Correspondence.

The Editor's are not responsible for the Opinions expressed by their Correspondents.

Cheap Gas.

MESSRS. EDITORS:—I send you for publication a few words in reply to an article which appeared in your valuable paper, the SCIENTIFIC AMERICAN, for April 10th, Vol. XX., No. 15.

The article signed "X. Y. Z.," upon the subject, "Cheap Gas," I think is intended to discourage those who hope to secure for New York cheap gas and that of a better quality than has yet been delivered to the consumer. "X. Y. Z." says: "It has often been said, but never proved, that a mode of cheapening gas would be to diminish its cost by saving the amount of freight on the coal used in its manufacture, and that this could be done by making it at the mouth of the mines, and transmitting it, ready prepared, from thence to the center of consumption, which would be a saving of at least $3,000,000 annually."

"But," says "X. Y. Z.," "something stands in the way, which is, that it will take a pressure of 491·74 pounds per square inch to pass through a pipe fifty inches in diameter 195,750 cubic feet of gas per hour." In making this estimate "X. Y. Z." uses a formula based upon a certain result produced in some known case, and he therefore infers that a certain other result ought to follow under other given conditions.

The pipe will be straight and free from any influence tending to check the flow of gas, except from friction, which is proportional, first to the area of rubbing surface, and second to the specific gravity of the gas. The friction of gas upon the pipe is independent of the pressure to which the gas is subjected. That is, the friction of gas along a pipe under a pressure of one hundred pounds per square inch is no greater than if it were only one pound, while it varies with the velocity, the ratio of which "X. Y. Z." does not appear to understand. That gas under a given pressure, moving at a given velocity at the sides of the pipe, will move much faster in the center of the pipe, and with no friction except that of the particles among themselves, must be obvious to the most careless observer; this ratio increases in proportion to the sectional area of the pipe. That fifteen inches water pressure is all that is required to pass in two pipes, of fifty inches diameter each, all the gas necessary to supply New York city and its immediate surroundings, I am prepared to demonstrate to any party of gentlemen who will undertake the enterprise. Instead of a loss of fifty per cent in leakage, there will not be five per cent. I see no reason why there should be any, inasmuch as each and every joint can be driven from both sides, if driven joints were used. A pipe properly laid and lined with suitable material would be perfectly tight and smooth.

When the writer was in New York two years ago the estimate then made for this enterprise, with coal lands sufficient for one hundred years' supply, retort houses, laying of pipes, gas holders, exhausters, and all complete for use, was $32,500,000, which is ample.

When this pipe is laid gas can be sold in New York for $1·50 per 1,000 feet, until which New York must pay present prices for poor gas.

I have made the study of this particular enterprise a specialty for years past, and now am prepared to say that not one obstacle exists to prevent the successful accomplishment of the enterprise, and should "X. Y. Z.," or any other person, wish to meet me before a party of gentlemen ready to undertake a work of this kind, I am ready to convince the most skeptical that it is not a wild scheme but perfectly feasible and practicable, and one that must soon be put in operation.

Wenona, Mich. P. W. K.

Piles Driven by Gunpowder.

MESSRS. EDITORS:—I take the liberty of correcting a little paragraph that appeared in your issue of May 1st, relative to Thomas Shaw's method of driving piles by explosive charges. Instead of the ram being elevated by one charge and driven down by another, but one cartridge is used, as follows: The frame used is an ordinary arrangement, except at the top, where it is provided with a ratchet and pawl to hold the ram up until ready for use. When piles are to be driven, a cast-iron cap is put on the head of the pile, having a small cavity in the upper surface. The cartridge is put in this, and the ram allowed to fall on it by liberating the pawl from the ratchet teeth. A short nipple on the end of the ram strikes the cartridge and explodes it—the result being to force the pile violently down into the earth, and blow the ram back to its highest elevation; the objects attained being to raise the weight by the same force that does the work. By repeated experiments the results obtained by the use of the explosive charge over the ordinary dead fall of the ram alone are as *eight to one*. One man can manage the machine with great ease, supplying the cartridges and letting the ram fall. So quickly does the ram ascend that it is impossible to follow its motion with the eye, and the noise of the "explosion," so-called, is scarcely perceptible, or at any rate not distinguishable from any ordinary mechanical operation. We hope soon to present you with an illustration of it.

EGBERT P. WATSON.

Shipment of Unginned Cotton.

MESSRS. EDITORS.—In No. 4, Vol. XX., new series of your valuable paper, I see the idea suggested by S. D. Morgan, of Nashville, Tenn., of shipping cotton unginned, and believing with him that there would be great advantages, as well to the producer as to the manufacturer, in doing so, I hereby give you a few facts.

In my own State 1,700 pounds of seed cotton will make a bale of 500 pounds of ginned cotton, including the toll to the ginner, which is one-tenth or one-twelfth—1,700 pounds of seed cotton may be compressed in about two bales of the usual sizes of ginned cotton. The producer will save 170 pounds of seed cotton, now worth about 4 cents per pound, $6·80; less baling and ties for one bale, $2·50; balance in favor of producer, $4·30.

The benefit for the manufacturer will be, first, the greater facility in removing all trash with proper machinery before ginning; second, the better ginning of the cotton and the saving of one set of machinery and a great deal of labor; third, all the cotton seed and the oil contained therein.

I am satisfied that this plan would result to the advantages of both the manufacturer and producer. There is a large amount of cotton seed now shipped to Liverpool on account of the oil contained in the seed. The oil cake is fed to cattle. Why not ship the fiber with the seed at once? The cotton fiber during the time of transportation will improve in strength, when adhering to the seed; and there cannot be any doubt, that wherever steamboat or railroad facilities exist, it would be better to ship cotton as fast as gathered in the field with the seed, instead of storing in open pens, where the seed as well as the fiber, is injured by exposure to the weather, now frequently the case with us. H. MILLER.

Belleville, Texas.

Toothache.

MESSRS. EDITORS.—If any of your readers suffer from toothache, or neuralgic affections, arising from teeth in any stage of decay, they may experience relief instantaneous and permanent (at least so far as indicated by the experience of the writer hitherto), by saturating a small bit of clean cotton wool, with a strong solution of ammonia, and applying it immediately to the affected tooth. The pleasing contrast instantaneously produced in some cases causes a fit of laughter, although a moment previous extreme suffering and anguish prevailed.

I have used the remedy for over one year, and have obtained sufficient proof of valuable result to warrant publication. ENTERPRISE.

Cincinnati, Ohio.

Zinc for Roofing.

MESSRS. EDITORS:—I understand that some of the Eastern railroads are making use of zinc as a roofing material for their cars, and that in some portions of the oil regions it is also used for tanks.

Will you allow me to inquire of those of your readers who have had some experience in using it, as above stated, in what way it has been used and with what success?

La Salle, Ill. W. F. KEELER.

Question about Milling.

MESSRS. EDITORS:—I would like some practical miller, who has made experiments and can give a true explanation, to answer the following.

Will a 30-inch burr millstone grind ten bushels of wheat or corn in one hour with less power than a 48-inch stone? If there is any difference in the amount of power expended which stone has the preference N. H. ELLIS.

Croton, N. Y.

Blowing a Wineglass.

I spent hours in the workroom of Murano, at Venice, fascinated, despite the blinding heat, by the fairy forms and rainbow hues evolved before my eyes; by the intense, grave, silent enthusiasm of the workmen, which extends itself even to the small children admitted to watch the proceedings; by the imposibility of quitting the scene of labor until the piece in hand could be secured from failure by completion. On my first visit the head workman was requested by Salviati to make me any article I might fancy; I chose a wine-glass with a deep bowl, initial stem, and broad ruby-tinted foot. The man dipped his hollow iron rod into a pot of molten white glass, caught up a lump, rolled it on an iron slab, popped it into the furnace, blew through his rod, tossed it aloft, and a hollow ball appeared. His assistant handed him a rod of metal, in which a green serpent seemed coiled in a white cage; this he caught, and, quick as lightning, formed two initials, touching the bowl with the tip of the M, to which it adhered. Than his assistant offered more white glass, which was joined to the bottom of the M, spun round, opened with nippers, and so the foot was formed. Again into the furnace, and then the shears opened and hollowed the deep and slender bowl. Then the assistant handed a scrap of ruby molten glass, of which the master caught a hair as it were, wound it around the rim of the bowl and of the foot. Once more into an upper oven, where it must remain until the morrow to cool, and then I drew a long breath of relief; for—knowing that if the metal be too hot or too cold, if too much or too little be taken on the rod, the weight and color will be faulty; that too quick or too slow an action on the part of the assistant, in presenting or withdrawing his rod, may spoil the whole—one cannot watch such processes without intense excitement. This excitement the workmen share in their own silent fashion; and when any rare experiment is going on, all gather around the master in breathless anxiety, while no sound comes from the parted lips save in the form of a hint or caution.

Bureau of Printing and Engraving.

Under the new administration of Geo. B. McArtree this important bureau at Washington has already grown into real value and importance, as now the greater portion of the government money will be printed there.

The new arrangements entirely preclude fraud. The checks and balances are plain and comprehensive, and cannot be misunderstood. The superintendents and assistants make out daily duplicate reports of all work in their respective divisions. One goes to the chief of the bureau and the other to the chief of division in the secretary's office. The copper-plate printing division of this bureau is being refitted and the various divisions reorganized.

As it is proposed to issue a new description of paper money, the paper for the purpose is now being manufactured. A paper maker and clerk representing the Government has charge of the mill, and the contractors can work only under their supervision.

Part of the legal tender notes will be printed out of this city and the remainder here. It is now intended to print all of the fractional currency notes here.

The same plan has been adopted in regard to whiskey and other stamps made for the use of the Bureau of Internal Revenue. In the Secretary's bureau a counting room for the blank paper is in operation, while a similar one will be in use in the printing bureau, and the same, with the money after it is made, except that the counter check room is in the Treasure's bureau.

The hydrostatic presses, about ninety in number, will be abolished, and in their stead roller presses will be used with greater economy; no steam is required and the greater safety of the building from explosions is thus obtained.

The employés, men and women, of the bureau, in the various divisions, have been furloughed until the 15th of May. During this interval all the machinery will be put in perfect repair and everything prepared for a fresh start.

It is proposed to call in the fractional currency. No more of any of the series will be printed. The style of the legal tenders or greenbacks will be entirely different from those now in circulation, and as they supply the place of the old the latter will be withdrawn. A set of books will also be kept, in which all the transactions of the bureau will be recorded, and no difficulty will be experienced in the way of making the proper investigations at any time. The old machinery not required will be disposed of, and all useless dies and plates destroyed.

Editorial Summary.

BRITISH IRON-CLADS.—Laird, the notorious ship-builder at Birkenhead, opposite Liverpool, has just launched a turret iron-clad steamer of 4,272 tuns, twin screws, strong ram, and two large turrets, armed with rifled 600-pounders. This model ship has been built by the Lairds on Captain Cole's plans, in the most thorough and costly manner, to test the principle, and is intended to be the finest and most formidable war vessel in the world. Why the British Government is spending such large sums on its navy just now is not very apparent. It may be the Suez Canal; it may be to give Mr Laird the opportunity to atone for his fault in sending out the *Alabama*. Certainly, all things considered, employing him to build a large part of the British Navy is an act of singular magnanimity on the part of the government.

IMPROVEMENTS IN STEAM VALVES.—A new self-adjusting plug cock or valve is at present being introduced, the *Mining Journal* says, which, it is claimed, is superior to those at present in use, both for economy and efficiency. By the employment of an outer shell, forming a heated chamber round the working shell of the valve, expansion and contraction are equalized; while by the use of two inlets and two outlets, the travel of the plug is reduced to one-half, thereby diminishing the friction and the wear and tear. The plug is kept in its position by a spiral spring packing in the center of the cover inclosing the loose spindle. It is claimed that in first cost these valves are cheaper than any others in use, will last double the time, and will not get out of order.

SOURCE OF PATENT OFFICE REVENUE.—The sum of one hundred and fourteen thousand, seven hundred and fifty-six dollars was paid into the patent fund from the New York office of Munn & Co., for the year ending April 13, 1869. This sum does not include several thousand dollars paid in through our branch office at Washington. The professional business of the Scientific American Patent Agency is the most extensive in the world, and keeps pace with the progress of invention. The above figures scarcely need to be commented upon. They point unmistakably to the fact that inventors know where their interests are most faithfully served.

FIFTY MILES AN HOUR.—The great Runcorn Viaduct, carried on ninety-eight arches, completes at last the fast railway line between London and Liverpool, and the whole distance, 200 miles, can now be run in four hours. A saving of time is effected by not stopping for water, which is scooped up from between the rails, when running at full speed, an operation so easy that it might be universally adopted. It is only to have a long trough, let down a scoop, and the water will rush up a tube and fill the tank.

DE-BRANNING WHEAT.—In answer to the inquiry of H. G., of Maine, in our issue of 10th April, S. Bents, of Maryland, writes that the above process is in successful operation in Liverpool, Eng., and that arrangements are making with parties for its general introduction in this country. He also sends us a specimen of the de-branned wheat, which is a nice article. He does not, however, give any details relating to the process

A. T. STEWART'S property on Broadway alone is worth about five millions. W. B. Astor's real estate on Broadway is worth about three millions. The Lorillard estate has eight millions invested in that thoroughfare.