



J. G. L., of N. Y., asks:—"Where a person has been manufacturing a patented article, and the patent expires, is it lawful still to continue to stamp the article 'Patent,' with date, etc. If so, can other parties beside the original manufacturer so stamp them?" Ans.—You can continue to use the stamp; others can use it also.

A. N., of C. W.—In the article on small boilers we said the materials would cost \$20; the labor would cost \$75 more; the profit would be \$20 more, which would make the boiler cost \$115. Plenty of persons in this city will make one. You have only to send the order and the funds and it will be made.

Decimal, of Va.—Your engine is of 120 horse-power, provided 50 lbs. is the mean pressure throughout the stroke; but if the initial pressure is 60 lbs., and the steam is cut off before the completion of the stroke, the engine is of less than 120 horse-power. You must multiply by the average, or mean, pressure throughout the stroke. The rule is correct.

T. B. R., of Pa.—"Silliman's Philosophy" has an excellent treatise on electricity; there is also a good one in "Miller's Chemistry," republished by John Wiley, of this city. You can get a work on mathematical instruments of Henry Carey Baird, of Philadelphia.

W. W. E., of Conn.—You will save coal by running the engine slower and carrying higher pressure. But you must increase the size of your driving pulley to keep the same velocity on the main shaft—not decrease it, as you propose. We cannot give a more definite answer without a calculation of some length. You can readily try the experiment without much expense.

J. M., of C. W.—The only objection to petroleum as fuel for generating steam is its cost. One pound of petroleum will make just about as much steam as one and a half pounds of coal—petroleum, therefore, must be bought at about nine cents per gallon to be as cheap as coal at ten dollars per ton. Magnesium wire is made by the American Magnesium Co., Boston; price \$6.50 per ounce. By sifting the powdered glass from out a quantity of gunpowder the explosive properties of the gunpowder are restored.

MARKET FOR THE MONTH.

The prominent features in trade during the month of November are, a considerable decline in the price of cotton cloths, and a steady progress in the extension of the credit system. The changes in the prices of the leading staples are shown in the following table:—

	Price Oct. 25.	Price Nov. 25.
Coal (Anth.) @ 2,000 lb.	\$13 00 @ 13 50	\$13 00 @ 13 50
Coffee (Java) @ lb.	32 @ 34	28 @ 29
Copper (Am. Ingot) @ lb.	31 1/2 @ 33 1/2	42 @ 45
Cotton (middling) @ lb.	57 @ 60	62 @ 54
Flour (State) @ bbl.	\$7 80 @ 8 75	7 90 @ 9 00
Wheat @ bush.	2 40 @ 2 80	2 25 @ 2 85
Hay @ 100 lb.	60 @ 65	60 @ 65
Hemp (Am. Gre'd) @ ton.	\$10 00 @ 325 00	\$10 00 @ 350 00
Hides (city slaughter) @ lb.	11 1/2 @ 12	13 @ 13
India-rubber @ lb.	35 @ 75	37 1/2 @ 90
Iron (American pig) @ 50 lb.	49 00 @ 50 00	50 00 @ 51 00
Iron (English and American refined bar) @ 100 lb.	125 00 @ 130 00	125 00 @ 130 00
Lead (Am.) @ 100 lb.	10 00	10 50
Nails @ 100 lb.	8 00	8 00 @ 8 50
Petroleum (crude) @ gal.	37 @ 37 1/2	40 @ 41
Beer (mess) @ bbl.	11 00 @ 17 00	11 00 @ 17 00
Salt-peter @ lb.	22	22
Spelter (pikes) @ lb.	10 1/2 @ 10	10 1/2 @ 10
Steel (Am. cast) @ lb.	13 @ 22	13 @ 22
Sugar (brown) @ lb.	13 @ 19	12 @ 17 1/2
Wool (American Saxony fleece) @ lb.	75 @ 77	75 @ 77
Zinc @ lb.	15 @ 15	16
Gold	1 46	1 48 1/2
Interest (loans on call)	7	7

The Way to Prevent Boiler Incrustations.

The last number of *Newton's London Journal* has a long article by Lewis Thompson, M. R. C. S., which concludes as follows:—

"A few careful analyses had convinced us that this incrustation is not due to carbonate of lime, but to sulphate of lime, by which the particles of carbonate of lime are cemented together and converted into a crust. To prevent the formation of this crust, it is necessary only to destroy the sulphate of lime, which is easily done by adding 1 lb. of common carbonate of soda (washerwoman's soda) to every 300 gallons of water supplied to the boiler. This converts the whole of the lime into carbonate, which has no tendency to agglutinate, but remains as a semi-crystalline powder, that may either be collected by placing an empty vessel in the boiler, or it may be blown out at intervals in the form of milky fluid. In both cases the conducting power of the iron boiler is preserved, which not only facilitates the development of steam, but prevents the burning or oxidization of the boiler. That it must also prevent or diminish the number of explosions is more than probable."

The "Algonquin" and "Winooski" Trial.

MESSRS. EDITORS:—It struck me this morning, on reading your editorial remarks on this trial, page 243 of your last issue, that you could not have reflected on the fact that the Chief of the Bureau of Steam Machinery had pronounced the use of steam expansively as used by the following firms to be a delusion, viz: Maudslay & Sons, John Penn & Sons, Randolph & Elder, R. Napier & Son, Rowan & Co., and other celebrated European engineers, also the Allaire Works, Novelty Works, Morgan Works, Etna Works, Delamater Works, Messrs. Merrick & Sons on the Atlantic Board, and, in fact, all other prominent engineers in this country, *except when building screw engines for our navy from Mr. Isherwood's designs.*

Now, Mr. Editor, I think when you remember that the cylinders of our screw vessels, planned by Isherwood (which in reality comprised nearly the whole of the non-plated navy), are proportioned in accordance with this gentleman's belief on the expansion question, viz: of such a small size that the steam must follow the piston *seven-tenths* of its stroke, so that the steam the boilers will make can be worked off, you will agree with me, that it is a great point that the truth of Mr. Isherwood's theory has been tested by these trials.

No one will deny but that in the late trial the *Algonquin*, as long as she worked, made as many turns with the same wheel as the *Winooski*, with the same consumption of coal; this being assumed, (although I know the *Algonquin* did much better), as the *Algonquin* cuts off at '11 and the *Winooski* at '47, according to the previous report of the Board, and the cut-off has not been changed since—in fact, according to her diagrams it is 4—*and, as Mr. Isherwood has stated in the summation of his Erie trials, "that if the point of cut-off be lessened to four forty-fifths of the stroke, the loss of the economy in fuel alone reaches the enormous amount of 44 per cent of the cost of the power when cutting off at seven-tenths,"* (see his report); it is quite clear that these trials, justly incomplete as you stated them to be, have completely overturned the theory on which he has planned the screw navy.

The more so, as the *Algonquin* worked against several drawbacks which did not exist in the much better constructed engine of the *Winooski*; for it has been calculated that twenty per cent of the water evaporated in the *Algonquin's* boiler passed through her independent circulating engine, and that she lost 50 horse-power by a back pressure of above 3 pounds per square inch more than in the *Winooski's* cylinder; beside, her boilers are not near so efficient in point of economic evaporation as those of her rival, as operated on the late trial. All these losses—losses due to ignorant engineering—the *Algonquin* made up by Nature's law, from which there is no appeal, of the gain by expansion.

NAVAL ENGINEER.

[It is astonishing to how small an extent the first principles of investigation are understood. The writer of the above communication is a young engineer of considerable intelligence and capacity, but, in common with the mass of the public who profess no knowledge of steam engines, he swallows these ridiculous experiments of the *Winooski* and *Algonquin* as settling the question of expansion. These experiments are exactly parallel to a series—an account of which was recently forwarded to the Farmer's Club—for testing the value of salt as a fertilizer. They were conducted by a cultivator of more than ordinary intelligence, in a very elaborate manner, and a record was carefully made of the result; but, in every case in which the man applied his salt, he mixed it with guano. This is manifestly absurd, but is no more absurd than trying to settle the value of expansion by working steam in two engines, with the pressure in one at 70 lbs., and in the other at 19.

One of the fundamental principles in making an experiment to test any mooted fact or property is to have the conditions precisely alike in the two trials, except in the point to be tested. It was the perception of this principle that made the investigations of Louis in

therapeutics so immeasurably superior to those of all previous observers; that has given their value to the experiments of Fairbairn; and that has stamped with the character of established truth the investigations of Faraday, Henry, Agassiz and all the eminent masters of science. Were it not for the abundant evidence to the contrary, it would seem that this principle ought to be apparent to the common sense of all mankind.—Eds.

Effects of Pure Air.

MESSRS. EDITORS:—When the air is pure we breathe more of it than when impure.

It is often remarked by chemists, that when an attempt is made to breathe carbonic acid gas, undiluted with air, the lungs refuse to receive it. In spite of every effort, the air passages close against it, and if enveloped in it, the person is strangled to death as suddenly as if choked with a halter. When there is as much as ten per cent of this gas in the air the person inhaling it breathes less and less, grows cold, and soon the lamp of life goes gradually out. The more impure the air, the less the person inhales, the more clothing is required, or the more the person suffers from cold. On the contrary, the purer the air the more the person inhales. This fact may also at any time be strikingly shown with my air purifier. The moment a person who has been for some time confined to the air of the city or village, or been breathing damp, warm air, commences breathing the air that has been properly filtered and purified in this apparatus, he perceives an involuntary heaving of the chest. He inhales almost twice as much air for a few breaths as he did before. So beautifully and wisely have our bodies been constructed and arranged, and so perfectly have the laws of nature been adapted for our good, that when even a little child while asleep begins to inhale the air that has left its impurities in this apparatus, it at once takes several deep, long-drawn breaths. It has been suffering more or less for the want of pure air, it has found it now, and though, asleep, by instinct, greedily devours it and is rapidly purified, stimulated, and strengthened, and its lungs are expanded by it. As it breathed much less when in very impure air, so now it breathes much more. The little chest, that was formerly collapsing gradually, many of the cells in its lungs being closing up, as if for the last time, is now rapidly expanding; those closed cells again opening and enlarging. I have seen not only little ones very low with summer complaint and dysentery placed under its influence and restored in a single night as if by magic, but I have seen the little child with weak, narrow chest, after sleeping under it only three or four months, exhibiting a remarkably large, full, and healthy chest. Its general effects are the same on old or young—it simply purifies, stimulates, and strengthens the whole system and expands the chest, increases the appetite, and improves the health. The best authorities substantiate the truth of the assertion, and no intelligent person who has slept a few nights under this air purifying apparatus, properly supplied, will doubt it that by simply breathing pure air during the hours of repose, families in cities who are now so generally growing weaker and rapidly running out, would rather grow stronger, and not only would there be an immense saving of life, as well as increase in numbers, but the race would be greatly improved physically, mentally, and, other circumstances being the same, even morally, with each succeeding generation. A. S. LYMAN.

No. 212 Second avenue, New York.

A Woman's Question.

MESSRS. EDITORS:—As you seem to know a little of everything, will you excuse me if I ask what may seem to you a foolish question?

My husband is not a grumbler, but he says our corned beef is as dry as a chip when it is cold, and I should like to know the reason of it. I put it in cold water as the cook book says, and let it boil slowly and take it out when it is done, but, for all that, I have no luck. Do help me and receive a woman's thanks. CHARLOTTE S.

Hartford, Conn., Nov. 20, 1865.

[Who could withstand such a pathetic appeal as this. The trouble lies with the cook book. It is a false light. The directions are quite wrong. If you put corned beef in cold water it lies an hour in