

HOW MACHINERY OUTGROWS ORIGINAL CALCULATIONS.

There is probably not an inventor who does not believe, at the moment of perfecting a great discovery, that he has accomplished much more than he has really done—secured something nearly approaching to perfection, if not quite reaching it, the fact being, meanwhile, that he has generally made the same approach towards easily attainable perfection as presented by the old firelock of the sixteenth century, which required a second man to carry flint and steel and strike fire every time the piece was to be discharged, when compared with the breech loading repeater of the present day, which is itself destined, no doubt, to be considered a clumsy contrivance by some near approaching age, when the firearm will load as well as discharge itself, even if it does not carry itself about and point its direction through the means of automatic machinery.

In such words as these did the writer express his opinions, some twenty years ago, regarding the possibilities of invention and mechanical contrivances. An examination of instruments, like the Gatling gun and other nearly automatic self loading firearms at the present day, will show that the time assigned for such wonderful inventions in firearms, field pieces and heavy guns was too long, for within the last twenty or the improvements in that department of industry have signally numerous and ingenious. But if we consider this rise and progress of machinery in engineering work we also find here that machinery outgrows original calculations. There is not much doubt that Fulton, on the day when he first saw the Clermont cleaving the waters of the Hudson, was one of the proudest and best satisfied of men; but if he could have looked forward twenty years and seen what the Clermont would be looked back to as having been, certainly he would have experienced some reduction of his content. The Stevensons, when at the end of twenty or thirty years they had made such improvements in steamboats as seemed to be very nearly perfection, would have experienced something of the same belittled feeling if they could have now how their wonderful crafts were to be eclipsed and thrown aside as antique oddities at the end of a dozen years. Very fortunately the view is limited; the inventor goes on to what he conceives to be perfection, and that discouragement prevented which would so certainly paralyze his hands, if not turn aside his purpose.

Some of us remember when Brunel—high in reputation as an English engineer—made and published a calculation that railway trains could never possibly be driven at a speed exceeding thirty miles an hour, because at any speed beyond this figure the pressure of the air passed through would flatten and demolish the cars; and still more of us remember when that same Brunel died, after having lived to build locomotives that ran at almost double this speed, and had driven some of them himself. Many men whose heads are only slightly grey took part in the watching and prophesying upon the first attempts at crossing the Atlantic by steam. "As an experiment this may possibly succeed once, after losing half a dozen vessels and a few hundred of lives, but it can never succeed practically, as the weight of machinery in a heavy sea must wring the vessel to pieces." So said the wisecrackers, many of whom have lived to see the day when sea-going steamers have made the Atlantic little else than a ferry, and when it is crossed without the aid of steam only by cargo vessels and the yachts of a few who wish to remain as long as possible from the sight of land. Instances might be cited *ad infinitum*. It is very apparent that we do not know everything of what we are going to do when we first begin. Machinery, which began by being the servant and owes its life to the inventive grain, literally forces improvements upon itself by its suggestions, and comes very near in the end to being the master.—*Mechanics*.

The New Brunswick Land and Lumber Company, shows no less than twenty varieties of woods at the antwerp exhibition. These include poplar, maple, ash, butternut, spruce, elm, larch, pine, balsam, hemlock, &c.

THE CULLING OF TIMBER.

The following is the full text of the bill introduced by Hon. Mr. Costigan to amend the acts relating to the culling and measuring of timber in the Provinces of Ontario and Quebec:—

1. The Governor in Council may make regulations from time to time—

(a) For giving effect to the provisions of the acts hereinafter cited;

(b) For determining the number of cullers to be employed in each department of the Supervisor's office; provided always that the number of cullers employed shall not at any time exceed thirty-three, apportioned in the manner following:—Cullers of square timber, fifteen; cullers of deals, twelve, cullers of staves, masts, spars and lathwood, three, and such cullers shall be employed regularly in rotation, unless the Governor in Council, in any case or class of cases, otherwise prescribes;

(c) Prescribing the manner of granting licenses to cullers;

(d) Assigning to cullers such fees as he, from time to time, deems proper;

(e) Making, raising or lowering a tariff of fees and charges for culling, measuring, counting off or making out specifications for timber, deals, staves or other lumber, under the said acts, in such manner as to meet and defray, as nearly as possible, the expenses of the Supervisor's office, and the payment of salaries to the Supervisor and the Deputy Supervisor, employed under the said acts, and so as to give the cullers employed yearly average earnings of seven hundred dollars each;

(f) For granting annuities, not exceeding three hundred dollars per annum in each case, to such of the cullers who were employed on the first day of May, one thousand eight hundred and eighty, as are incapable, by reason of age, infirmity or otherwise, from pursuing their business of culling, or whose services are no longer required;

(g) For the payment of such annuities granted, as herein provided, out of such funds as have been collected, or as shall be hereafter collected, over and above the cost of the culling office;

(h) In the event of there being no such surplus funds out of which the annuities granted, as provided in the next preceding section, can be paid, such annuities shall be paid out of the Consolidated Revenue Fund of Canada.

2. Section four, all the words in section six after the word "Act," in the sixth line thereof, and section ten of the Act thirty-eight Victoria, chapter thirty-four, and sections two, three and four of the Act fortieth Victoria, chapter sixteen, are hereby repealed.

3. This Act shall be read and construed as one Act with the Acts hereby amended.

MAKING HARDWOOD OUT OF SOFT

For the manufacture of loom shuttles, says the London *Engineer*, boxwood has been very largely used, but the price has become almost prohibitive, and it has been found that by the compression of cheaper classes of wood—teak being about the most suitable for this purpose—a substitute meeting all the requirements can be obtained. For carrying out this process Sir Joseph Whitworth & Co. of Manchester, have just completed a powerful hydraulic press to be used in compressing wood for loom shuttles. This press consists of a strong cast iron top and bottom, with four steel columns and steel cylinder, with a large ram. In the centre of this ram will be fitted a smaller ram fitting into a die which is placed on the top of the large ram. The wood is put into this die, and a pressure of 14 tons per square inch is applied. The pressure is then relieved, and the large ram descends. The top pressure block, which fits the die, is then removed, and the small ram rising, pushes the wood out at the top of the die. The wood so treated is made very dense and uniform, and so close grained that it is capable of taking a very high finish. For the manufacture of shuttles it has been found to be fully as good as boxwood, and there is not any doubt but that a similar process might be readily applied with advantage to many other branches of industry where expensive hardwoods have to be used.

LAKES OF SOLID SALT IN ASIA.

Yar-ollan means the sunken ground, and no word can better describe the general appearance of the valley of these lakes. The total length of the valley from the Kangrauli road to the Band-i-Doran, which bounds it on the east, is about 30 miles, and its greatest breadth about 11 miles, divided into two parts by a connecting ridge which runs across from north to south, with an average height of about 1,800 feet, but has a narrow ridge which rises 400 feet above the general average. To the west of this ridge lies a lake from which the Tekke Turcomans from Merv get their salt. The valley of this lake is some six miles square, and is surrounded on all sides by a steep, almost precipitous descent, impassable for baggage animal, so far, as I am aware, except by the Merv road, in the northeast corner. The level of the lake I made to be about 1,430 feet above sea level, which gives it a descent of some 400 feet from the level of the connecting ridge, and of some 930 feet below the general plateau above. The lake itself lies in the centre of the basin and the supply of salt in it is apparently unlimited.

The bed of the lake is one solid mass of hard salt, perfectly level, and covered by only an inch or two of water. To ride over it was like riding over ice or cement. The bottom was covered with a slight sediment, but when that was scraped away the pure white salt shown out below. How deep this deposit may be it is impossible to say, for no one has yet gone to the bottom of it. To the east of the dividing ridge is the second lake, from which the Sarvke of Penjeh take their salt. The valley in which this lake is situated is much the larger of the two. The valley proper is itself fifteen miles in length by about ten miles in breadth. The descent to it is precipitous on the north and west sides only, the eastern and southeastern end sloping gradually up in a succession of undulations. The level of this lake is apparently lower than that of the other. I made it out to be some 800 feet above sea level. The salt in this lake is not so pure. It is dug out in flakes, or strata, generally of some four inches in thickness, is loaded into bags, and carried off on camels for sale without further preparation.

Drowsiness in the Day-time.

unless caused by lack of sleep or from over eating, is a symptom of disease. If it be accompanied by general debility, headache, loss of appetite, coated tongue and sallow complexion, you may be sure that you are suffering from biliousness and consequent derangement of the stomach and bowels. Pierce's "Pleasant Purgative Pellets" are a sure cure for all ailments of this nature. They cleanse and purify the blood and relieve the digestive organs.

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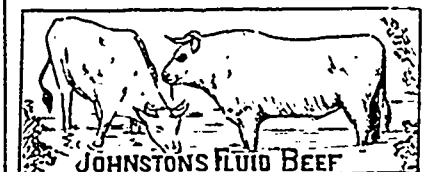
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