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Contents.

(Illustrated articles are marked with an asterisk.)

OUR FIVE HUNDRED THOUSAND DOLLAR COMMISSIONER TO VIENNA.

Another communication from the United States Commissioner to the Vienna Exposition, designed as a refutation of the facts presented in our editorial of last week, will be found elsewhere in this issue. It is devoted to the pointing out of certain errors in our article; and exception is first taken to a circular mentioned therein. After quoting the words of the publication, our correspondent makes the positive assertion that it never issued from his office "nor does it purport to be." We have but one comment to make upon this remarkable statement, which is that General Van Buren has evidently not taken the trouble to read the document in question; if he had, he could not with truth publish such a denial. The circular comes apparently from the Advisory Committee of Group 13—a body supposed to be appointed by the Commissioner—and concludes with these words: "Manufacturers of machinery *will address T. B. Van Buren, Commissioner of the United States*, 51 *Chambers street*, or the undersigned" (Professor Thurston, of the Stevens Institute). So far as our perceptive faculties extend this *seems* to come from General Van Buren; and even were his name omitted, the fact of Professor Thurston—who, by the way, is to be addressed only in the alternative—being his agent renders the Commissioner legally responsible for such official emanations.

"In all my statements upon the subject," our correspondent continues, "I have endeavored to give a careful and true account of what has been done," etc. Then we must sympathize with the General in the unfortunate failure of his well-meant efforts in this direction. In the sentence immediately preceding the words above quoted, he makes, innocently we are sure, assertions which are wholly without foundation, and on which he further enlarges in the succeeding paragraphs of his letter. We are informed: First, that the Austrian government has made concessions. Second, that a valuable trade mark treaty has been effected, which is strong evidence of Austrian good will. And third, that exhibitors in the Vienna Exposition are protected by a certificate which operates as a full patent.

What the "concessions" are we have yet to discover. As for the trade mark treaty—which, in connection with everything else relating in any way to Austria, seems to be regarded by the Commissioner through rose-tinted spectacles of the deepest hue—being any proof of Austrian good will or affection for this country, is sheer nonsense. The provisions of our law on the subject of international trade marks make the matter one of simple reciprocity; that is, we guarantee to protect the trade marks of a foreign nation if that nation will in return engage to do the same by us. The offer is open to the world. Large numbers of Austrian manufacturers export goods to the United States, and they want protection here for their marks; consequently it was to Austria's direct interest to take advantage of the treaty, and she did so.

As to that exposition certificate, we have repeated again and again, and proved our assertions beyond all peradventure by the best evidence, that it does *not* ensure one *iota* more of security against the infringement or piracy of inventors. It is simply an enactment, as a Vienna correspondent of the New York *Herald* truly states, "to allow inventors to bring their inventions to the Exposition and exhibit them and take a patent under the old law before the 31st day of December," after the show is concluded. It is manifestly *not* a patent, nor can we see how any one can trace in it the remotest resemblance to such; it may be refused by the Director General to any inventor or exhibitor *without appeal;* and it merely places the limit of the time during which an invention may be introduced into Austria without being patented at one year. It does not modify the obnoxious laws, nor is it anything beyond a decoy to deceive persons who, like the Commissioner, are inexperienced in Austrian patent law practice. These facts seem perfectly self-evident, and we cannot understand by what course of logic General Van Buren expects to persuade himself or any one else endowed with reasoning faculties to the contrary.

Our correspondent remarks that the opposition of a portion of the press, which by the way includes three of the New York dailies beside ourselves, will postpone or prevent the success of his endeavors in Washington. We hasten to say that such is precisely our intention, just so long as he persists in manœuvring to obtain any such exorbitant sum as half a million of dollars, the greater portion of which, according to his own showing, will be needed to pay his expenses and those of his assistants in Vienna. Now, in regard to these assistants: General Van Buren flatly denies that he has sixty-five sub-commissioners, or whatever they may be termed, or even one fifth of that number. The General should not rely so implicitly upon his memory. We have before us a circular: date November 15, 1872: signature T. B. Van Buren: contents, a description of the importance of the Exposition and a list of an advisory committee (of which the Hon. S. B. Ruggles is Chairman) composed of *thirty* gentlemen. Thirty is more than one fifth of sixty-five. The last mentioned number, let us explain, we specified under the impression that there were but thirteen gentlemen in the above mentioned advisory committee, coupled with the assurance of a member of said body that each person appointed four assistants, which made up a sum total of sixty-five. Now, however, it appears there are twenty-eight advisers, not including the chairman and secretary; consequently, instead of there being sixty-five officials, there are now one hundred and forty-three. Was the above described circular published by General Van Buren or by an irresponsible somebody? Or is it a forgery? Or were we grossly deceived by the gentleman who informed us that the Commissioner not only appointed but requested him to serve on the advisory committee? Or does our correspondent now mean to repudiate the whole document, and with it the gentlemen therein named? After thus disposing of our "error," the General proceeds to observe that the few persons he has appointed are scattered about the large cities distributing programmes, etc. We were not aware that New York had lost so many of her prominent citizens, or that such gentlemen had undertaken agencies for the Vienna Exposition; for we recognize very nearly all of the thirty advisers as well known residents of the metropolis.

The Commissioner closes his communication with the suggestion for the government to pay all the bills generally, and especially, of course, the expenses of a certain number of commissioners—said number, we naturally infer, is thirty. Now, as there is no earthly reason why one set of volunteer employees should be paid and not another, the hundred and odd assistants will doubtless expect to come in for a share of the spoils; so that the half a million of dollars will go but a short distance, and the unfortunate exhibitors in the end bid fair to be of very secondary consideration.

ASTRONOMICAL NOTES.

Under this heading, we publish in another column a variety of interesting astronomical information furnished for our readers by Professsor Maria Mitchell, Astronomer of Vassar College. From these notes, it appears that the surface of the sun has for some time past exhibited the presence of large numbers of dark spots, the movement of which across the great luminary attracts the attention of observers. These spots may now be seen through an ordinary opera glass, care being taken of course to protect the eyes by the interposition of proper colored media.

The precise character of these sun spots is still unsettled. Although to the eye of man they appear as dark or black bodies, it is certain that they are in reality very luminous; but they are less luminous than the surrounding portions of the sun's surface, and hence they appear dark to the eye, just as the most brilliant gas light appears black when interposed between the eye and the sun. The prevailing opinion based upon the spectrum observation, is that the spots are composed of thick luminous masses or clouds of gases of various substances, among which are found iron, calcium, barium, magnesium, sodium, hydrogen, aqueous vapor. Some observers think the spots have a semi-fiuid consistency, while Zöllner regards them as a kind of slag or scoria.

The positions and appearances of various heavenly bodies, to be seen on these clear winter evenings, as mentioned by our correspondent, will be read with general interest.

A REMARKABLE TEST PLATE.

One of the devices used by microscopists to test the correctness and power of their lenses consists of a glass plate, upon which lines of exceeding fineness are engraved by the diamond. For this purpose a small ruling machine is used, all the parts whereof must be made with unusual nicety. In Europe the test plates made by M. Nobert, of Prussia, have long been celebrated for the fineness of their ruling, and in this country those of Mr. L. M. Rutherford, of New York city. The expense of the best Nobert plates has been $100 each, and the finest rulings heretofore done have been 120,000 lines to the inch. There are few microscopists who have ever been able to see or resolve the lines of these plates owing to the difficulty of properly lighting the plate. Dr. Woodward, of the United States Army, is among those who have succeeded in doing so. He has not only seen them but has photographed the lines.

Professor F. A. P. Barnard, President of Columbia College, in this city, has lately received from Nobert a new test plate, ordered some two years ago, at an expense of $200, which surpasses in the fineness of its ruling anything heretofore produced. It is a slip of glass 3½ inches long and 1¼ inches broad, in the center of which the unassisted eye may discover what appears to be a mark perhaps the fiftieth of an inch in width. But when placed under the microscope this mark is found to be composed of a great number of parallel lines. The plate, in fact, contains twenty test bands, that is to say, twenty series of lines. Each series contains such a number of lines as will occupy or more than occupy the field of view of the microscope. The fineness of each band or series varies from a ratio of three thousand lines per square inch up to *two hundred and forty thousand* lines per square inch; this last band contains double the number of lines ever before ruled on a test plate. Nobert is said to have remarked, on sending this plate, that if the microscopist, on seeing these lines, found that they were not sufficiently fine, he would engage to rule a still finer plate. When Professor Barnard succeeds in seeing them, doubtless he will let us know.

ITALIAN INDUSTRIAL PROGRESS.

With the exception of 10,000 tuns of refined sulphur derived from the Roman mines, all of that material obtained from Italy comes from Sicily, and is exported in a crude state. The total value of the sulphur is nearly $5,200,000, not including the export duty of two dollars per tun, which is paid by foreign buyers. There are about 19,000 workmen engaged in this industry, 5,000 miners and 14,000 operatives employed in transportation, refining, etc. The carrying of the sulphur from the mines to ports of embarkation furnishes labor for 20,000 additional workmen.

The iron drawn from Italy and the articles made therefrom represent annually a value of $4,000,000. The production of the founderies does not exceed 22,000 tuns. The total product is but one fifth of the entire amount consumed in the country.

Lead and zinc are derived almost exclusively from Sardinia. Their extraction requires 10,000 workmen, and quantities to the value of $2,400,000 are produced. The lead ore is argentiferous but the silver is found in extremely small amounts. The zinc is exported to Belgium and England. The quantity obtained yearly reaches 60,000 tuns.

THE FAIR OF THE AMERICAN INSTITUTE.

The American Institute Fair formally closed on the 20th of November last. Mr. N. C. Ely, Chairman of the Board of Managers, delivered the concluding address, stating that the Exhibition had been on the whole successful, though at one period its receipts were seriously impaired by the stoppage of public travel through the horse disease. The usual congratulatory remarks to managers and exhibitors were pronounced, after which such premiums as had been awarded were published. Medals of special award were lavishly distributed on almost every prominent article in the Fair. Several recommendations, we learn, have been made for the Grand Medal of Honor, but no award of this distinction has as yet been made. As compared with previous exhibitions, the Fair has been fully up to the standard in the variety of entries and important inventions presented, though it was hardly expected that such would be the case, owing to the excitement of the late elections directing public attention into other channels.

As there still remain a few articles of merit to be noticed, most of which were recent additions to the Fair, we give brief descriptions of those which seemed to us most interesting.

ELECTRIC CLOCKS

were exhibited in various styles by Messrs. Himmer and Au tenrieth, 371 Pearl street, New York. The chief obstacle which inventors of electric clocks have heretofore had to encounter is the inequality of the electric current, which even from the most constant battery varied with the condition of metals, temperature, strength of solutions, etc. To avoid this difficulty, Mr. Himmer conceived the ingenious idea of combining the constant action of a weight with the electric current, so that, in his own words, "in place of driving the pendulum by the direct action of the electric current, when passed over helices of wires and charged by magnetic attraction, a little weight, of not more than half a grain, is used, which, by its descent, drives the pendulum, and which, after every oscillation, is lifted up to its former position by the electromagnetic power of the battery."

The clock is in fact wound up after every oscillation, the battery lifting up the weight a distance of only some quarter of an inch. As the latter is very light, an extremely small electric power is wanted to accomplish this labor For this purpose Mr. Himmer has invented the constant battery described in a recent number of this journal. Another advantage of the application of electricity to clocks is the possibility of moving the hands of any number of clocks through the oscillations of a single pendulum. This is effected by attaching, to the arbor of the second hand of the clock, a notched cam or break circuit, whereby, once during every revolution of the arbor or at any interval desired, connection is established and broken with any number of other clock works.

THE WOODBURY BRUSH MACHINE,

one of the most remarkable and ingenious inventions that has ever come under our notice, has been exhibited in actual operation. This device was fully explained in a recent number of our journal; its operation consists in inserting the the bristles in solid brush backs in such a way that it is impossible to remove them. During the tests made before the judges, the machine made tooth brushes and coarse scrubbing brushes with equal facility, placing the bristles in ebony,

ivory, and wood with wonderful accuracy. It received the highest praises in the official report of the experiments, and well merits, if it does not receive, the best award in the gift of the Institute.

THE CHAMPION SPRING MATTRESS,

manufactured by Messrs. F. C. Beach & Co., 141 Duane street, New York, deserves notice as one of the best of the many entered for exhibition. It is composed wholly of metal, no wooden slats or frames being used. It is therefore very durable. Helical steel springs are used, so connected as to make a perfectly elastic soft and level bed. This mattress is remarkably light, its largest size weighing but twenty-five pounds, and it rolls up like a blanket, is easily moved and transported. Just the thing for housekeepers. The springs are inlaid with a waterproof fire enamel so that the bed is serviceable in any climate.

THE SAWYER PLAITING MACHINE

will doubtless prove a valuable invention to manufacturers of shirts and similar garments made with numerous plaits. The device consists of two cylinders, in the lower one of which a heated iron bar is placed. As the cloth is passed between, a sharp steel blade is caused to rise and form a plait or fold of any desired width, which is smoothed perfectly flat by the action of the rollers.

THE AMERICAN WOOD PANELING MACHINE

is a novelty that cuts panels in hard or soft wood with remarkable accuracy. The board to be operated upon is placed on a table, which is so arranged as to be easily movable in any direction. On the plank, by a simple means of adjustment, are attached pieces which give shape to the panel and which guide the cutting instrument. The latter works vertically and its operating blade resembles an auger point, only constructed somewhat on the principle of solid cutters for sash molding; so that, when caused to revolve and pressed down upon the board, which is moved under it, it cuts a molded groove. By allowing the instrument to remove certain portions of the wood, either a raised or a sunk panel may be made, leaving nothing further to be done beyond smoothing the work by hand in the ordinary manner.

NEW PLAN FOR A LOCAL FIRE DEPARTMENT.

The town of Easthampton, Mass., has an excellent plan for a local fire department, which may be advantageously copied by communities who cannot raise funds sufficient to introduce regular water works, or do not desire to maintain steam fire engines in connection with a reservoir. In the above mentioned town, the Valley Machine Company, there doing business, are building a large bucket plunger steam pump with a capacity for discharging 500 gallons per minute, from which pipes have been laid through the streets, connecting with hydrants placed at suitable distances apart. These pipes are always kept full of water by means of a small auxiliary pump, and in addition to their fire purpose serve to supply the hotel of the place. The large pump, which, we may here add, was invented and patented by William Wright, for many years master mechanic in the Woodruff & Beach Iron Works at Hartford, Conn., is to be connected with a boiler in one of the manufacturing establishments of the town, where steam is always kept up, so that a stream of water can be obtained in a moment, in case of fire, by merely coupling the hose to a hydrant.

The citizens of Easthampton, in lieu of devoting a large sum yearly to the maintenance of a fire department, in addition to defraying the expense of the above described machine, set aside an amount annually for the extension of the pipes, so that each year a broader area is protected.

SCIENTIFIC AND MECHANICAL POSSIBILITIES.

Gas wells in various localities indicate that immense deposits of coal oil and petroleum exist in the earth, which may be at great depths; and New England may yet count it among her treasures, and large and enduring deposits, which few now dream of, be found. We may burn it for fuel as well as for illumination; by its use steam boats may cross the ocean, and locomotives fly by its aid. We are just beginning to learn the power of this new servant that man has awakened from the sleep of ages. The country also abounds in limestone, sandstone and bituminous shales, which, by scientific and mechanical aid, may afford an almost never ending supply of this wonderful material.

And notwithstanding the seemingly advanced state of the means of transportation, it is inadequate to the present wants of man. Steamboats and railroads do not even meet the wants of our own country. New England and the Middle States want Western and Southern products; and, *vice versâ*, the West and South want Eastern products at cheaper rates. Can the possibility of aerial navigation be doubted? Every year is bringing us nearer to the practical solution of this great problem.

If a light motive power is required, science may yet discover a cheap method of separating aluminum from our clay, some of which contains as much as 30 lbs. of this most wonderful material to the tun. This metal is three times stronger than steel and as light as chalk. On the very surface of the earth, we daily walk over a material from which the machinery for a motive power may be constructed of about one tenth the weight of iron or steel. In the oxygen of the atmosphere is abundant fuel which may yet be used to rarify the air for a motive power; other powers also exist in Nature, which will, no doubt, yet become the servants of man. One discovery opens vast and expansive avenues, leading to unexplored regions where munificent creative Nature hold in store rich treasures which the scientific hand may drag from her dark *arcana*.

He who engages his mind, his time, or his fortune in the development of scientific means for bringing forth from Nature's rich stores that which will add to the enjoyment, happiness and comfort of man is entitled to the greatest honors that can possibly be bestowed by an appreciative world. J. E. E.

REMARKABLE MAGNETIC STORMS AND AURORAS IN EUROPE.

On October 14 and 15 last, a brilliant aurora borealis was observed in Paris. At Brest, at 10h. 34m. on the evening of the 14th, the magnetic storm burst. M. Sureau, who was at the time closely watching the needle of the galvanometer, which was gently oscillating between 2 and 3 degrees, saw it leap suddenly to 25 degrees. All the working apparatus was suddenly attacked, and all the sounding machinery instantly set in motion, making a deafening noise, while the electro-magnets were strongly excited. It was also remarked that the currents acting on the telegraphic wires of Brest were directed from west to east. During October 16, 17 and 18, the disturbances in the telegraphs became general throughout France and probably through the greater part of Europe. The telegraphic service in France was thrown into complete disorder, necessitating the forwarding of the telegrams for Italy through the mails. These perturbations, which lasted three days, were, says *Les Mondes*, of a totally different character from those of the 14th and 15th of the same month. They were nothing more than instantaneous contacts, derangements analogous to those produced by mixing the wires; there were no longer the prolonged contacts and well defined waves which accompanied the polar auroras.

With the disturbances throughout nearly the whole of Europe appeared violent storms with thunder and lightning, which, in connection with a great barometric depression in Spain and in the southwestern portions of the continent, together with an exceptionally chilly temperature, have been remarked as extraordinary cosmic phenomena.

STEAM TRACTION.

Professor R. W. Thurston, of the Stevens Institute, delivered recently an interesting address before the Polytechnic branch of the American Institute. He showed conclusively that for heavy truckage on common roads and streets, the steam traction engine may be used with an economy of seventy-five per cent over the cost of employing horses. In other words, steam carts can be employed at only one fourth of the present expense of horse carts. During the subsequent conversation, the subject of steam street cars and carts was talked over, and one of the members expressed the opinion that the reason why horses were frightened at the steamers was because the animals were superstitious. They saw the machines were without horses, and instantly assumed that the movement was the work of the devil.

SCIENTIFIC AND PRACTICAL INFORMATION.

THE ELLIS VAPOR ENGINE.

A correspondent signing himself "Diameter," takes exception to a sentence in the letter signed J. A. H. E., on page 244 of our current volume, in which the writer says: "The theory that heat is converted into power in an engine, and thereby used up and lost, does not prove true in practice, as the experiments of Mr. Ellis fully show." J. A. H. E.'s pen must have slipped a little here. The Ellis engine is intended to save some of the heat that would otherwise be wasted. The difference of pressure—that is, of the heat—between the steam in the first cylinder and the bisulphide vapor in the second is a measure of the work done in the first cylinder, and the abstracted heat is converted into work. But as long as any heat remains in the vapor, more work can be obtained from it; and when all the heat is gone, no more work can be obtained. There is nothing in the Ellis engine to combat the theory of the convertibility of forces, and we do not think J. A. H. E. would maintain that there is.

DRYING AND COLORING NATURAL FLOWERS.

When blue or violet flowers are exposed to the smoke of a lighted pipe or cigar, a very surprising change of color takes place, the flowers becoming a magnificent green resembling Schweinfurt green, without any injury being done to the form of the flowers; and the deeper the original color, the darker is the green. Candy tuft (*Iberis umbellata*) and night violet (*Hesperis matronalis*) take an especially beautiful color. This phenomenon is caused by the small quantity of ammonia present in tobacco smoke, which converts blue and violet into green in the same manner as solutions of the alkalies do. The smoke blown from the mouth will not produce the same effect, because the ammonia is absorbed by the saliva of the mouth. Unfortunately this beautiful appearance does not last long; the flowers which have been exposed to the slightly increased temperature of the burning cigar wilt and become of a dirty yellowish brown color. The experiment is much more satisfactory when weak ammoniacal gas is used. To do this, insert the flower in the tube of a glass funnel in such a manner that the rim of the funnel projects an inch above the flower. A few drops of ammonia are dropped on a plate, and the funnel containing the flower is inverted over it; in a few minutes the most beautiful change of color takes place. Nearly all blue, violet, and light carmine flowers are changed to a magnificent Schweinfurt green. Dark carmine red pinks are colored black, the carmine flowers of *Lichnis coronata* become dark violet, while all white flowers turn sulphur-yellow. Variegated flowers show the most striking changes of color, the white petals turning yellow, and the red petals on the same flowers, green. If red fuchsias with white calices are treated with ammonia, the calix becomes yellow, and the red part, green and blue. After the change of color has taken place, put the flowers at once into fresh water, and they will retain their beautiful colors from two to four hours, according to the amount of ammonia taken up. Gradually, however, their former colors return, the green leaves passing through blue to the original color, without wilting. Lovers of flowers can in this way produce, as it were by magic, a *flora* which does not exist in Nature.

If the ammonia be allowed to act on the flowers for one or two hours, they acquire a permanent dirty chamois color, without wilting or losing shape, even when dried. Asters, which have no odor, acquire a sweet aromatic odor as soon as saturated with ammonia.

To give blue, violet, or red asters a beautiful red color, so that they can be dried to be used in winter for wreaths, it has heretofore been customary to immerse them in, or sprinkle them with, dilute nitric acid. This method did not produce very perfect flowers, because the wax in the petals of the flower prevented the acid attacking them equally. This produces irregularity in color, and when dry the form of the flower is also irregular, so that many of them are wasted, being unfit for use. These disadvantages are overcome by using hydrochloric acid vapors. Any wooden box can be used for the purpose. The box should first be provided with strings on which to hang the asters, and a piece of glass inserted on opposite sides of the box to watch the change of color. Then suspend the asters by pairs or double pairs, with the stems tied together, and in such a manner that the flowers hang down. On the bottom of the box are placed one or two plates of ordinary hydrochloric acid, according to the size of the box and number of flowers, and the box is closed. Small flowers are evenly colored in two hours, larger ones require four to six hours exposure to the acid. Red and blue asters become carmine red without injury to their form. It is necessary to examine the box from time to time, and to remove the flowers as soon as the change of color is completed.

After being removed from the box, the flowers are suspended in a similar manner in an airy but shaded room to dry. When dry, they are preserved in a dark dry place.

PURIFICATION OF DRINKING WATER.

Some time in 1871, Dr. Bischoff, Jr., took out an English patent for removing organic matter from drinking water by using a filter of spongy iron prepared by heating hydrated oxide of iron with carbon. This iron sponge not only purifies the vilest sewage water from organic matter, but also precipitates any copper present. It has, however, been found to possess this disadvantage, that the water so purified contains so much iron that it soon turns brown, and the iron separates in a copious precipitate in the form of the hydrated oxide of iron. This threatens to limit the usefulness of the discovery.

SOLDERING IRON AND STEEL.

Dr. Sieburger publishes the following methods for soldering iron and steel:

If large and thick pieces of iron and steel are to be joined, sheet copper or brass is placed between the perfectly clean surfaces to be united, which are then tightly wired together. The joint is covered with wet clay free from sand, and dried slowly near the fire. When the mud is dry, the joint is heated by a blast to a white heat and cooled, suddenly if iron, slowly if steel. When brass is used, it requires less heat, of course, than copper.

For objects of moderate size, hard brass solder is made by fusing together 8 parts of brass and 1 part tin. Soft brass solder is composed of 6 parts brass, 1 part zinc, and 1 part tin.

For soldering small iron or steel articles, a hard silver solder composed of equal parts of fine silver and malleable brass is used, the mass being protected by borax. Soft silver solder differs from this only in the addition of $\frac{1}{16}$ part tin.

Very fine and delicate articles are soldered either with pure gold or a gold solder composed of 1 part gold, 2 parts silver, 3 parts copper.

A CHEAP FIREPROOF SAFE.

A correspondent sends us a suggestion for a cheap fireproof safe, which he proposes to construct as follows: "Sink a well, six or eight feet deep, in the basement, and place in it a round or square boiler tube which should rise a little above the surface. In this tube place another, a little smaller and shorter, so that there will be space (at least two inches all round) between the two. Close the inner tube with a watertight door packed with a soft rubber ring, and let water fill the space and flow over the inner tube. Let there be an inch pipe from the bottom of the inner tube, leading under the walls of the building and rising out of the ground. The external end of the pipe will serve to admit air to the inner tube, and should be covered to prevent the admission of dust. Let a waste pipe lead from the top of the outer tube, and arrange a cock so that the water over the door of the inner tube may be drawn off. Fix two guide rods to the inner tube, and let an elevator with shelves pass up and down the rods, to lower your books into the well. The elevator when loaded can be counterbalanced with a weight. When you have placed your books on the shelves and lowered them into the well, close the door and let the water flow in till the whole is covered. As long as there is water in the outer tube, the inner one cannot become hotter than 212°. It will be easy to arrange so that the water can be turned on or let off without descending to the basement."

THE steam canal boat Success, built on Captain Goodwin's plan, illustrated not long ago in the SCIENTIFIC AMERICAN, lately arrived in this city from Buffalo, after a profitable and successful trip—her first voyage.