INTERESTING CORRESPONDENCE.

PRESSURE ON SLIDE VALVES.

MESSRS. EDITORS:—Much has been said and written relative to the amount of power required to operate the slide valves of steam-engines, but one fact seems to have been overlooked by all who have made anything public on the subject. Some persons contend that the pressure is equal to the whole face of the valve, while others are equally confident that it is only equal to the ports under the valve. I think that both may be right and both wrong. If we take an engine in which the valve is moved suddenly by means of a cam and then allowed to stand still during half of the stroke, then I think the pressure is equal to the whole face of the valve; but if it is moved by an eccentric which gives it a continuous motion (except at the changing points), then its pressure is only equal to the area of the ports under it. The following is the reason assigned for this action:—

When the valve is in motion, minute globules of water always find access between the face and the seat of the valve, and these allow some steam to pass under the valve and relieve the pressure upon its back; but when the valve is allowed to stand still, these globules of water escape down the exhaust ports and the steam is then excluded from between the valve and its seat, when the pressure of the steam, as a matter of course, becomes equal to the whole face of the valve in contact and area of ports in addition. The proof of this may be had in any engine-room where the engine is worked by means of a starting bar. If the engineer works the bar quickly at the commencement of the stroke and then waits for the stroke to be finished, as is usual in working engines by hand, he will be surprised at the amount of power required; if he now gives the bar a continuous motion, the same as an eccentric, the difference will become obvious. In a condensing engine, using a slide valve, more power is required to move it than the slide valve of a non-condensing engine, from the fact that the atmospheric pressure being removed in the former, the globules of water referred to are excluded from between the exhaust side of the valve and its seat. This affords an explanation of the fact that the valve seats of low pressure engines wear out more rapidly than those of high pressure non-condensing engines. In order to make slide valves move easily, they should be so arranged that no motion should be lost between the crank and the valve.

GEO. H. REYNOLDS.

New York, July, 1859.

OBSERVATIONS ON HEAD VENTILATION AND HYGIENE.

MESSRS. EDITORS:—The ideas advanced in your issue of the 18th ult., relative to *ventilating hats*, have been advocated by me during many years, but within only a year or two has there been an attempt at its becoming a custom. I have frequently been asked why I kept my sitting and bedroom windows down both winter and summer, and why I had such a large hole in my hat. The first of these questions you have answered fully, but the latter not satisfactorily to me, and on this I beg to make a few remarks, which I know will be appreciated by parties acquainted with the nature and power of steam and hot air. That there can be no ventilation in the hat unless there are "perforations at or near the band to secure the inward passage of air," I must beg to deny. The atmospheric pressure caused by the great and continual heat of the head, which is ever creating hot air and emitting steam from ten thousand pores, forces a draft through the ventilator that can be *seen* by causing a person wearing the hat to stand in a sunbeam in a room, when the dust will fly upwards from the ventilator. Suppress this atmosphere, and the pressure on the head when in a perspiration becomes intolerable, and the hat must come off. Hence the necessity for ventilation. If this sensible fashion would become a general, necessary custom, men would not become bald any more than do women.

The furnaces in our modern dwellings will force upon us the necessity of building our houses with ventilators in every room for the escape of foul gas, hot and poisoned air, dust, &c.; and when we shall have got well into the business, with its variety of expenses, both ornamental and useful, we shall have learnt that furnaces must be abolished. Churches and other public edifices used only occasionally may be heated by hot air, but furnaces in private dwellings will hourly destroy the health of our women and children. Hot air, with delicately or indelicately bare shoulders, bare arms, and thin clothing, contributes largely to our cemeteries, increases the number of bald heads, decayed teeth, and black-craped hats, the consequences of over-indulgence in hot coffee, tea, and ice-water, taken alternately during the term of our *un*-natural lives. Yet all common sense and health must yield to fashion and the "grim tyrant, Death."

If cholera in this city contributed to the grave as liberally as does consumption, the people would fly the metropolis; but the still, smiling, silent, subtile searcher of almost every family of *grown* sons and daughters is welcomed; the poison he administers in all cases is agreeable, and adds to the romance of almost any foolish novel; there is a charm to its melancholy (for consumptive victims are indispensable in pretty novels), as they appeal to the feelings of the *bereaved* masses; and so long as we continue to dig down into the ground and fill our houses with foul air, we shall be able to furnish interesting subjects for truthful novels, written on almost every family in this city.

Man was never intended to live under the ground; he is evidently an over-ground animal; but some of the brute creation, intended for his use, can only be found in dens and caves of the earth. Some architects in New York are becoming ridiculous by planning houses with as many rooms below the street-surface as above it. Now, there are two extremes, the high and the low. Constantly breathing the damp air of cellars creates consumption, while climbing to the top of five-story houses creates a complaint in women that is best known to physicians. We will reduce this science down to the simple rule-of-three, as "figures never lie." If the foul air of a cellar 40 feet deep will kill a man in ten minutes, how long will it take the foul air of a cellar 10 feet deep to kill him?

To keep ourselves healthy and comfortable we must wear warm clothing in-doors, keep the air cool, shut our well-ventilated cellar-doors tight, wear ventilated or cooler hats and all our hair, be satisfied with one beverage at a time, and preserve our teeth, else the above-named abuses will become chronic throughout the land.

J. C. BATTERSBY.

SPEED OF CIRCULAR SAWS.

MESSRS. EDITORS:—I have had an experience of five years in running circular saws, and I think there is a great advantage secured in running them fast. The mill in which I am engaged has only 12 horse power to drive, and the saw runs at the rate of 6,720 feet per minute. There is another mill in the neighborhood which has 20 horse power to drive, the saw of which runs only at the rate of 1,400 feet per minute. Both saws are four feet in diameter. Our mill cuts double the amount of lumber that is accomplished in the one with 20 horse power. I believe that a four foot saw may be run at the rate of 8,000 feet per minute with good advantage. To drive at this speed and not waste power, the governor should be very sensitive, so as to operate the throttle valve of the engine and make the latter run slower when the saw is not cutting.

J. J. W.

Marianna, Fla., June, 1859.

SETTING OF CIRCULAR SAWS.

MESSRS. EDITORS:—Owing to various causes (the most prominent of which are imperfect construction and adjustment of the saw and mandrel) the plate of a circular saw will always vary more or less from its proper plane, thus causing the saw to cut a kerf wider than it otherwise would, and involving imperfect work, loss of lumber and loss of power. The best method of setting circular saws, so far as my experience goes, is as follows:—Adjust the saw-plate as nearly as possible to a plane at right angles to the axis of motion, and let the mandrel have no end play. Now, revolve the saw so as to touch very slightly the point of a file held securely at the base of the teeth at right angles to the saw, and thus find out that portion of the saw-plate which varies most from a plane intersecting the center of the saw and at right angles to the axis of its motion. Now mark the portion of the plate thus found and give the tooth at that part a very little set, barely sufficient to keep the plate from rubbing the walls of the kerf. The file should now be fixed so as to graze crosswise the point of the tooth. All the teeth are now set by bending to the point of the file, so that they may all graze it equally as they revolve. Having thus set both sides of the saw, it will be found to cut much faster, smoother, straighter, and with less vibration and noise, and it will also cut a much narrower kerf. This method of setting saws diminishes the number of planes of motion described by the outer corners of the teeth, and brings them nearer together.

A common circular saw may be made to cut a kerf of any width, from one to six inches, by simply increasing its inclination to the axis of motion, an example of which is given in Harrison's Tenon-saw, illustrated on page 33, Vol. XIII., of the SCIENTIFIC AMERICAN. This method is original with me and probably with many others, but is, I think, not so generally known as it ought to be.

E. P. B.

Athens, Maine, July, 1859.

THE INVENTOR OF STREET RAILROADS.

MESSRS. EDITORS:—Your motto relating to inventors I believe is, "honor to whom honor is due;" and with this motto in view, I will merely call your attention to two patents, dated on the 23d of August, 1831, one of them for a "new and useful improvement in the mode of *turning short curves* upon railroads;" the other for the "mode of forming and using *cast or wrought iron plates or rails for railroad tracks in cities* and elsewhere."

You will please bear in mind that these patents were obtained before a passenger-railroad was in working existence in this country, and long before the introduction of tracks into cities had been seriously contemplated by any railroad company. Yet here are two patents for the very improvements you have so justly appreciated, invented by a then resident of your city in 1828, who lived on the corner of Charlton and Macdougal-streets, and who removed to this city in the year 1829, and brought with him a model of a street, with the *grooved* rails shown along it, and the *identical short curve*, with the flat rail to receive the flange, and increase the diameter of the outer wheels whilst turning the corners. There was also a "turning platform" on the same model, and a "self-acting switch." You will see a copy of this model, now in the Patent Office, restored after the fire. What makes these inventions the more remarkable, is the fact that the inventor, long before they were needed, conceived the simplest and most practicable form of the whole system of street railroads, and that which now, eight years after his death and thirty-one years after his invention of them, is being appreciated. That inventor, as you will see by referring to the patents, was the late James Stimpson, and the Harlem Company paid him for the right to use these patents. I could also give you the history of the power-loom he invented and sent to Russia in 1817, by order of the Russian Minister, and a great number of his other inventions, but not being the subjects in question in your article, I close with the belief that, acting in accordance with your motto, you will at least give his name the credit which is justly belonging to him.

JAMES H. STIMPSON.

Baltimore, Md., June 30, 1859.

CHLORIC ETHER DISINFECTANT.

MESSRS. EDITORS:—On page 301, Volume XIII, SCIENTIFIC AMERICAN, several suggestions are made in reference to disinfecting foul ships, and a rather troublesome plan recommended to produce a discharge of chlorine for this purpose, after having secured the hatches down and closed the crevices in the usual way. A better way, allow me to say, is to close the vessel, as all who have the control of vessels are supposed to understand how to do; and burn in glass-lamps, properly distributed so as to reach every point, a quart or two for a small vessel of chloric ether.

The chlorine becomes liberated and penetrates every crevice, and even the pores of the wood, "filtering the air," if I may so term it, and rendering it sweet and healthy. If any one is disposed to test it, let him try it upon the foulest air he can find; of course I do not mean in the open air; a room of ordinary size may be disinfected so far as odor is concerned or *deodorized* by simply closing the doors and windows, and burning a lamp of chloric ether five minutes; no one need leave the room. Lamps for this use should be of glass, the common ones for camphene are suitable, and the ether may be treated precisely as the "Ethereal Oil" usually is. A lamp with a wine-glass of the ether is entirely harmless, and may be kept ready for use.

I furnish every vessel I employ with a pound of chloric

ether and a glass spirit-lamp. Five minutes use of this will entirely remove the smell of bilge-water, or other disagreeable odor from the cabin; but unless the *cause* is removed, the lamp may require to be frequently used. Try it. R. H. A.

Baltimore, Md., June, 1859.

[We are much obliged to our correspondent for the information contained in his letter. No method could be more simple for disinfecting ships, hospitals, and households, but at the same time, the hint contained in the last clause of the letter must not be forgotten.

LOCOMOTIVE BOILERS---POST OFFICE MISMANAGEMENT.

MESSRS. EDITORS:—I sincerely wish that some of your numerous readers connected with railroad engineering could explain the cause of the choking-up of the water-passage in a locomotive boiler at the one side when hard or limestone water is used. Several cases of this kind have lately occurred here, and one on an engine which had been running only about nine months. The termination of the passage through the upper or check valve became diminished to about three-eighths of an inch, and caused the bursting of a cast-iron air-chamber half-an-inch thick; it being on the right or working side of the engine, the left-hand pump being seldom used. One would naturally suppose that the passage from the pump which is almost in constant use would be most likely kept open, but it is not so, and it would be very gratifying to know the reason of this.

There is another question, and one of a very serious character, which I wish to bring to the notice of those who can remedy the evil, namely, the mismanagement of the Post-office in the safe and prompt delivery of the SCIENTIFIC AMERICAN; other papers, however, are subject to the same trouble. Scarcely a week passes but one or more of your subscribers in this place are minus of their papers, while on other occasions, papers belonging to persons residing in other places are received; clearly showing that the fault is in the Post-office. It is very annoying to be thus disappointed, and to hear the remark often made angrily, "what has become of our paper this week?"

A new-comer in this place called frequently, but vainly at the Post-office for letters and papers, but found none. At last he became clamorous, and demanded a search to be made for them, when lo! a number were found snugly situated on an upper shelf. His name not being familiar to those who assist the postmaster in his duties, the owner came very near losing both papers and letters.

ENGINEER.

Knoxville, Tenn., July, 1859.

[To the inquiry of our correspondent in regard to the incrustation forming on the interior of the water-pipe in the boiler, we can only say that hard water forms incrustations in all metal pipes, even when it is moving at a considerable velocity. The amount of scale formed is proportional to the amount of water passing through, especially if aided by heat. We advise all our railroad companies to use nothing but soft water for their locomotives; and if they cannot obtain a sufficient supply from springs or creeks, let them erect cisterns at the stations to catch rain water for that purpose.

The case of mismanagement in the Post-office we refer to the attention of Postmaster-general Holt. We believe he will not allow it to pass without inquiry. We are confident that the general circulation of many newspapers is greatly affected in every place where there is an unfaithful or incompetent person in charge of the Post-office, and we have therefore a just cause of complaint as well as our subscriber.—EDS.

PUMP FOR AUSTRALIA.—In No. 35 of Volume XIV. of the SCIENTIFIC AMERICAN, we published a letter from Messrs. Fisher, Ricard & Co., Melbourne, Australia, in reference to a pump for deep mining. We have since learned that this firm can be addressed at No. 56 South-street, New York.

A HUMANE INVENTION.—It is announced that an inventive Yankee has produced an apparatus which he claims is a cure for snoring. He fastens upon the mouth a gutta-percha tube, leading to the tympanum of the ear. Whenever the snorer snores, he himself receives the first impression, finds how disagreeable it is, and of course reforms.

DEATH OF A PROMINENT INVENTOR.

[Communicated.]

Walter Hunt, who has been an originator for about fifty years, has been at last relieved from that shell of earth and has passed to the future, where the annoyances of human strife can no longer torment the head or heart. From early childhood he exhibited signs which told that his destiny was that he should be a teacher, an almoner to the grieved ones, rather than a servant of self. His earliest practical workings were in mechanical movements, the breech-loading cannon being one; from this he, after much experiment, succeeded in making the breech-loading many-chambered pistol, usually known as the "revolver" at this day, and upon which others, by dint of perseverance have reaped the reward which justly belonged to him. The experiments in endeavors to control the lightning-flash of electricity so far back as 1833, as a motive-power, were as nearly successful as the then known circumstances would admit, and to this day have but slightly advanced. At about the same time, on the very spot where the *Sun* Office now stands, he experimented with a very crude machine for spinning flax, with such success that by imitations and innovations it has in other hands become one of the most valuable machines in that department of treating fabrics.

That he was the first inventor of the sewing-machine there is no doubt, inasmuch as in a contest with Howe, during the term of Judge Mason as Commissioner of Patents, he opened an interference against Howe, but unfortunately he had sold the invention to a Mr. Arrowsmith, therefore, the Commissioner decided as follows, in substance, viz: "Walter Hunt was the original and first inventor of the sewing-machine, but inasmuch as he had sold all his right, title and interest, and neither himself nor his relations had prosecuted the business to the advantage of the public, the community had not been benefited, and that Howe by persevering had made it valuable, and therefore must be sustained."

While I have not space to describe it, it is certain that his machine for forging wrought-nails has never yet been superseded, although many patents have been subsequently granted in hopes of so doing. His machine for cutting brads from the sheet-metal was exhibited at the American Institute Fair in 1835, at Niblo's Garden, simultaneously with his machine for punching leather and filling the holes with wire-plugs, so that the leather should support the metal, thus producing an iron and metal surface for a durable sole of a shoe or boot. Prior to this time he had experimented in preparing concrete blocks for the purpose of making docks, &c., which would be permanently lasting, and one of his latest griefs was (as expressed to the writer), that more than twenty years ago he explained this plan of building docks to Peter Cooper, who but a few months ago put it before the public with a view that it would appear to have emanated from himself. Another effort was the molding paper-boxes directly from the pulp, by having a female-mold into which a corresponding male-punch or piston would so nearly fit as to form the boxes at one operation, thus making a box per second. The vapor-bath was, as a medical instrument, extremely valuable at the time he introduced it.

The hollow rifle-ball having a conical-shape, with a sharp point, and the charge within the ball, was a beautiful chemical and mechanical discovery, yet it met no favor until Minie, in France, had adopted it to use, and in consequence he received the credit which belonged to Walter Hunt. Not content with his former experiments in fire-arms, he to the very latest hour continued to exercise his brain in relation to this class of instruments. The latest and probably the best of his improvements in this line was to arrange a new priming which would always be safe, it being water-proof and arranged in sticks, so that as the hammer came down to discharge the piece it would cut off a little piece, and the final closing of the hammer would cause the little piece to explode, thus igniting the powder or the charge in the ball, which would cause the displacement of the ball so that it would go to the intended destination. He also had an invention for reducing tobacco stems to a pulp, after which they could be rolled into shuts like paper, and thus formed into the most elegant segars. It was in his early days that he suggested the roller as a substitute for the old-fashioned balls for inking the form on the hand printing-presses, this being before power-presses had come into use. He was successful in preparing a paper-pulp which, when rolled on to or combined with the coarsest cotton, would appear like the finest linen for collars, bosoms, &c. His several medicines, of which his life-invigorating cordial is one, have proved extremely valuable.

Although what the writer has here enumerated are scarce a tithe of his inventions, which covered every branch of mechanical art, chemistry, and science, yet fearing to become tedious I will be content that there is sufficient for the present occasion and purposes.

Walter Hunt, like most inventors, devoted his life more to his friends than himself; the writer has frequently seen him give his last cent to the poor when he knew not where the next was to be found for himself; and the succoring of families in distress was his most holy thought; it was thus that all who knew, knew but to love him, no friend in need could want when he was supplied. In early life he became a free and accepted Mason, which undoubtedly contributed to his disposition to be philanthropic. He struggled with that monster, the dollar, all his life, in hopes of mastering it, but his almost numberless experiments kept him always comparatively poor. At the time of his death he was engaged in experiments which seemed to promise a rich reward for his past labors, but his long and ardent devotion, by night as well as by day, resulted in an attack of pneumonia, which in four days closed his earthly existence at the age of sixty-three years, thus parting the spirit from the house of clay that it might be wafted to the realms of bliss.

J. L. KINGSLEY.

[Our correspondent, takes the unqualified position that Walter Hunt was the original inventor of the sewing-machine. When this assertion appeared in the *Tribune*, Mr. Howe denied the fact, and quoted from the decision of Judge Sprague to sustain his position.

BARKING FRUIT TREES.

We have received several letters on this subject, having been called out by the article on page 328, of Volume XIV., SCIENTIFIC AMERICAN, in which it is stated that if the entire bark to the wood of the trunk is removed, it would be fatal to the life of trees. In reference to this opinion, Mr. John Gill, of Patmos, Ind., says: "Paradoxical as it may seem, if apple-trees are skinned after the sap is well up and the leaves developed, they will form a new bark and flourish afterwards as well as if not barked, and perhaps better This is frequently done in the West to cure what is termed *bitter-rot*; a disease that attacks apples with small black spots, which run into the core in a conical-shape, and which are intensely bitter. How barking would operate on other trees I cannot say, but I saw this done twenty-five years ago."

In another letter on this subject from Mr. J. B. Sawyer, of Manchester, N. H., he says: "It is doubtless true that, in eleven months out of the twelve, it will kill a tree to strip it of its bark, but there are a few days in the month of June when many kinds of exogenous trees may be deprived of their bark (including even the liber, or inner coat), without causing the death of the tree. By a beautiful provision of nature the cambium, or jelly-like substance, which is ordinarily developed every year into a new layer of wood, will, if not injured by the operation of peeling, or by a too scorching sunshine, become a new bark. It will be very smooth and tender for a few years, in fact much like the bark on the young shoots of the same tree. It is possible that such a new and healthy bark may, in a few years, more than compensate a tree for the shock which such an unnatural operation must produce. This phenomenon may often be observed where a tree has been accidentally deprived of a portion of its bark at this season of the year."

We have seen old decaying pear and apple-trees renovated by scraping off the outside bark, and leaving a thin rind adhering to the wood, which was washed with soap-suds, containing a little sulphur. The *bitter-rot* in western apple-trees, we think, may be cured by such an operation. Although, according to our correspondents, some trees at certain periods of the year may be denuded of their entire bark to the wood, yet it may be truly stated that this operation is one which is likely to be fatal to the life of the tree, and is not therefore to be recommended for general practice.

BOUND VOLUME.—The SCIENTIFIC AMERICAN in its present form will make a very handsome volume at the end of the year, and we counsel all to preserve their numbers in a cleanly condition for that purpose.