Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

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VOL. XXXVI., No. 14. [NEW SERIES.] *Thirty-second Year.*

NEW YORK, SATURDAY, APRIL 7, 1877.

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The Great Tay Bridge, near Dundee, Scotland. The largest railway bridge in the world; with 3 engravings, dimensions, particulars, method of construction, building, and sinking of the Iron Caissons.—The new Railway Bridge now being constructed over the Hudson River at Poughkeepsie, N. Y., with 1 engraving.

The Kentucky River Bridge; with general particulars and 2 illustrations.

The Fires of 1876; their number, character, and the aggregate losses.

The Bressa Prize for New Discoveries.—On the Ventilation of Rooms, by F. E. THICKE.

Recent Trials of the 81 Ton Gun, with 4 illustrations of the target and the remarkable effects of the shot thereon.—New Rivet-heating Furnaces; 2 engravings.

Cooper's Steam Boiler, with 5 illustrations.—Kendall and Gent's Machine for Drilling Boiler Shells, with 1 engraving.—Foucalt's new Device for Raising Water.—On the Racing of Propellers at Sea.

II. TECHNOLOGY.—Recovery of Gold and Silver from old flooring of plating establishments.—New Mode of Tempering Glass.—Unconscious Education.

Pipes for Gas and Other Purposes.—On Spigot and Socket Joints, with 3 engravings, table of weights of lead for joints.—Whitehead's Machine for Socketed Drain Pipes, with 3 illustrations.

On the Preservation of Foods by means of Salicylic Acid and its use in the Household. How to preserve Raw Meat, Milk, Butter, Fruits, Vegetables. How to purify the air of rooms, to Cleanse bottles, corks, etc., by Salicylic Acid. How to Print in Carbon.

III. CHEMISTRY, METALLURGY, ETC.—On the Solubility of Ether in Aqueous Hydrochloric Acid, by H. N. DRAPER, F.C.S.—On the Retardation of Chemical Reactions by Glycerin and other Matters. By DR. G. LUNGE.

On the Adulteration of Milk. By HENRY A. MOTT, Jr., of New York. A valuable and exhaustive paper.

The Fluorescent Matter in Atropa Belladonna.

IV. ELECTRICITY, LIGHT, HEAT, SOUND, ETC.—New Electrical Clock Regulator.—Early Experiments with Lightning, with eight engravings.—Duplex Telegraphy as practised in England.

Polariscope Objects, by W. SPOTTISWOODE.—Sympathetic Resonance.

V. ASTRONOMY.—The Moon: Abstracts from the remarkable work of Edmund Neison, lately published.—The plains, mountains, rings, craters, and other objects observed on the Moon's surface. The Moon's Atmosphere. Effects of her Glaciers. Ice, but no water, on the Moon's surface.—The Colored Belts on Jupiter.

VI. MEDICINE, HYGIENE, ETC.—Prevention of Cloudiness on Exploring Mirrors.—Carbon disulphide as an antiseptic.—Magenta in the Blood. Co ogne Water as an Anæsthetic.

VII. AGRICULTURE, HORTICULTURE, ETC.—Plan for a small Early Vegetable House, or Greenery.—Best Flooring for Stables.—The Digestive functions of Vegetables.—Immense flocks of Grasshoppers.

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THE PRESERVATION OF LEARNING.

Printing has been aptly styled the art conservative of all the arts. But what shall conserve the products of the art of printing?

As was shown in our recent suggestion "For Posterity," books and papers as they are now printed are exceedingly short-lived; and the chance that any existing print will be preserved a thousand years, if matters take their ordinary course, is slight indeed. Even of the writings that have been considered most sacred, and have been guarded most religiously, perfect copies a thousand years old are extremely rare. And when we take into account the vicissitudes of five, ten, or fifty thousand years, the likelihood that our remote posterity will retain any literary record of these days, or any exact knowledge of the civilization we enjoy, is too slight to be entertained for a moment. Yet it is certain that, whatever may be the condition of mankind at any future epoch far remote from us, such a record would be of inestimable value. Our suggestion, therefore, was that an effort be made to put into imperishable form some of the more valuable of the representative works of modern civilization, and store them away in some secure place for the benefit of future ages.

A correspondent, who favors the idea, suggests that the cost of imperishable stereotype plates might be saved by the use of gum copal. The fact that this substance has withstood the elements for such a considerable period, as is indicated by the conditions under which it is found, is ample proof of its durability under ordinary circumstances; and all that would have to be specially guarded against would be its possible exposure to fire.

The plan proposed is briefly this: To varnish on both sides the printed sheets to be preserved, and then by the application of heat and pressure mould them into solid blocks. This done, the blocks might be placed in earthen vessels and covered with melted copal. Thus, like flies in amber, the ideas of the present age might be fossilized and laid away in their integrity for the entertainment or enlightenment of times to come. Buried under public buildings, or other structures likely to remain in some form to challenge the curiosity of explorers—geologists, maybe, of some distant geological era—such fossilized records of our day and generation might be the only clue to the mental and moral condition of a type of humanity that had long since passed to the limbo of forgotten existences.

As we urged before, the cost of such a legacy to posterity would be small compared with the benefits it would carry. If the amended suggestion should be adopted, the relative cost would be infinitesimal. Before, we merely threw out a suggestion; now we would make a serious proposition. It is this:

In a few years one of the grandest monuments of the age will be erected in or near this city—the magnificent gift of France in commemoration of our Centennial year. When we are building the tower on which to set the colossal statue of Liberty giving Light to the World, let us make room in the foundation, or elsewhere, for a legacy of intellectual light to remote posterity. Without weakening the structure in the least, spaces might be left for storing our more precious and instructive volumes, duly embalmed in copal or otherwise, to remain undisturbed until the celebration of our tenth centennial year, or longer, in case the preservation of ordinary books and records should be more satisfactory than we have anticipated. This would simply be carrying out in a more scientific and comprehensive way the common practice of depositing newspapers and transient matter in corner stones. A more favorable opportunity for setting a signal example to the civilized world touching this matter is not likely soon to occur than in connection with the light-bearing statue of Liberty; nor a more appropriate opportunity. Let it be done!

THE BLUE GLASS EPIDEMIC.

The blue glass epidemic continues its silent progress; it is now quite common along our streets and avenues to see frames of the azure crystals hanging within dwelling house windows; while, on sunny days, the invalid grandfather or other patient, may be noticed basking in the ethereal rays, his countenance filled with hope, though streaked with blue. In one case, that of an old lady of seventy-four, that lately came to our knowledge, in her desire to secure the coveted benefits of the blue, she took her seat before the glass after the sun had nearly gone down, and in a short time declared that the blue glass had thrown her into a perspiration. This suggests the possibility that the blue glass may be used to better advantage, upon some persons, in the absence of sunshine, and perhaps in the absence of light.

The proprietor of an extensive medical bath-house informs us that, in deference to the demands of his patrons, he has placed blue glass in his windows; but the only practical effect thus far perceived is to make his premises dark and gloomy, especially on cloudy days. He states as the result of his observations, extending over several years, that patients derive the most benefit from air baths in pure sunshine, without the interposition of any glass whatever.

Upon what basis or evidence does the supposed power of blue glass upon the animal economy rest? Upon no other, apparently, than the ludicrous inferences and whimsicalities of good old General Pleasonton, whose ideas of science and mathematics seem to be sadly mixed. Being requested, by the President of the Philadelphia Society for Promoting Agriculture, to explain to that body the nature and facts of his discovery, he gave the following as its original experimental basis: On the 3d of November, A.D., 1869, he imprisoned three sows and a barrow pig, all weighing 203 lbs., in a common sty; and on the same day, three other sows and a barrow pig, all weighing 167½ lbs., in a blue glass sty. On the 4th day of March, 1870, the animals were weighed, and it was found that the common sty pigs weighed 537 lbs., the blue glass pigs 522½ lbs. Allowing for the original difference in weight, this showed a gain for the blue glass pigs of 21 lbs., or 5¼ lbs. each pig, in four months' time. From these and other comparisons the General infers that "it seems obvious that the influence of the violet-colored glass was very marked." He, however, states that the barrow pig in the common pen increased 151 lbs., while the barrow pig in the blue glass pen only increased 124½ lbs. Here is a gain of 26½ lbs. in a single animal in the common sty over a single animal confined in a blue glass sty. The General explains this by saying that the common sty pig was a strong fellow who stole more food from his companions than well behaved swine are expected to take. But any person not a blue glass believer would naturally infer that the reason why the common sty pig gained 26½ lbs. over the blue glass pig was that, for barrow pigs at least, the blue glass was a damage rather than a benefit. After mentioning these pig experiments and that of a calf, the General proceeds to explain to his hearers that it is electricity evolved by blue glass that makes it so powerful; it is electricity, he says, that produces the sparks that we sometimes see when a horse's shoe strikes the pavement; electricity, he says, ignites the hydrogen gas which is evolved when two sticks of wood are rubbed together until fire is produced. But here the General's science is as lacking in weight as his blue glass barrow pig. It is the affinity of oxygen for the heated particles of iron or wood that causes the spark and the combustion he mentions, not the evolution of hydrogen or electricity.

It is well known that Dr. Crookes' admirable little instrument, the radiometer, is very sensitive to electricity; and if, as the General supposes, the blue glass rays have superior electrical or other power, the vanes of the instrument should rotate faster under blue glass than under common glass. But a friend of ours, who lately tried the experiment, reports that, while his radiometer made 135 turns per minute in the sunlight, behind ordinary window glass, it fell to only 60 turns a minute when placed behind a sheet of General Pleasonton's blue glass. If, then, we designate 135° as the indicated power of common light in this experiment, we lose 75° of power by the use of the General's blue glass; which corresponds relatively, to some extent at least, with the loss of pork power experienced by the General in the use of his famous blue glass experiment upon the barrow pig.

A CURIOUS HISTORY OF AN OLD INVENTOR.

A queer bit of history concerning an inventor has recently been unearthed in England, which may well serve as a companion piece to the interesting article on Papin's achievements, which Professor Joy recently contributed to our columns. Solomon De Caus was engineer and architect to Louis XIII., King of France; and he stands fourth in chronological order on that list of the original discoverers of steam power, which is headed by Hero of Alexandria. In 1615, De Caus published a book quaintly entitled the "Causes of moving forces, with divers machines useful as well as pleasant," in which he states that "water will, by the aid of fire, mount higher than its level;" and he describes a globe filled with water and an attached vertical pipe, through which the water was elevated by the expansion of the steam generated by heating the vessel. This is the sum and substance of De Caus' discovery, but it is obviously one of importance; and even in the early period when it was produced, it attracted the attention of scientific men, and among others that of the Marquis of Worcester. That noble inventor seems to have appropriated De Caus' idea, and many years later he described in his "Century of Invention" a substantially similar device to De Caus', which he constructed and operated, and on which his fame as another original inventor of the steam engine is founded.

So much for fact and for De Caus' work, and by way of preamble to his history. That record, as usually met with, is to the effect that Solomon one day suddenly vanished, that he fell a victim to royal jealousy, and that he was imprisoned for being ahead of his time. Subsequently he went mad, and was shut up in an asylum, and there he was visited, says the chronicle, by the Marquis of Worcester, who, during a lucid interval of the unhappy inventor, obtained from him the secret of his discovery. All this makes a very tragic story, which the world has credited for about forty years, and which has placed Solomon de Caus in pop-