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Steam Engine Improvements.

The city of Buffalo is a good example of the attention now aroused to improving and testing steam engines. Three years ago, the shops of Buffalo and all the Lake cities were turning out direct-acting high pressure engines alone, and although they had attained to great perfection in the employment of suitable devices for very high pressure steam, and had succeeded in producing some of the most fast and economical propellers in the world. they adhered to that fixed style with great tenacity. Now, oscillating engines have almost completely displaced them, and although quite high pressure steam is very properly employed in the boilers, the benefits due to condensation are availed of in all the larger vessels by tbe introduction of all the usual apparatus for the purpose. In addition, tbe Buffalo ste m engine works are arranging for the construction of the Corliss engine, the invention which has proved itself so eminently successful in the manufactories of tbe East for some five years past; the Messrs. Scbultz are commencing the construction of the Woodruff and Beach style, another modern improvement; and the Shepard Iron Works, the largest and most successful in all that portion of the West, are getting out new, beautiful and highly economical styles of their own. Work is not as active as at some former periods, which is perhaps one reason wby the leisure is afforded to construct new patterns, but all seem alive to the importance of knowing the best styles, and of allowing them to supersede the wasteful old methods either in stationary or marine engines. A few years will probably see our interior and Western engineering as far advanced as is that of our seaboard places; in fact, the former are in some points already ahead. The difference in the circumstances will always induce a necessary change in the details of much of the machinery common to the two sections; but the workmen of the Atlantic shores may be assured that the West is progressing with most rapid strides, even in the department which they have heretofore considered especially their own. The locomotives of the West, and to a considerable extent of the South, are now made on their own soil. The sharp, flat bottomed boats of the rivers are urged by machinery cast and finished within sight of their landings, and tbe hundreds of stout propellers plying the chain of lakes are actuated by well constructed oscillating cylinders bearing on richly burnished labels the names of Shepard, Cuyahoga, and other principal shops of their own ports. The largest sizes of engines for mammoth side wheel steamers and water works are still built in New York and Philadelphia, and forwarded in parts, as the Western tools are not equal to such operations; but only a few years or months may elapse before the West will be independent in the manufacture of engines unless the East can keep up, or in many points *create*, a reputation for very superior excellence in design or execution. The rivalry is wholesome, and the stimulus it affords hastens forward the prog ess of the industrial interests of the whole country. There is scarcely a branch of manufacture but is more or less dependent on steam power. Its perfection indirectly aids to cbeapen the tools of the farmer, and to diminish tbe expenses of the poorest railroad traveler. All are linked in interests in this repect, and we hope to see the economy of fuel due to the perfection of the steam engine u'timately progress many fold beyond its present most advanced position.

It is not generally realized, but the steam engineers of 1857 are yet in the condition of our forefathers, who used to balance the bag of corn on the back of the horse, by placing a big stone in the other end. We should like to publish, occasionally, in a few lines, the actual performance of any engines and boilers which are believed to be among the best in the world. Give us the amount of wood and coal consumed, and the work done, and add any circumstances important in connection. The best "duty" of any pumping engine we have heard of in America is the Beam Cornish Engine at Belleville, which pumps the water for Jersey City. This, when very carefully attended to for an experiment, a few weeks ago, lifted seventy-two million pounds one foot high with the consumption of 100 pounds of coal. The pumping engine at Hartford, tested in the same careful manner, attained a duty of sixty-two millions. Both these performances are better than any before attained in this country, we think.

Dressing Skins for Robes, Saddles, and Mats.

A correspondent requests us to give him information concerning the method of dressing skins "with the hair on." It differs but little in principle from that of tanning them for leather. In preparing skins for leather, they have to be deprived of their hair either by sweating or liming, this process is dispensed with in preparing robes. The fresh skins, if they have to stand for some time before tbey can be treated, are first steeped in a brine of common salt; then lifted out of the brine and laid over a table or bench, with the hairy s de downward, all the fleshy parts scraped off clean with a knife, and the ragged edges cut off and trimmed. They are now ready for undergoing the preserving operations. If they are clean white sheep skins, intended for seats, saddles, or mats, they are steeped in a solution of alum for several days—from three to six—then lifted out, nailed on racks to stretch them to their fullest extent, and dried in the air; they are now ready for use. The strength of the alum solution employed should be at the rate of one pound of alum to every four pounds of skins, the alum being dissolved in sufficient quantity to cover tbe skins.

Calf, dog or other skins designed for robes are prepared in a different manner. After having all the fleshy parts removed as heretofore described, they are steeped in a bath of oak bark or sumac, or blackberry wood liquor, containing some alum in solution. A peck of ground oak bark is sufficient for tanning twenty pounds of skins; it will require twenty pounds of American sumac, or the same amount of young blackberry bushes to effect the same object. These are boiled in a close vessel for about three hours in water to extract their strength, then mixed with sufficient cold water to cover the skins in two separate baths (or else boiled at two several times). Three pounds of dissolved alum are also placed in each bath when they are ready for the skins; these are all placed in one of the baths at one time, and allowed to remain for three days, being turned in the interim every succeeding day, and then lifted out, dripped and placed in the fresh bath where they undergo similar operations during the next three days. They are again lifted out, nailed on racks, dried in the open air, and are then fit for use.

Skins are composed mostly of gelatine which is very liable to decompose by exposure to moisture and the atmosphere. To preserve them, they are brought into chemical union with some substance or substances, so as to form an insoluble compound. An acid in oak bark, willow, sumac and hemlock, has been used from time immemorial as the chemical agent, to forman insoluble compound with the gelatine of the skins by the process called tanning. Any other chemical substance that will produce the same effect may be used for the same object, and hence alum, which is a colorless substance, is employed for this purpose for white skins. Robes of skins require to be more elastic and soft than leather, hence they are not submitted to the tanning processes for such a long period. Young blackberry bushes impart to the skins greater softness than oak or sumac liquors.

To preserve skin robes from the attacks of insects, they should be submitted to a slight smoking in a smoke house, and then hung up in the wind for a few days afterwards. If found to be a little too hard when dried, they should be beaten with rods until they are quite soft. By attending to these directions carefully, persons living in the country may prepare their own skins with no more apparatus than a barrel, a table, and a kettle.

The Best Roofing Materials.

A correspondent asks what is the best covering for roofs? The question is one of the many we are unprepared to answer, and we solicit the aid of any who, by practical experience, have determined either the value or worthlessness of the infinite variety of materials. The expense is a matter of the first importance on large buildings, and although a fire-proof character is important in many situations, there are others where this latter is of little moment. Roofs which, like the Boston Custom House, are of thick granite throughout, cemented with lead, may probably rank among the *best* in the world, and a simple covering of inferior boards slightly overlapping at their edges, is in most situations undoubtedly the cheapest. Between these extremes are a host of materials and processes, some of which we are assured possess great merit, and have not yet been sufficiently published. Do not attempt to ventilate through our columns all the theories you may form on the subject, but give us facts as they have occurred within either your experience or observation.

There are several manufacturers of patent fire-proof paint who furnish a very cheap material for covering wooden roofs. Messrs. Corliss & Nightingale, of Providence, R. I., cover the roofs of their very extensive one-story buildings with a kind of mineral paint, procured in great quantities near by. Will they allow us to publish the characteristics of such clay or other earth, that others may perhaps find equally good without expense?

There is a painter in the Third avenue in this city, who has been very successful in applying a kind of liquid cement to roofs, and there are hosts of patents for compounds for this purpose. The great difficulty, we think, with most organic compounds in this application has been its inclination to crack after a few years, or even months. The correspondent who started the inquiry says:—"We have been using coal tar on a flat roof, but it contracts and cracks, and will not answer," and inquires "how would Burnettized cloth answer by painting?"

An article on this subject in the New York *Tribune* last year, probably written by Mr. Solon Robinson, recommended the following:—"There is a tarred paper sold at five cents a pound, one pound of which will cover a yard square, or say half a cent a foot; but this paper is rather thin, and we should prefer the thick, spongy straw board paper used for light, cheap boxes. It does not require to be strong, and perhaps the cheap article alluded to will answer perfectly; if so, a roof can be made for one cent a foot. This paper comes in rolls, and may be laid in courses up and down or across the roof, so that the edges are lapped, and tacked with common 6 oz. tacks, which would be very much improved by using leather under the heads, as is often used in tacking carpets. The composition for covering a paper roof is made of the following ingredients: good clean tar, 8 gallons; Roman cement, 2 gallons; rosin, 5 lbs.; tallow, 3 lbs.; boil and stir, and thoroughly mix altogether, and use hot, spreading it evenly, in a thick coat over the paper, which should be tacked upon thoroughly seasoned boards—kiln-dried are best. The roof may be quite flat, rising only one foot in twelve. In nailing on the paper, lap the courses as you would shingles, and commence putting on the composition at the upper edge and work down, and while the coating is still hot, let a hand follow and sift on sharp grit sand, pressing it into the tar with a trowel or back of a shovel. When the first coat is cool, go over with a second, and again with a third, and afterwards once in five or six years as long as your house stands, and you will have a tight roof. In place of the Roman cement, you may use very fine, very clean sand."

Weighing Gold Quartz.

Everybody knows how the old Grecian philosopher ascertained the proportion of gold in the King's crown, to determine the honesty of the goldsmiths, which was simply that of finding its specific gravity by weighing it first in air and then in water, and estimating the difference. Pure gold being denser than alloy the specific gravity is greater, and knowing the specific gravity both of gold and the silver with which it was mixed in the crown, he found the proportion by this means very readily. An invention has recently been obscurely announced which is to ascertain the weight of gold contained in gold bearing quartz, but whether or not by any ingenious application of the same principle we cannot well determine. It is represented as simple and of little cost, and as ascertaining the amount of gold "by measures and weights, with an index and the use of the most simple rules of mental arithmetic. The principle can be applied to other metal and mineral substances, when composed of but two different specific gravities, and is easily adjusted to porous or solid quartz" In reply to an inquiry we unhesitatingly say that if the apparatus is capable of indicating with sufficient accuracy for this purpose, which must be extreme, its value is unquestionable.

To Boys.—Misapplied Labor.

All necessarily spend a part of their time to little or no apparent profit; but it should be only that which is spent in feeling the way—in fact, in experimenting. Be as careful not to spend in useless labor a particle of your energies as you are to cultivate a habit of labor itself. Don't let the fact that the American Institute, or some other old-coach concern, has allowed a few exhibitors to label their abortions "done with a jack-knife" or in some other equally foolish way, induce a belief that the public generally are interested in such ridiculous efforts. All whose esteem is worth having, look on such child's play as merely refined idleness. Don't spend an hour in it, except by chance and before you are conscious of it.

Ingenuity is a serious damage to some persons. Having "constructiveness" well developed, they begin, when boys, to labor hours and days in simply making something. Their highest ambition was to be thought ingenious and they succeeded. When older grown, the same plentitude of unguided ingenuity, and the same lack not only of judgment, but of any serious effort at cultivating that faculty is still discernible. They toil and construct, but accomplish nothing. They are not men who make money for themselves or benefit their race. They are pitiable monuments of misdirected talent.

Have a purpose, then, in all you do. If a certain scheme looks promising when sifted, push it ahead, and a few dozen failures will give you considerable skill in that same sifting process. You will frequently find the object, when attained, too small to pay for time and care invested, but will always have the satisfaction of acting not under the blind impulses of "genius" alone, but guiding it by a noble God-given and carefully cultivated judgment.

The Patent Extensions.

Congress has adjourned, and left the entire batch of patent extensionists in a most wretched state of confusion, their schemes have failed, and there is now no other alternative left to them but to return home, pocket the loss of money spent, and dispel their happy visions for the future. Their last hopes have fled, as it is understood that President Buchanan, is wholly opposed to special legislation for the benefit of a few hungry monopolists who desire to bestride the public.

Oil.

The *New London Star* claims that it is as easy to obtain pure sperm oil now, by applying at the right places in that city, as it was twenty years ago. This may be true; but, if so, it would be a great public convenience if these honest dealers would establish branches in the principal cities, as it is believed to be absolutely impossible to buy sperm oil in this city, except by going to the manufactories and watching it through all the processes.

Heavy Cables.

A cable lately finished by a Liverpool firm for the steamship *Adriatic*, 80 yards long, weighs 50 pounds per link, and has been tested with a strain of 105 tuns. The same concern is making a cable for the *Great Eastern*, to weigh 80 lbs. per link. The length of the link in either cable has not been published.

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