

Scientific American.

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One Thousand Dollars Reward.

The terms of subscription to our paper are \$2 a-year for single copies, but the prices are less where a number of persons combine together and form what is called a Club. Packages of twenty or more subscriptions are supplied at a discount of thirty per cent. below the single rates, or \$1.40 each, per annum. The allowance of this liberal discount forms a strong inducement, for the simultaneous subscription of several persons in any given neighborhood, and many thousands of names collected in this manner, are annually endorsed upon our books. But in every locality it is necessary, for complete success, that some one or two enterprising individuals should head the movement, or, in other words, "boss the job." They must see to the collection of the money and its remittance to the publishers. They generally re-imburse themselves for the trouble and time spent in making the collections by a percentage in the shape of an increase on the publisher's charge.

It has been our custom, for several years past, to encourage and stimulate the activity of those who undertook the formation of clubs, by offering handsome cash Prizes for the largest lists of subscribers. Last year we paid out \$450 for this purpose, but this year we propose to pay more than double that amount. It will be seen by reference to our new Prospectus in another column, that we offer *One Thousand Dollars* for the twelve largest lists of subscribers that are sent in to us between the present time and the first of January, 1857. The following is the manner in which the awards will be made:—

For the largest list,	\$200
For the second largest,	\$175
For the third largest,	\$150
For the fourth largest,	\$125
For the fifth largest,	\$100
For the sixth largest,	\$75
For the seventh largest,	\$50
For the eighth largest,	\$40
For the ninth largest,	\$30
For the tenth largest,	\$25
For the eleventh largest,	\$20
For the twelfth largest,	\$10

\$1000

Here is a grand opportunity for persons of enterprise, young or old, to improve their fortunes. It is the simplest matter in the world to obtain subscriptions to such a paper as ours. Unlike political or partizan sheets, the mere presentation of which is oftentimes repugnant, the *SCIENTIFIC AMERICAN* is welcome everywhere. Its pages are always laden with riches of an intellectual and practical character. No one can examine a single number without feeling that it is suited to his wants, and that he ought to be a subscriber. What ought to be will be, if the canvasser does his duty.

In view of these facts, we confidently hope that the number of *SCIENTIFIC AMERICAN* Clubs formed this year will be greater than ever before known. The field is a broad one and open to all. Last year the highest prize, \$100, was carried off by Canadians, greatly to their credit. This year the first prize is doubled in amount. Let there be a strong and healthy competition in every quarter. Those who work the hardest will get the highest rewards.

One Thousand Dollars, cash, will be paid by us on Jan. 1st, 1857, for the twelve largest lists of subscribers, that are obtained for the *SCIENTIFIC AMERICAN*. Those whose purpose to compete should begin at once.

On Reading.

Why should so many persons be so very careful with regard to the food with which their bodies are nourished, and pay so little attention to that for the mind? The seeds of disease can be as easily sown in the mind as in the body, and the disease is far more difficult of cure. Every paper and book that is read, exerts a useful or deleterious influence, not only during life but after it.

The words and actions that are influenced by books and papers go forth to exert an influence for good or evil upon others, while the food taken into the body is limited in its influence, and that but for a short duration. It is, therefore, of immense importance that every person should be exceedingly careful in the selection of his reading, for in the mass of general reading how little there is of truth, how much of error and untruth. In view of the great amount of unreliable reading in vogue, the question "what is truth," may not only be often asked with propriety, but also "where is truth."

A continual indulgence of the appetite in unhealthy and unsubstantial food will soon enfeeble the body, and make it enervated and effeminate; and it is just the same with reading, which is food for the mind. What then can be expected of those persons whose mental food almost entirely consists of the most trashy literature—its chaff, straw, and stubble? Effeminacy and weakness of intellect. We regret that such a charge can be preferred against the vast majority of our own people, and those of every other enlightened and civilized nation. The records of literature prove that for one reader of real solid and useful papers and books, there are a hundred who feast on the wildest and most frothy works of fiction. Such reading must be injurious to the mind, because it furnishes it with no genuine aliment.

The most useful works in the libraries of the Mechanics' Institutes in England have a very limited number of readers, while those of a light and amusing character have a host. We hope it is not so with the members of our Mechanics' Institutes; and in some instances brought to our knowledge, we are happy to say, it is not. Still, it is the very few among the great mass of our mechanics, artisans, and farmers, especially our young men, who read useful works; the great majority are intense readers of love-sick stories and bombastic fictions.

A man may cram his mind with reading and yet he may be very ignorant and ill-informed. What is knowledge but truth? The man, therefore, who desires to be well-informed (and who does not?) should make truth the object and aim of his reading. Every young man, especially, should endeavor to cultivate habits of judicious reading. He must pursue truth with assiduity if he would store his mind with knowledge; he must endeavor to derive solid pleasure from the study of true and useful works if he would rise to eminence in literature, in politics, in law, in engineering, in chemistry, in any of the sciences or pursuits of life, to be distinguished in which, implies a cultivated mind.

The character of a man is as much indicated by the books and papers which he reads as by the company with which he associates. We have but to know what books and papers a young mechanic, engineer, or artisan reads to form a very sound opinion of his qualifications and his abilities. If he takes no paper or periodical containing useful information relating to science, art, and improvements, he cannot be intelligent; he cannot be expected to attain to distinction in his profession, for he denies his mind that food which is necessary for its proper growth and sustenance.

The Qualifications of Engineers.

The recent steamboat and railroad disasters which have occurred in different parts of our country have called forth a number of criticisms respecting the qualifications of our engineers entrusted with the charge of running steamboats and locomotives, and some of these not very flattering to their reputation. It is to be regretted that too many persons are appointed to the charge of steam engines who are very defective, by want of education and thorough experience, and by defects of character—such as the want of good judgment, care, and decision—to such important trusts. An engineer in charge of a locomotive or steamboat engine is placed in an awfully responsible situation.

For collisions on railroads and steamboats, engineers cannot be justly blamed; conductors, pilots, and captains are the responsible persons for such disasters. But so far as it relates to burnings and explosions in connection

with the heat of flues, over-pressure of steam, want of water in boilers, and defects of apparatus and machinery, the engineer is responsible.

What are the qualifications necessary to fit a man for such an important situation? Some have asserted that an engineer should not only be capable of managing, but constructing steam engines, and all their necessary appendages. This is simply preposterous. It is not necessary to be able to construct a ship and all its parts, in order to command and navigate it. Engineers, in general, are machinists, capable of working at the lathe, filing, and fitting up. They are not forgers, molders, or boiler makers, nor is it required that they should be.

An engineer should understand the whole physiology of the steam engine, and be able to take down and fit all its parts together.—He should be a draughtsman; understand the quality of metals; the relative proportions of all parts of an engine, how to work it to the best advantage; and have a most thorough understanding of the nature and action of steam and the construction of steam boilers; and with all the practical and scientific knowledge necessary for his business, he should be intelligent, careful, and decisive. We know one of the most experienced and able locomotive engineers in our country who could not be trusted with running an engine. With all his well-known practical skill and knowledge of the engine, when he used to run a locomotive some years ago on one of the railroads in this State, he was for ever running off the track, or committing some such error. He was sure to be too long in slacking speed before approaching a narrow curve, or a station; and while he could plan, draught, and build locomotives, he was defective in qualities for running one. It is just as necessary to have peculiar qualifications for running as for constructing a steam engine.

It is a fact too generally overlooked, that the most important—because the most dangerous part of a steam engine—is the boiler and its appendages; and engineers, in general do not sufficiently qualify themselves in this department of their business. We would exhort engineers to give more attention to the study of the steam boiler.

Too many explosions are caused by inefficient steam boilers—not supplying a sufficient quantity of steam; hence to raise the proper quantity for a certain speed, it requires tremendous firing and forcing to get the work out of the boilers. It is just like the overtaking of a noble animal in running a race—it must perform so many miles per hour, or be foundered in the attempt. This appears to have been the cause of the late explosion on the steamboat *Empire State*. For such defects of steam machinery the owners must be held responsible. The Coroner's Jury at Fall River, in that case, have exonerated all parties from blame for this accident. What are the Inspectors for this district going to do? They appear to be very slow in their action; they must be held responsible for it until they have done their whole duty.

Recent American Patents.

Metal Planing.—By Chester Van Horn, of Springfield, Mass.—Consists in a peculiar manner of supporting the cross head or cross slide on which the tool stock is fitted, whereby work of any width may be planed. In the ordinary machines, the width of the work is more limited.

New Drawing Instrument.—By W. J. Kammerhueber, Washington, D. C.—This is an instrument for facilitating the draughtsman in the construction of linear perspectives. It consists in providing the sides of the drawing-board with raised edges of circular form, the sweep of the circle corresponding with the distance of the vanishing point. The lines are drawn with a common T-square, the base or cross piece of which is provided with a couple of pins. The pins rest against one of the circular edges above named, and on being moved around against the circle, the blade of the square will always indicate the correct line of perspective. This simple device takes the place of complicated and expensive mechanism, which has heretofore been required. To

artists it will prove a valuable acquisition, as its use will save much time and labor.

Improved Fire Arms.—By Gilbert Smith, of Buttermilk Falls, N. Y.—This invention is applicable to fire arms having the sliding breech and those having the hinged breech, or to almost any that have the breech movable separately from the chamber, and are loaded at the rear of the chamber. It consists in forming a groove around the chamber near the extreme rear thereof, to produce a lip from the solid metal of the rear of the chamber, of sufficient thinness and flexibility to be driven back against the breech by the force of the explosion of the charge, and thereby to prevent any escape of gas, and consequent loss of the force of the explosion. The above is an excellent improvement.

Gold Washer and Amalgamator.—By W. S. Pierce, North Attleborough, Mass.—In this improvement the inventor takes advantage of the well known fact that mercury when heated to a temperature of 212°, will absorb five times more gold than at 60°. The apparatus consists of a large box, in which a furnace for producing the heat is placed. The top of the box is beveled, and covered with an inclined plane or bed, over which the crushed quartz or gold bearing dust, mixed with water, is caused to flow. Ledges or pockets containing mercury are placed across the bed so as to intercept the gold. The fire below heats the mercury, and the precious metal is thus absorbed. At the lower end of the inclined bed is a fine screen, through which the finer particles of gold that may have escaped the mercury, fall. They are received on a sponge, which duly retains them.

Machine for Manufacturing Sheet Metal Ware.—By T. Gomme and C. E. A. Beaugand, of Paris, France.—This invention relates to the manufacture of brass kettles, and utensils of various kinds from sheet metal, without brazing. It consists of a peculiar construction of the stamping punch, one portion of which is made to hold the stamped metal in place during the operation, while the other portion of the punch withdraws for a new stroke.

Improved Odometer.—By Smith Beers, of Naugatuck, Conn.—This is an instrument for indicating the distance traveled by carriages. It consists of a combination of small cog wheels and indexes placed in a box and fastened to some convenient part of the vehicle. There is an elastic connection between the instrument and one of the wheels of the carriage, so arranged that at each revolution of said wheel one of the cog wheels of the apparatus will be moved, and a change of position be thus imparted to all of the others. The instrument exhibits to the eye and keeps an accurate account of the miles and fractions traversed by the vehicle.

Improvement in Paints, Inks, Dyes, etc.—By Frederick Kuhlmann, of Lille, France. The patentee's name is familiar, no doubt, to our readers, and to the scientific world in general. He is one of the most distinguished chemists and savans of Europe. The invention for which he has just secured Letters Patent in this country appears to be one of much practical value; and of universal application in the arts. It consists in the admixture of alkaline silicates with paints, varnishes, inks, dyes, etc. Silicates have heretofore been applied as coatings, or varnishes, or layers, and the colors laid thereupon.

We copy from the patentees specification the following statement of some of the methods of application and advantages of his improvement:

"My invention consists in the application of alkaline silicates, or of several silicates with different bases, to cementing, painting, printing, and dressing or finishing fabrics. The silicate which I prefer using, as being the most economical to prepare when it is applied as a solution, is silicate of potash, which is or may be obtained by heating silica during six or eight hours in a solution of caustic potash having a specific gravity of about 1.160, the temperature being that corresponding with a pressure of five or six atmospheres. Instead of potash I also sometimes use caustic soda, but this latter is more liable to produce white efflorescences on the painting, especially if the