

Scientific American.

NEW YORK, AUGUST 15, 1857.

To Readers of the Scientific American.—Our New Volume.

The fleeting wings of Time have carried us almost to the end of another twelve months' journey, and we are brought near to the beginning of a fresh professional campaign. In three short weeks we shall close the printed records of our twelfth year, and open the unsullied pages of the thirteenth.

The major portion of all subscriptions to the SCIENTIFIC AMERICAN will expire with the current volume. It is, therefore, necessary that all of our friends who desire to continue the paper should immediately remit, in advance, payment for the new year. "Pay the printer" is an old and wise maxim. We trust it will not be forgotten at the present time; for our invariable rule is to cross from our books the name of every subscriber when his term expires, as we have no disposition to thrust our paper upon those who may not wish to continue it, although we regret the loss of a single name. We intend to begin the New Volume on September 12th next, with an edition sufficiently large to supply an increased subscription list. Early remittances will prevent the loss of any of the first numbers of the volume, for which there is always an unusual demand. Our terms are set forth in the Prospectus on the last page. It will be observed that for all clubs of twenty and over, the yearly subscription is only \$1 40.

Several new arrangements and improvements are proposed by us for the new volume, which, we doubt not, will give satisfaction to our many kind patrons. In the first place, new type and other typographical accompaniments, have been provided, which will considerably beautify the appearance of our publication. In the next place, we shall endeavor, by every means in our power, to improve the general contents of the SCIENTIFIC AMERICAN, and render it increasingly useful and attractive to every reader. Lastly, we propose to reward liberally all who will volunteer to assist in the good work of increasing our subscription list. For this purpose we have set aside, in cash, the sum of one thousand five hundred dollars, to be paid in the form of premiums, to those who are disposed to co-operate with us. Whoever labors for us will thus be well repaid. We will pay in cash for the fifteen largest lists of subscribers sent in to us between now and the 1st of January 1858, the following sums:—

For the largest List,	\$300
For the 2nd largest List,	250
For the 3rd largest List,	200
For the 4th largest List,	150
For the 5th largest List,	100
For the 6th largest List,	90
For the 7th largest List,	80
For the 8th largest List,	70
For the 9th largest List,	60
For the 10th largest List,	50
For the 11th largest List,	40
For the 12th largest List,	35
For the 13th largest List,	30
For the 14th largest List,	25
For the 15th largest List,	20
Total,	\$1500.

Names can be sent in at different times, and if desired, the papers addressed to different Post Offices. The cash will be paid to the orders of the successful competitors immediately after the 1st of January, 1858.

In view of the above, we hope that our friends will be induced to take hold and see what they can do in the formation of subscription lists for the SCIENTIFIC AMERICAN. The practically useful character of our paper, and the welcome reception it meets wherever it goes, render the enterprise of procuring subscribers' names comparatively easy.

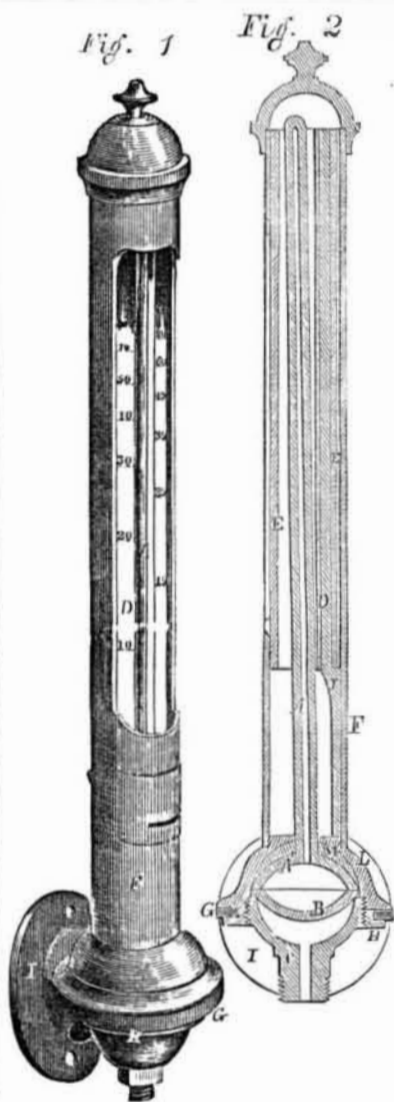
The opening of a new volume presents an excellent opportunity for new subscribers to enroll their names. We want an increase of at least ten thousand names for the year 1858. Shall our want be met? It remains with you, friends, to say. We leave ourselves in your hands.

Miller and Kailey's Steam Gage.

The accompanying figures represent an improved Pressure Gage or manometer, patented by Joseph H. Miller and John Kailey, of Canton, Ohio, on the 16th of June last. It is a mercury gage, and one of the forms thereof in which the fluid is forced to rise against the pressure of enclosed air, so that the range is moderate, and the gage in every respect equal to the most portable and convenient gages of this character now in use. The peculiarity consists in the mounting and arranging of the lower portion, and in the protection of the whole against injury, also against derangement in consequence of being placed in inclined positions, agitated, or the like.

Fig. 1 is a perspective view of the gage complete, and Fig. 2 a section through the whole.

A is the glass tube, and A a bell-shaped mouth at its lower extremity, B is a diaphragm of properly prepared rubber, C a cup-shaped bottom of metal, D an index plate carrying



the suitable graduations, E is a glass case which forms a protection for the enclosed tube, and F a brass case, open on one side as shown in Fig. 1, which serves as an additional protection to the whole. G is a supporting ring, on which the weight of the whole is carried, H a tightening ring, which is screwed up against G, to attach the gage firmly to the latter, and I a broad flange, by which the whole is fixed either to the boiler or to any suitable fixture. J is a piece of wood, which forms a support for the index plate, D. L is a top piece, and M is a filling of plaster, to secure a tight fit of L to A'. The connection at the bottom leads to the boiler, and allows the steam to press directly against the diaphragm, B, which is here represented as being slightly depressed, or bent downwards by the weight of the mercury. As the pressure of the steam increases, it forces this diaphragm to assume, first a plane, and finally, an upward bulged condition, the surface of the mercury in the tube, A, of course, rising to a far greater extent, and indicating the pressure very accurately.

It will be seen that this gage is perfectly safe against all possibility of derangement, except from the cracking or stiffening of the diaphragm, B, an effect which cannot be avoided in any gage of this character, but which, with prepared material, will not occur for a long period. It will also be seen that

no steam or water comes in contact with the glass, and consequently the latter cannot be affected either by violent changes of temperature or by the expansion due to the freezing of any water which might be retained. The gage may be mounted so as to allow the steam to come directly into contact with the diaphragm, B, or the pipe may be bent so as to allow the collection of water in a portion of the connecting pipe, so that the pressure will always be transmitted through a cool medium.

For further information, or for the purchase of gages, or rights to manufacture, address Messrs. Miller, Kailey & Danner, as above.

Conveyance of Power.

Shafting and belting, the means in most common use for transmitting power from one point to another, are far from being the only agencies available for such a purpose. At the top of the banks of the Niagara river, a little below the Falls, on the American side, a large reciprocating saw is (or was a few years ago) driven by the action of a water wheel in the rapids some 200 feet perpendicular depth below, and without anything equivalent in its action to either shafting or a belt. The connection was formed by pitmans, or connecting rods, of wire rope. There were four cranks on the jack-shaft near the water's edge, and an equal number of a similar throw in the mill above, and each was connected with the corresponding one by a rope steadied at two or more intermediate points. The action of the wheel was expended in turning the lower shaft referred to, and the connections described compelled the upper one to revolve in the same manner.

Power is sometimes required in mines where the smoke and gases evolved by a fire for a steam boiler would be a very serious evil. Steam could be conveyed to an engine within a mine from a boiler above ground but not without a great loss from condensation. At the great London Exhibition of 1851 the steam was generated in a separate boiler house, and conveyed under ground to the "machinery in motion" department, the east end of which must have been at least a sixth of a mile from the engine house. The conveying pipes were wrapped thickly with hair cloth, over which was placed a covering of patent canvas. This is probably a greater distance than high pressure steam was ever carried in any other instance, but the steam for the engines in the New York Crystal Palace, in 1853, was generated on the opposite side of the street, and conveyed in a pipe encased in a continuous box of saw-dust extending the whole distance, some 250 feet, we think, without much loss; and in Western steamboats, with stern wheels, the steam is usually carried from boilers near the bow almost to the extreme stern in naked pipes, all of which instances may with propriety be termed "conveyance of power," as the power is obviously treasured up in the steam ready for development in the cylinder of the engine. At the Govan colliery, near Glasgow, Scotland, an engine has been several years at work at a point half a mile from the mouth of the pit, by the force of air pumped into it by the aid of a steam engine above. We gave an extended notice of this apparatus soon after it was successfully put in operation, and it has recently been described in a great number of mechanical journals. The duties of this engine—the cylinder of which is ten inches in diameter with a stroke of piston eighteen inches—are to raise water and ore from a still lower pit. For the performance of a smaller amount of work—the drawing of trains of wagons along a level—another British colliery has, we learn, recently introduced a stationary engine in the mine, and adopted a somewhat similar means of conveying the power, but using water instead of air. The engine consists of two small cylinders and pistons, each being three inches in diameter, with a 12-inch stroke. The water which supplies the power is that pumped from the shaft, collected in a reservoir six hundred and six feet above the level of the water engine, and of course applying an enormous force on the pistons; the pipe conveying the water down the shaft is four and a half inches in diameter.

The question, which is the best method of

conveying power in any given instance, must depend much on the circumstances. We have given these examples to show how some apparently very serious difficulties have in several instances been surmounted.

Testimonial to Judge Mason.

UNITED STATES PATENT OFFICE, August 1st, 1857.

SIR:—We, the undersigned, offer you the expression of our regret that you have resigned the position which you have so long held as the head of this office.

In the relation which has existed between us, you have uniformly shown a courtesy and dignity alike pleasing and impressive; and we assure you that we shall always retain a grateful recollection of your personal kindness and a high respect for your official ability.

Permit us also, collectively and individually, to tender you our most sincere wishes that, in all the relations of life, your future may be one of unclouded happiness."

(Signed by all the officers in the Patent Office.)

To the HON. CHARLES MASON, late COMMISSIONER OF PATENTS."

Judge Mason, in reply to the above letter of kind expression and good wishes from those employed in the Patent Office, says:—

UNITED STATES PATENT OFFICE, August 3d, 1857.

Gentlemen:—Your communication of the 1st inst., manifesting regret at our approaching separation, and filled with kind expressions relative to the past, and good wishes for the future, has afforded me the liveliest gratification. It will be treasured and remembered with pride and pleasure throughout the course of my future life.

That during the four years I have been connected with this office, I have not given frequent occasion for dissatisfaction, as well to employes in the office, as to those doing business therewith, I cannot for a moment suppose. But I have met in all directions, and in almost every instance, with evidences of an indulgent charity greater than I had any reason to expect, or any right to claim. It is evident that freedom from error has not been expected, and that correctness of intention has often been received as its substitute by those within and without the office.

It is now a source of unalloyed satisfaction in reviewing the past, to reflect that, as far as my knowledge and recollection extend, nothing like an angry feeling has been excited in my official or personal intercourse, either with the multitude of anxious, interested inventors, or with those with whom my relations have been more frequent and intimate in the daily transactions of business.

It is this consideration which has given the principal charm to the position in which I have been placed for the past four years, and has more than once induced me to postpone a severance of those relations which were so agreeable, although very strong considerations were urging me to that severance. This force has recently been augmented to such an extent that I feel it to be controlling; and I find myself compelled, with many and deep regrets, to bid you all adieu.

All your kind expressions and good wishes are most cordially reciprocated. I hope I may long find a place in your friendly recollection; and I shall never cease to regard with interest the fortunes which in future await you all.

I trust we may often meet hereafter; either here or in my Western home, where I shall always be happy to welcome you.

I remain, very truly, yours, &c., CHAS. MASON

S. T. Shugert, Esq., Chief Clerk, will act as Commissioner of Patents until a successor can be appointed. Mr. Shugert has had much experience in the office, and will no doubt supervise its business with discriminating care.

We are assured that the President will not hastily fill this important office, and Madam Rumor intimates that the choice may ultimately fall upon some one of the worthy officers now connected with it. We should have no objection to such an appointment if carefully bestowed, so that it would indicate a proper regard for the interests of inventors.