUMPHS OF INVENTORS.

"Necessity is the mother of Invention," saith the proverb. In many cases, the meaning of this pithy sentence has been reversed and Invention has proved the mother of Necessity. Of all the long line of illustrious men, whose works still live, and will continue to exert their beneficial effects upon the welfare of mankind, none have been so sorely tried, none have achieved more glorious victories, than inventors. High birth, extensive learning, or even wealth, have not purchased immunity from superstitious persecution, from contumely, nor from poverty and neglect.

The age has past when a Galileo was brought before an ecclesiastical bar to answer for heresy, because, forsooth, he had demonstrated a great truth which conflicted with the superstitions of the time; but the difficulties resulting from limited means and facilities, from deficient material, and the demands upon time and mental energy in the struggle for subsistence still remain to embarrass and fetter the modern inventor. Many are unequal to the contest and cease further effort, leaving, doubtless, valuable ideas partially developed, which from thenceforth become to them like household treasures forever buried out of sight.

We have seen many such in our experience and expect to see many more. We sympathize with, while we admire them; for be it remembered, that fidelity to an idea once conceived is a mark of true greatness. Your great inventor makes pecuniary reward always secondary. The successful demonstration of the truth of his conception is the paramount motive with him. It was, we think, the great architect, Inigo Jones who remarked regretfully in his old age, that he never had done his best; that there had always been some limiting circumstance of cost, or site, or dimensions, or whim on the part of others, that had confined his powers, so that the beautiful and masterly conceptions of which he felt himself capable had never been produced.

We have said that many inventors are unequal to the contest with adverse circumstances. That this is so does not prove them all weak. Many are strong, but cruel circumstances are stronger. Pallissy, whose fame rests no more upon his successful imitation of the Italian pottery, than his long struggle through sixteen years of unprecedented trial, would have succumbed to blindness had that been added to his other misfortunes of imprisonment and poverty. Though he burned his chairs for fuel to bake his experimental wares, and suffered pangs which only those can feel who hear the unanswered cries of loved ones for bread, and yet held out stoutly, he might have given up in despair, if an angry nerve had risen in rebellion against overtaxed energy, and added the physical pain of *tic doloireux* to his sum of afflictions. Arkwright, first barber, finally a knight of the realm, capable of separation from a wife who, lacking faith in his ideas, and lacking household comforts which a more close application to shaving would have procured, broke his models, might have yielded to other obstacles.

It is worthy of note, however, that those who have been most sorely tried and who have been able to endure to the end, have triumphed most signally. Of such many illustrious modern examples, as well as those of a past age, might be cited. One learns something of the value of pluck in reading the histories of these great men, who engaged not only in a conflict with untoward circumstances, with doubting cavillers, and personal afflictions, have with one hand held them all at bay, while with the other, they have wrested from Nature a response to their demands. Even the demand upon physical

courage has been met by this class of men as much as by any other. There are men who walk our streets with faces scarred by explosions, with mutilated limbs, and broken constitutions, resulting from voluntary risks taken in the pursuit of some new truth that should benefit their race.

What space would be required to record the sublime achievements of these much tried and long suffering benefactors of mankind. The civilization and even Christianization of the world has been forwarded as much by their aid as by any other human means.

It is to them we owe our cheap Bibles as well as cheap transportation; the means of rapidly distributing the bread of life to those that sit in darkness.

In the future the names of these shall stand like fixed stars perpetually shining, while those brilliant meteors which have dazzled the gaze of past and present ages, by the red blaze of military glory, shall have gone out forever.

THE DARIEN SHIP CANAL—WATER COMMUNICATION BETWEEN THE ATLANTIC AND PACIFIC.

Hon. Caleb Cushing has returned from the capital of Colombia, the most northern of the South American republics, whither he was sent by the Department of State, and the draft of a treaty he there negotiated for the right of way, etc., of a ship canal across the Isthmus of Darien, or Panama, is now before the Senate for ratification.

The project of uniting the two oceans by a cut across the Siamese-twin ligature that unites the two great western continents and divides the two great oceans is not a new or a modern one. In 1528 a route for a canal was examined by two Flemish engineers by the orders of Philip II. of Spain, but finding insuperable difficulties the project was abandoned. The advantage of a short cut between the rich silver mines of Mexico and the home treasury were palpable and recognized by the Spanish government; but the enterprise was lacking, and the absorption of the public revenues of the kingdom by constant wars made the attempt impossible.

In England the project was revived in the latter part of the 17th century. In 1826 Domingo Lopez of New Granada explored a route for a canal 44 miles in length between Panama and Portobello. Another survey was made in 1827 under the orders of Gen. Bolivar by two English engineers, Lloyd and Falmark, who concluded their labors in 1829. The only result of their labors was proving the possibility of either a canal or railroad between Panama and Chagres.

In 1843 the French government sent out MM. Garella and Courtines to make explorations. They reported in favor of a canal passing under the dividing ridge of the Ahogayegua by a tunnel 125 feet high from water level and 17,390 feet long. With the disastrous expedition of Lieut. Strain, probably all or most of our readers are familiar. The sum of these and other explorations, having a similar object in view, has been to show the possibility, if not the feasibility, of a canal across the isthmus. Through this connecting link, however, the backbone of the great double continent stretches, and at no, as yet ascertained, point offers what is termed a "pass," a depression sufficiently depressed to admit of a canal without very heavy rock cutting. In the case of a railroad, slight and even considerable grades may be surmounted, and where the carrying of these grades is too costly a tunnel may be driven through; but a railroad tunnel scarcely twenty feet wide is possible, while one to accommodate ships, like that proposed by Garella is a feat at which even modern engineering may stand aghast. A canal, however, is proposed, and one without tunnels.

Several months ago Secretary Seward came to New York City and held a conference with some of the most enterprising business men of the city in relation to this subject, which resulted in the formation of an association with Mr. Peter Cooper at its head, intended, if the reports were favorable, to be organized into a company. Returning to Washington Mr. Seward sent Mr. Cushman to Bogota, and the result is a treaty by which the republic of Colombia concedes to the United States the exclusive right to construct an inter-oceanic canal across the Isthmus of Darien at any point which may be selected by the United States. The Colombian government cedes six miles of land on each side of the canal, one half for its own benefit and the other for that of the party undertaking the construction of the work. The Colombian government is to receive ten per cent of the net income for the first ten years, and the canal is paid for twenty-five per cent of the net profits. The treaty is to be ratified by the United States within ten months.

We ascertain from Mr. Cooper that the entire length of the proposed canal will not exceed thirty miles, with a good harbor at each terminus and only about seven miles of rock cutting. There are several points on either shore which may be selected, but none have yet been decided upon. Whether either of those already surveyed will be selected or a new survey made, is not yet determined. We are assured, however, that upon the ratification of the treaty, measures will at once be taken to begin what will, when completed, be the greatest work, in importance, of this century.

HORTICULTURAL PROTECTION.

The sole ground upon which the modern patent systems of our own and other countries stand, is the right of the inventor to share more largely than any other individual in the benefits of his invention. The world at large may enjoy to any extent the fruit of his labors, but it must reward him for the benefits he has conferred upon it. Such reward is not a gift but the wages of his toil. He has earned, and is therefore entitled to it. The principle upon which copyrights are given to authors is the same. There is, however, a class, who conferring most substantial benefits upon the public, are yet un-

protected in their rights to compel those using the results of their labors to make them an adequate return. We allude to horticulturists.

That they might no longer be deprived of protection, a committee of ten were appointed by the Lake Shore Grape Growers Association to draw up and present a memorial to Congress, which was accordingly done in December 1868, praying that letters patent might be granted on new horticultural varieties, and that purchasers of said varieties be allowed to propagate for their individual use only, during the time of the right granted, and that a gift of plants propagated from said variety by any other excepting the originator, be considered a breach of law similar to that of a sale.

This was opposed by Mr. P. Barry, in a letter to the *Rural New Yorker*, Jan. 9th, 1869, who asserts that by the nature of the case, the originators of new varieties are already sufficiently well protected, and that the determination of the patentability of a variety would be impracticable. He asks, "Who would be the judge as to whether an article would be worthy of a patent? I have known people to claim old and well-known fruit as seedlings. I have known instances, I might say by thousands, of people supposing they had produced or discovered a valuable fruit, when, in fact, it was utterly worthless."

Now, as Mr. Barry is himself a horticulturist, and has shown by the paragraph just quoted that he is able to discriminate between good and bad, and old and new, we respectfully submit that he is himself a competent judge as to whether an article would be worthy of a patent, and we make no doubt that when the United States desires to obtain a competent examiner for this department, numerous applicants equally as well qualified will be forthcoming.

Mr. Barry regards it as being in the power of the originator of a valuable species to propagate it at once largely, and thus to secure the benefit of his discovery by large sales at the outset. Now it has often been, within our personal knowledge, that new varieties have been obtained by surreptitious means, and when the originator supposed himself ready to enter the market, after large expense and trouble, he has found himself anticipated by others and his hopes of profit suddenly blasted. Many such men, are unable from lack of means, to widely disseminate a new variety until some unscrupulous and wealthy nurseryman has been able to scour the field, thus robbing him of his reward with perfect impunity.

It is also contended that the granting of patents to this class of claimants would retard the introduction of new varieties to some extent, and this is regarded as being a strong argument against the proposed plan. We admit that the granting of patent rights and copyrights does retard the general seizure and appropriation of the fruits of other men's toil; in this respect it is like the laws imposing penalties for theft, highway robbery, and burglary. As well might a man propose the expurgation of all these laws from our statute books, as to adduce such an argument against the justice of protecting a class of earnest workers who are contributing so much to the welfare of mankind as horticulturists.

People are not generally aware how long and arduously a man must work in this field before he arrives at a result worth perpetuating; what numberless experiments must be performed; what years of anxious waiting and constant care must elapse before he can hope to secure any reward; what endless and trying disappointments lie between him and the goal he would reach.

We believe the enactments of the law desired by the petitioners a matter of simple right and justice, and we are pleased to learn that the committee to which the bill was referred has reported favorably upon it. Now let Congress act upon it speedily and put an end to the system of "grab," which has hitherto been the course which the public has pursued towards this important and numerous class of benefactors.

We believe no man uninfluenced by mercenary motives can view this question in any other light than one of simple and common justice. The stimulus which would be given by such a law to the origination of choice varieties to take the place of those which have run out, would be prodigious, and would confer incalculable benefit, not only upon a worthy and industrious class of people but upon the country at large.

COLORING OF MARBLE AND OTHER BUILDING STONES.—A NEW PROCESS.

The coloring of marble has been practiced a long time, but heretofore its results have not been altogether satisfactory. It has always been considered a difficult process, and the piece of marble to be colored required great care in its selection, that it might be free from spots or veins. Heat, to open the pores of the stone so as to prepare the stone to receive the colors, has been considered essential. It is true that many of the colors used would strike into the texture of marble while cold, but they would not sink to a desirable depth and the color remained upon the surface.

The colors required and the vehicles employed to convey them to the stone have been numerous and various. Horses or dogs' urine with lime and potash, lye from wood ashes, alcohol, oily liquors, spirits of turpentine, and wine, are mediums which have given some of the best results. The coloring matters used have been drawn from the animal, vegetable, and mineral kingdoms. Among them may be enumerated, extracts of saffron, buckthorn berries, alkanet root, dragons' blood, logwood, cochineal, gamboge, vermilion, yellow prussiate of potash, etc., etc.

The art of marble staining has been generally kept a secret by those who have achieved the greatest success in it, and has proved a lucrative employment.

We have said that the results attained have not proved en-