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THE VALUE OF SCIENCE.

Many persons have been deterred from pursuing scientific studies on account of the cry of utilitarianism and the reproach that attends upon anything practical. There is something quite unworthy of the age in which we live, in any such notion, as the progress of society and the advance of civilization in modern times depend chiefly upon the application of the discoveries of scientific men. We never know what use may ultimately be made of a discovery. What appears to us at the time as a trivial and insignificant fact, may become one of the links in a great chain of practical application.

When Oersted observed the deflection of the needle produced by the galvanic current, he could not have anticipated that a telegraph would grow out of so slight a circumstance. Faraday's discovery of induction gave us the present form of the telegraph, and also electro-plating and electro-chemistry. The black powder in the alkali manufacturers' vats in Paris, to which the name of iodine was given, was of no consequence when first discovered, but now we know that the grand application of photography depends upon it.

A few years ago a German chemist announced the discovery of sugar in the beet. The account was received, like a vast number of other announcements, as a useless fact, and rather disgraceful to the man who wasted his time in such insignificant labors. Now we know that the beet sugar industry is one of the most important, on the continent of Europe, involving millions of capital, and giving occupation to thousands of men.

The illustrious philosopher, Faraday, succeeded in condensing a number of gases. It was an interesting experiment, but certainly no one could have predicted that some day the question of furnishing cheap food to large cities would depend upon the application of this discovery, but such appears likely to be the fact. The best refrigerating machines, and the most practical methods of producing artificial cold, are founded upon the condensation of gases, especially of ammonia, by means of which we shall be enabled to transport frozen meat any distance.

But not only in the production of cold is Faraday's discovery available; we have in it the germ of a valuable motive power, that is capable of extensive application. Faraday also discovered benzol, and for many years no use could be devised for it; we now know that the whole aniline industry, with its magnificent array of colors, rests upon what appeared to be a useless discovery; and yet Faraday, who gave us our present form of telegraph, who enabled us to produce the richest colors, who put cheap food within our reach, and gave us a motive power available at all times, himself worked in poverty, and died a poor man.

Professor Tyndall has just aroused the attention of the world to the great question of haze and dust, and out of the agitation of this subject will eventually grow true methods of ventilation, the suppression of cholera and fevers, the proper care of the poor in tenement houses, and many improvements in the sanitary condition of mankind.

De la Rive, of Geneva, while experimenting in electricity, found that a bit of zinc would prevent the oxidation of iron, and he at once suggested its employment for this purpose. Out of this simple fact has grown the immense industry of galvanizing iron; but that is not all, for in the same battery De la Rive observed that the minute scratchings on one of the cups was accurately copied on the copper deposited upon it. He mentioned the circumstance; Jacobi took it up, and we now have electro-plating and galvano-plasty carried to complete success.

Pasteur has been devoting years to the study of fermentation, and as a result of his experiments, we are taught to know the true causes of disease and decay, and to invent the proper remedy.

The workers in copper were found to be exempt from cholera, and on investigation it was found that they breathed considerable sulphurous acid, and it was at once seen that this gas, which prevents fermentation and destroys the cholera germs, was what had afforded protection to the coppersmiths, and the same remedy was applied with success in cholera districts and in hospitals.

Sir Isaac Newton discovered the solar spectrum. It was an insignificant thing to throw a beam of light on to a screen through a hole in the shutter, and his neighbors thought he ought to have been better employed; but what a wealth of invention has grown out of this one fact. We now dissect our light, and apply each part as we want it. We can shut out the light and admit the heat. We can concentrate the chemical rays and take a picture. We can examine the spectrum and determine the composition of the sun, moon, and stars, and we shall, before long, separate the light and chemical rays from the heat, and shall store up the heat of the sun as our great motive power, after our coal and fuel have been exhausted. We cannot tell to what vast uses this discovery is destined to be applied.

Professor Schrotter, of Vienna, found that he could convert phosphorus into a red powder, which had many peculiar properties: It was not so poisonous to the workmen in the match factory; it did not ignite on friction, and could be easily transported from one place to another; it was not soluble in the same re-agents as the ordinary phosphorus; and it had powerful reducing properties. It was a trifling matter at first, but has since saved the lives of many a poor person in match factories, and served an important use in the extermination of vermin.

The catalogue of trifling discoveries is almost endless, and we have mentioned enough to show the importance of appreciating the labors of those whose whole life is devoted to the good of their fellow men.

In ancient times it was said, "The proper study of mankind is man," and acting upon that, the world stood still for centuries. The study of mankind led to metaphysical mysteries and superstitions, and it is only since science has dispelled these clouds and let in the light of observation, perception, and judgment, that man has begun to enjoy freedom from such thralldom as our early philosophers imposed upon him. One superstition after another passes away before the clear light of scientific inquiry, and it is not the man of science, but the metaphysician and inductive philosopher, who throw doubt and distrust and unbelief into our ranks. The value of scientific study is therefore two-fold; it gives us the comforts of civilized life, and overturns all doubt and superstition; "it proves all things and holds fast that which is good."

IS HYDROGEN A METAL?

About a year since, we published an account of the late Mr. Graham's researches on the occlusion of hydrogen by the metal palladium, from which he arrived at the conclusion that hydrogen was a metal in a gaseous form. In a recent issue we also gave an account of an interesting experiment performed by Mr. Loew before the Lyceum of Natural History in this city, from which it appeared that he succeeded in making a hydrogenium amalgam with mercury.

It is well known to chemists that when mercury containing a little sodium is treated with a solution of chloride of ammonium, the mercury apparently swells to a bulk very much greater than it originally possessed, and the radical ammonium, generated by the reaction of the chloride of ammonium with the sodium, appears to enter into combination with the mercury to form an amalgam, called the ammonium amalgam.

From this deportment of ammonium with mercury it has been maintained by eminent chemists that hydrogen, one of the elements of the radical ammonium, is probably a metal, which theory the investigations of Graham were pretty generally accepted as confirming.

In the discussion upon Mr. Loew's experiment above alluded to, Professor Seely took occasion to remark that he, together with others, entertained the opinion that there yet existed no proof calculated to substantiate the belief that hydrogen was metallic in its nature, and that the term "hydrogenium" which Mr. Graham applied to that element, was therefore inappropriate.

In a recent conversation, Professor Seely expressed the same opinion to us, adding that the so-called ammonia amalgam is nothing more than a *froth* of mercury, and that the hydrogenium amalgam of Mr. Loew is a similar *froth*.

To enforce his views he performed in our presence an interesting experiment. The mercury amalgam was made by him in a glass tube, to which a small air-tight piston had been previously fitted. After the reaction had taken place he subjected the same to a pressure of probably ten atmospheres by forcing the plunger into the tube. The amalgam deported itself exactly in accordance with Mariotte's law of the compression of gases, which certainly could not have been the case if the amalgam was other than a froth as claimed by Mr. Seely.

We deem this experiment as wholly conclusive that this apparent compound is really nothing but a mechanical mixture and not a true chemical compound as hitherto maintained.

We may add that Professor Wurtz, of this city, who had his attention called to the experiment of Professor Seely, has since been able to produce a froth of mercury by simple agitation of aqua ammonia with the metal first amalgamated with a little zinc.

HOW PEOPLE LIVE TOO FAST.

The word "fast" has latterly obtained a peculiar significance as indicating a tendency to general high living and indulgence in sensual pleasures. A man of reckless expenditure, who indulges himself in all that can gratify his sensual tastes, is a "fast man" in the common sense of the term. This expressive adjective has also been applied to those who habitually risk money in games of chance, and has in some instances been coupled with the names of others, who speculate in doubtful stocks.

We have come to the conclusion that sensual indulgence, exciting games of chance, or speculation in fancy stocks, are not the only ways in which men may live too fast.

Many a godly and devout divine is a fast man. Many an editor, lawyer, merchant, or scientific man, against whom no thought of suspicion exists as to the soundness of his moral character, is fast in as just, though not in so reprehensible a sense, as the man who wastes his substance in riotous living.

Fast living in the sense of such living as shortens life, is a much more common evil than it is generally regarded. We have been an observer of faces and character for a long time, as we have had opportunity in cars, stage-coaches, and our daily intercourse with men, and we believe that in the vast majority of cases it would be found that the rapidity of the pulse in Americans is above the normal standard. Every man's life may be measured by pulse-beats. He will live, accident excepted, to make a definite number of these, and his life will be shortened in proportion to the excess of work performed by his vital organs, in a given time.

Excitement, physical or mental, is the cause of the rapid rate at which most American people are living. The love for excitement is a vice, as positively evil in its effects as the love for strong drink, licentiousness, or gambling. It matters not what kind of excitement; all excitement is fast living, and begets a feeling of exhaustion in intervals of indulgence, which clamors for relief from some other form of stimulant.

Thus it is that the universal demand for artificial stimulants has increased, until there is perhaps not one in a thousand who does not resort to something of this kind. Alcohol, absinthe, opium, hashish, tobacco, coffee, tea, or whatever else it may be, is taken to support the system under the effect of nervous prostration, and to supply in another form the excitement which it craves.

Now all this is just the reverse of what should be the case. Instead of seeking excitement, health and long life demand that we should shun it. The natural, healthy condition of the mind and body is that of unruffled calmness. If excitements occur, they should be exceptional, not the rule of life. As soon as they become a necessity there is a diseased state of mind and body, and the candle begins to burn at both ends.

THE STEAM MAN.

Have we not heard somewhere in song of a wonderful steam arm, which hammered away all obstacles, and of a steam leg that walked the owner to death, and then walked away with his ghost? If our memory serves us, we have. We never expected to meet those wonderful members in the flesh, but no man knows to-day what is reserved for him to-morrow. We have lived to see steam legs, steam arms, steam body and breeches, steam coat, hat and choker, all combined to eclipse all that poets have sung or dreamed.

Passing up Broadway we saw large posters announcing the greatest wonder of any age, past, present, or future, which wonder was explained, in smaller letters, to be an imitation of the human form divine, impelled by steam, and approximating in agility the renowned Hanlon Brothers.

We paused, considered, entered the place of exhibition, and found the steam man in a perfectly nude state, with the exception of his hat. His other articles of dress were hung upon a line, as if to dry from them the prespiration they had absorbed in his severe exercise. We were at fault, however, in this supposition, as we were told by the steam gentleman's valet, who was giving his master a drink of benzine through a hole in his shoulder. This attendant told us that the grace of the steam man's movement, and the comeliness of his features had begotten a general desire in the minds of his admirers to see his manly proportions, and his modesty offering no protest he was accordingly disrobed for the benefit of the public.

We proceeded to take observations of his anatomy from divers points of view. The gluteal region, kindly protected from rude assaults of hostile boots in ordinary mortals, by thicker muscles than are found on other parts of the frame, was replaced on the steam man by a Behrens rotary engine, the contour of which would give, we may imagine, an outline—when covered by clothing—not unlike that demanded to sustain the resemblance to a man so far as this important portion of the human system is concerned.

This engine impels a screw, which actuates worm gears; the gears actuating eccentrics, which actuate the legs and feet, which actuate the entire man at a velocity of, we should say, about forty feet per minute, when doing his level best.

His legs are merely straight bars, with large blocks of iron