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The Supply of Cities and Villages with Good Water.

The subject we have chosen for making a few remarks, is one of vast importance. Fire, air, food, and water are essential necessities of life. In some climates fire might be dispensed with, but in no country or climate can any man dispense with either one of the trine necessities, and live. Water is so essential to health and happiness, that its first and paramount claims relate to its uses as a supporter of life. We cannot eat a meal but water forms seven-eighths of it, and we cannot inhale a breath but it is moistened with two or three per cent. of the same element; our bodies are composed of seven-eighths of water, and a knowledge of this fact gives us some insight into the causes of those terrible deliriums and excruciating torments which men are reported to have suffered, who have been long deprived of its use.

It requires no argument to prove that the water which man needs should be pure—the fact is self-evident to any man who has eyes to see, ears to hear, or sense to taste. The prince, surrounded with all the other luxuries of the world, if deprived of good water, would be poor indeed—the hardy mountaineer of the Alleghanies, who quaffs the cool draught from the bosom of his native rocks, and with only corn-cake for his simple repast, would be wealthier than he.

The inhabitants of cities, villages, or districts supplied with plenty of good water, are superior in robustness, health,—in fact, in every respect, to those who live in places destitute of such blessings.

Owing to a few enquiries made of us, lately, about Artesian Wells, we presume that what we have to say upon the supply of water, will be of some interest. There are four methods of supplying cities, villages, and houses with water: one is by common wells, or artesian; the second by river water conveyed from a higher to a lower level; the third, by forcing river water, by steam or water power, from a lower to a higher level; the fourth, by collecting water over an extended surface, and conveying it by gravitation (from a higher to a lower level.) Another plan is, for domestic supply, by collecting rain water in cisterns. It is not possible to lay down any empiric rules for supplying all places in the best manner—that depends in a great measure on locality, but we wish to call attention to one plan, which has been triumphantly carried out in this city, and which is now becoming better understood, and coming into more general favor in the old world: we allude to the collecting of water into dams, and supplying it by gravitation.

Dr. Lee, of the Southern Cultivator, states, that on every acre of vacant land, near Charleston, S. C., there falls 825,000 gallons of water per year, according to the rain gauge. Here, then, is a source of water supply, from the heavens above, which those who cannot get it from the earth beneath, should avail themselves of. Other places have the same source of supply, but to take advantage of the same, it must be collected in such a situation as to run down hill, (supply those who want it by gravitation.) Another thing is, to collect it; for it will soak away through the earth, or disappear by evaporation, unless proper means are adopted to save it. The best way to collect and save it, is to have the gathering grounds composed of an upper stratum of sand or mould, and an under-stratum of clay; and to have deep dams and reservoirs to contain it. This plan is fast supplanting artesian wells in many places in the old world, for it has been found, that the water collected in this manner is purer and much better than that derived from deep wells. It has been found that clay, has a most extraordinary effect, in purifying water, and it is contended that the change is an important chemical one. If water contaminated with carbonate of lime be made to trickle through a layer of clay, or of

sand and clay, the lime will be detained in the clay, and the water will come out almost pure. Water mixed with other salts can be purified in the same simple manner. And sand and clay, how abundant and common the materials; no place of any note or enterprise need therefore be without a supply of good water, unless it be those situations which are denied the blessings of copious showers.

Hints to Inventors.

There is no professional business, we believe, in which more skill and a thorough understanding of general mechanical matters is necessary, than in conducting applications for American patents.

We often hear inventors complaining of the injustice of the Patent Office in having rejected some alleged invention which the applicant had supposed to be new, and which, perhaps, in itself, did possess some novelty, but which the inventor had failed to properly set forth in his drawings and specification.

Inventors who apply for patents themselves,—who make their own drawings and specifications, should not overlook some important facts, which they are too liable to do. They should represent, specifically, in their drawings, such parts of their improvements as they deem of the most importance; and if they slight the execution of any part (which is not recommended) let it be done on such parts as are known to be old, and on which they expect to base no claims.

In preparing the specification, let the same rule be followed in describing the machine, or whatever apparatus it is, as is recommended in preparing the drawings. It is necessary that the nature of an invention be first described in the specification, and then explain its operation, referring to letters on the drawings; the same letters should, in all cases, refer to the same parts.

After you have fully described, in your specification, how your improvement or machine is to be used, you come to the most important and difficult part of the whole matter,—that is, the basing of your claims, which should be done with very great care. The claims to an invention are on what rests the whole or chief security, and therefore, they should not be made too broad, nor framed so ambiguously as not to cover all that is patentable in plain phraseology; it requires great mechanical skill, as well as a thorough knowledge of what exists of a similar kind, in order to correctly frame a specification and make the claims, and, we believe, it is owing to the fact, that so many furnish the Patent Office with imperfect drawings and specifications, that such a multitude of applications for patents are every year rejected.

It is an old saying, that "if a thing is worth doing at all, it is worth doing well," and we would recommend the same adage to inventors who wish to get their inventions secured by letters patent—if you have got an invention that is worth patenting at all, it is good policy to have the application properly prepared before submitting the case to the Patent Office.

Cheap Postage.

The Cheap Postage Bill is now before Congress, and we hope it will be passed and become a law, not in a few weeks, but days. By the debates in Congress, the proposed reduction of postage to 3 cents prepaid upon all letters to whatever distance, appears to meet with great opposition from some. It is said by one, that the reduction will injure the receipts of the post office, and that it will not be able to support itself, and it is argued by another, that in that case it will become a burden to the general government, whereas in all cases it should be self-supporting. These arguments betray a great amount of ignorance in Post Office experience. The reduction of our postage fees from 25 to 10 cents, and from 10 to 5 cents on letters, has increased our revenues, and the reduction in England from 24 cents to 2 cents has increased the revenues there also. It is very singular how some men can see how all useful government establishments should be self-supporting, but cannot see how many useless offices can or should be supported but by taxing the people.

We go for a universal reduction of postage to 3 cents or 2 cents, on all single letters, and we hope that the agitation for post office reform will not end here, but go on increasing until we have an Ocean Postage Reform also. The charges for carrying letters between America and Europe is shameful: no less than 24 cts. is charged for a single letter. If the price was reduced to ten cents, we believe that it would increase the Post Office revenues on both sides of the water.

Reform of the Patent Laws.

IN SENATE.—The Bill to amend the Patent Laws, which was introduced last Session, was greatly amended and re-committed to the Committee on Patents. After being left over, the Committee, on last Thursday, the 19th, reported the amended bill back, with several amendments, which produced the following discussion:—

Mr. Turney moved to amend the amendments of the committee.

Mr. Jefferson Davis was opposed to the trial of patent cases before the ordinary judicial tribunals. He was in favor of establishing a special court to try patent cases, where the whole points involved were those of nice scientific distinctions. At the proper time he would offer a substitute for the bill.

Mr. Turney said that courts of law were as competent to try patent cases as they were to try murder cases—where death was occasioned by poison, or by steamboat explosions on account of defects in the machinery. In these cases chemists are called in to analyse the alleged poison, or men of science to give their opinion as to machinery. The courts, bar, and jury decide these cases on the opinions of such skillful men, and why not decide patent cases on the same evidence? If the argument, that courts of law were not competent to try patent cases, was sound, why would it not apply as well to the Senate? Why were they competent to pass patent laws? The immediate amendment before the Senate was, that each defendant in a suit for infringement of a patent shall be entitled to a *scire facias*, to be served on the patentee, to show the validity of his patent.

Mr. Jefferson Davis replied to show that the courts of law were not the best qualified to try patent cases on the same evidence, and cited the authority of Judge Story and Judge Kane, of Philadelphia, to sustain him. He did not think Congress was the best constituted body to frame patent laws.

Mr. Turney replied.

Mr. Seward said he understood the amendment now pending was to effect that, when a patentee should sue any one for infringement of his patent, the defendant might sue out *scire facias*, to try the validity of the patent, and that the original suit should be stayed till the *scire facias* was tried. In either case, the validity of patents was involved, and would be tried; and he could see no justice in making the patentee the defendant, instead of plaintiff. Instead of the number of suits being decreased, they would be doubled: for every defendant, when sued, could have his writ of *scire facias*. If the Circuit Court of one district were to decide for or against the validity of a patent, that judgement would not be conclusive or final in other districts, as between other parties on the same patent right. He was opposed to the bill, and hoped another would be introduced.

Mr. Turney rejoined, and the amendment was agreed to.

Mr. Turney offered an amendment, making certified copies of specifications granted in foreign countries, receivable in evidence on trial of all cases for infringement.—Agreed to.

Mr. Jefferson Davis offered a substitute for the whole bill.—Laid on the table.

[In the above, Mr. Jefferson Davis struck deep and true to the mark, although we differ from him about the Special Court; yet so far as it respects the ability of Congress to frame good Patent Laws, we can have no better evidence of the truth of what he said than that of our present Code; it is a great mass of confusion. His allusion to the opinions of Judges, to show their unfitness to try patent cases, was good. It is a positive fact that some of

our Judges set themselves up to be the sole arbiters of facts in patent infringement cases, and decide upon the merits of mechanical combinations, of which they know but very little. Some of our Judges have made very singular decisions. We do not like Mr. Turney's last amendment, but we have not room to say anything more about it this week.

If the writ of *scire facias* be as Mr. Seward has stated it to be, then we don't like it, but we apprehend that it is altogether a different affair from the light in which it is presented by him, and will give our views on it next week.

Explosion of Steam Boilers.

Scarcely a week, yea, scarcely a day passes over our heads without our hearing of some terrible calamity, caused by the bursting of a steam boiler. Last week we heard of the death of one well known among us—Alfred Stillman, of the Novelty Works. He was killed by the explosion of the steamer Anglo Norman, the boiler of which exploded at New Orleans, as mentioned by us last week. It is a terrible thing to be recording so much destruction of life every few weeks, by such means as explosions. The causes of explosions are well known, there is no secrecy or phenomenon about them. They can be prevented, just as certainly as the sun shines, were the means resorted to for that purpose. How seldom do we hear of explosions in England; how seldom in our Eastern States, how common on the Mississippi. The high pressure non-condensing steamers on that river, are like so many floating powder magazines. The most skillful engineers do not seem to prevent explosions; in fact, the majority of engineers who have fallen victims to explosions, have been men of practical experience. Continual exposure to danger, not only leads men to be fearless of it, but reckless also. There is no real safety apart from a low pressure condensing engine; at least we think that 40 lbs. pressure, in large boilers, as high as the law should allow any boat to carry. We know that the shallowness of the Ohio, and the great amount of earthy matter in the waters of the Mississippi, may be urged as strong objections to practicability of condensing engines, with their heavy machinery, but surely something should be done beyond mere talk. We have given our opinion; who will provide a better one to remove the evil?

New Year's Presents.

It is customary with many employers to give their apprentices holiday presents: the custom is one of the good old times—we like it. Gifts, however, are often very injudiciously bestowed. We do not merely allude to that absurd custom of giving young people toys—but in bestowing any gifts which have no reference to the solid benefit of those to whom they are given. Books are common holiday presents—none are better, if the books are good; and it is in reference to literary presents that we would say a few words. Every year we have had orders from a number of employers for the Scientific American, to be given as presents, along with some gifts of drawing instruments, books, &c., to their apprentices;—they made their apprentices subscribers, thus encouraging a true taste for their business, and adopting the best possible way to feed the appetite, viz., sending home the Scientific American to be read every week for a year. A great deal of good, we have been informed, has been done in this way. We make these remarks, merely, to call attention to the fact—the reasonable fact, of such a present as making an apprentice or son a subscriber to the Scientific American doing a great amount of good at a trifling expense. Nothing but the soundest moral sentiments find their way into our columns, and it never shall be otherwise. To many, our paper may be dry, especially to those (and, alas, there are too many among our young men) whose tastes have been vitiated by the wild and exciting literature, in shilling novels, &c., but let any person read the Scientific American for one year, and if a taste for the solid and useful is not formed and encouraged, we will be willing to pay him back his money. We especially request the attention of parents and employers to this subject.