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(Illustrated articles are marked with an asterisk.)

NO LIMIT TO INVENTION.

That the mechanical arts have reached a very advanced stage of improvement, as compared with their status in medieval ages, cannot be denied. How far modern civilization, dependent upon progress in those arts, exceeds that of a more ancient period, is a difficult question to answer satisfactorily. The remains of Egyptian, Roman, and Greek architecture, together with such knowledge as can be gathered from a few Latin and Greek writers, and the discoveries recently made in the excavations among the ruins of Herculaneum, indicate that in many things the ancients were not inferior to us of the present day, while in others they probably possessed knowledge that was superior to that at present possessed upon the same subjects. The arts of stone cutting, fresco painting, and sculpture, the mathematics, and speculative philosophy, were cultivated by them with great success. Could the books and manuscripts lost in the wanton destruction of the Alexandrian library be restored, there is no doubt that many mathematical theorems and mechanical devices, considered as belonging to the present age, would be found to have their prototypes in the ages whose records were lost in that ever to be lamented conflagration.

However, it may not only be fairly presumed that we have regained the greater portion of the art knowledge of the past, but that we have explored vast fields of knowledge, the very existence of which was not even suspected by the ancients. As progress in the sciences has been made, the scope of mechanical invention has been also enlarged, until the number and variety of machines which have been produced, and applications of substances discovered in chemical research to the supplying of the necessities and luxuries of mankind, are beyond computation.

The questions naturally arise, how much further the inventive powers of the human mind can find scope; whether there is not a limit to progress in mechanical construction; or if not limited by want of materials, or subjects upon which to operate, whether the constant increase of labor-saving machinery, and the increasing supply of fabrics, will not at last reach a point where the wants of the human race will be so fully supplied that demand will cease, and thus, the necessary stimulus to further attempts at improvement no longer existing, the epoch of invention will not forever terminate. The discussion of these questions forms the subject of the present article.

The development of new resources is constant and increasing. Chemical research is being almost daily rewarded by important discoveries which add to the already vast resources of materials available for mechanical purposes. To the ordinary observer, it might seem as though these resources were sufficient already; but to show the fallacy of such an opinion, we will state a few of the wants now seriously felt in the mechanical arts, and the supply of which would give a powerful impulse to invention:

A substance perfectly flexible, impermeable to fluids or gases under heavy pressure, and not acted upon chemically by ordinary substances in general domestic use, oils, liquors, etc. A substance which can be produced in large quantities at a cheap rate, of as low a specific gravity as the body of a goose-quill, and with equal strength, that shall be easily molded into required forms. A substance having, or capable of having imparted to it a surface as smooth as the surface of water at rest. A method of producing the galvanic current in large quantity, as cheaply as heat is obtained from the combustion of coal. We might enlarge the list greatly, but our object is simply to illustrate the fact, that extensive as the mechanical resources in material might seem to be at first glance, there are still many deficiencies to be supplied.

That these deficiencies will be supplied we have not the slightest doubt, and their discovery will commence a new era in hydraulics, aerostatics, photography, and the construction of electro-motive engines. But could all such requirements be placed at once within our reach, we should find that in their utilization new and hitherto unsuspected necessities would arise for other materials and processes, which would in their turn become objects of research for the chemist or the metallurgist. Such discoveries would give rise to numerous inventions developed by the same gradual march of improvement that has characterized the history of the steam engine, navigation, and other departments of mechanical engineering.

Nor is it probable that the wants of the human race will ever be so completely supplied that demand for improvement will cease. Man, in a state of barbarism, has but few wants except those possesses in common with the animal creation. As he advances in the scale of civilization his wants increase in a far greater ratio than his progress. He is no longer an animal, satisfied with sufficient food, and warmth, and rest; his mind and affections begin to assert themselves, and to not only modify those wants which are purely physical, but to create new ones. Even if man could for a space find his every desire completely satisfied, the craving for variety, which is an attribute of the human intellect, would create new desires, and novelties in dress, in food, in amusements, would become not certainly essentials to his existence, but most surely they would be necessary to a refined and cultivated existence. "The eye is never satisfied with seeing, nor the ear with hearing;" and this universal truth is a sufficient guarantee that while skill can supply it shall always find a demand for its products.

WIND WHEELS---SOME OF THEIR ADAPTATIONS.

It is somewhat surprising that while in other countries the wind mill, or wind wheel, is extensively employed to save the labor of man and beast and the eating expenses of the steam engine, there are so few of them used in this country as stationary motors. No one, not even those who make its manufacture or sale a specialty, pretend that it can supersede either the steam engine or water wheel; but they claim, not without reason, that where neither of the others are available, or where the expense of their establishment and care precludes their employment, the wind wheel may be economically used. Our western prairies afford no water powers, and as they are not overburdened with fuel, the use of the steam engine is almost interdicted. In this respect parts of Holland and Belgium resemble these portions of our own country, as they are level and not wooded, but the wind mill is a prominent feature in the landscape. It is so also in other parts of Europe.

The wind wheel is not well adapted to such mechanical work as requires a steady, uniform motion, owing to the variable and unreliable character of the power; although it has been and still is employed to run the stones for grist mills. But for some of the services needed on the farm, especially for pumping water for cattle and for household use, it seems to be admirably adapted. It would appear, also, that while the wind wheel can elevate water for domestic or irrigating purposes, or for the draining of mines, it might be employed to produce a reservoir of that fluid to be used on a small turbine or water motor, to give motion to a sewing or knitting machine, a loom, or churn, and for various other purposes that will readily suggest themselves. Its first cost is light and its after management requires but little care.

ROUGE---ITS COMPOSITION AND USES.

In the mechanical arts rouge is used for polishing purposes. It is entirely different from the cosmetic known by the same name, which is a vegetable preparation and used only for the complexion. But the rouge used by machinists, watchmakers, and jewelers is wholly a mineral substance. In its preparation crystals of sulphate of iron, commonly known as copperas, are heated in iron pots, by which the sulphuric acid is expelled and the oxide of iron remains. Those portions least calcined, when ground, are used for polishing gold and silver. These are of a bright crimson color. The darker and more calcined portions are known as crocus and are used for polishing brass and steel. For the finishing process of the specula of telescopes, usually made of iron for large instruments—although lately cast of steel—crocus is invaluable; it gives a splendid polish. Lord Rosse prefers for the production of rouge the peroxide of iron precipitated by ammonia from a dilute solution of sulphate of iron, which is washed and then compressed until dry. It is then exposed to a low red heat and ground to powder.

To Deposit Copper, Silver, or Gold by the Electric Battery on Paper and other Fibrous Material.

The whole question is to make the paper a good conductor of electricity without coating it with a material which may peal off. One of the best methods is to take a solution of nitrate of silver, pour in liquid ammonia till the precipitate formed at first is entirely dissolved again, and place the paper, silk, or muslin for one or two hours in this solution. After taking it out and drying well, it is exposed to a current of hydrogen gas, by which operation the silver is reduced to a metallic state, and the material becomes so good a conductor of electricity that it may be electroplated with copper, silver, or gold in the usual manner.

An Electrical Thermometer.

One of the most interesting adaptations of electro-magnetism is an English invention for making electricity in connection with a thermometer regulate the temperature of a room. An ordinary mercurial thermometer is provided with a platinum wire connecting with the mercury in the bulb. Through the other end of the tube is inserted another platinum wire capable of being elevated or depressed. These two wires are in connection with the poles of a battery, and in the circuit is an electro-magnet whose armature controls the opening or closing of a valve for the admission of hot air. If it is desirable that the temperature of the air should not rise above sixty degrees Fah., the free end of the movable wire is brought to the required number on the tube. When the heat is such as to cause the mercury to rise to that degree, the electric circuit is completed, the armature closes the hot-air valve until the temperature is diminished, when the circuit is broken, and the valve again opened.

To the Disciples of Icarus.

From the number of letters received elaborating various plans for navigating the air, we are aware that there is a large class of our readers who are intensely interested in aeronautics, and for their benefit we announce the prizes to be awarded by the English Aeronautic Society at their approaching exhibition in the London Crystal Palace:

For the best form of kite or other aerial contrivance for establishing communication between ship and shore in the case of a wreck, or between two vessels at sea, $250.

For a machine whatever may be its motive power, which shall sustain itself in the air at a hight not less than ten feet from the ground for a period of twenty minutes, $250.

For an apparatus (not a kite or a balloon) that shall ascend with a man to the hight of 120 feet, $500.

For the lightest engine in proportion to its power, whatever the power may be, $250

Competition is free for citizens of every nationallty, and let our boasted ingenuity display itself to the amazement and gratification of our British cousins.

Meteors and Comets.

Professor Pepper, in his Lenten Lectures on "physical astronomy," at the London Royal Polytechnic, stated that fourteen years ago, Dr. Bedford discovered the relation between meteor and comet, and announced their actual identity; that at the time, and long since, it was regarded as mere theory; but within the last two years astronomers have proved the truth of Dr. Bedford's discovery, which was made by a careful comparison of recorded phenomena from the earliest times. The Professor said that it had been proved by five mathematical elements of the orbits of five several comets and meteors, and that the discovery is regarded as one of the grandest additions to astronomical science; and stated that Dr. Bedford has propounded entirely new theories of astronomy, which are most profound and very interesting, and well worthy of being studied.

A NEW TELEGRAPH PATENT FOR OLD INVENTIONS.

In March last an act was passed by Congress and approved by the President authorizing the issue to Charles Grafton Page of Letters Patent for alleged inventions in the science of electro-telegraphing, the position of Prof. Page as Examiner in the Patent Office disqualifying him from either taking out a patent or acquiring any interest therein without special legislation. Prof. Page died on the 5th instant, but prior to his decease, under the pretended authority of this law, a patent was granted to him which virtually hands over to his representatives the whole control of American telegraphy, entirely ignoring the claims of other recognized inventors, and taking from the public, rights they have enjoyed for years by the expiration of former patents. The heirs of Prof. Page now step in and insist upon securing to themselves the profits promised by this singular law.

The direct claim of Professor Page, as set forth in the law, was for the invention of the induction-coil apparatus known among telegraphers as the Ruhmkorff coil; but the patent covers much more than this. It embraces the "employment of one electro-magnetic instrument to open and close the circuit of another electro-magnetic instrument, using either one battery for both or separate batteries for each," which is, in fact, the famous "local circuit" years ago patented to Prof. Morse; the "combination of an automatic or mechanical circuit breaker with either a primary coil alone or a primary and secondary coil combined," invented and patented by Royal E. House; the "employment of separate and independent batteries to operate an electro-magnetic circuit breaker and the circuit which is broken by it," which is the famous "repeater" patented by Mr. Hicks; and, indeed, covers all automatic closers, repeaters, local circuits, and all points of value known in the electro-telegraph business.

The bill and the patent founded upon it are outrageous impositions upon the public, and will not for a moment stand the test of the courts. It is singular that Prof. Page's name should never have been known and associated with these important inventions, and that as Examiner of Patents for many years he should have passed favorably upon the claims of those who have secured patents for these very discoveries, which he afterward claimed to have originated with himself. The Morse and House patents have expired long since, and by limitation of law their inventions have for years been public property. The Hicks patent has yet some years to run. The truth is, the bill bears upon its face evidence of having been the work of lobby legislation, and the patent is glaringly absurd, unjust, and illegal. We understand that an effort is being made to induce some of the telegraph companies to buy up the pretended rights of Prof. Page's heirs; but we advise them to keep their money in their pockets and to take no notice whatever of the claim. The passage of such a law shows how careless and stupid our legislators at Washington have become since the small amount of brains they possess has been muddled up by impeachment, and the best thing