

HYDRIODIC ACID.

Dr. W. Gill Wylie, of this city, calls attention in the *Medical Record* to the value of hydriodic acid as a therapeutic agent in certain cases where the use of potassium iodide is indicated, but where the continued use of the latter would irritate the stomach and seriously interfere with digestion. Hydriodic acid, which is not even mentioned in the text books on therapeutics, is prepared by mixing say 60 grains of potassium iodide with 90 grains of tartaric acid, dissolving in water, and adding sufficient heavy sirup to make four fluid ounces. The object of the sirup is to prevent a decomposition whereby the iodine would be set free. The case that first suggested this remedy was one of asthma of long standing. On trial it was found that one teaspoonful of the above mixture had as much influence on the bronchial surfaces as twenty grains of potassium iodide, and produced no bad effect whatever on the stomach. The author states that for the past six years he has had uniformly good results in the use of hydriodic acid in bronchitis, and in chronic or subacute catarrhal diseases. He has found that it acts as an irritant and does more harm than good, however, in acute febrile stages. He has also used it in chronic malarial poisoning, and in Grave's disease, and recommends its use in place of iodine in goiter and adipose tumors. In a case of the latter he found that it relieved the dull pain about the tumor and slightly reduced the bodily weight of the patient, who was very fleshy. In the use of the new remedy Dr. Wylie says that he has seldom found it necessary to increase the usual dose to obtain the desired effect.

PNEUMATIC CLOCK.

The pneumatic clocks that were exhibited in the Austrian and American sections of the Paris Universal Exhibition of 1878, were described by us not long since. We give herewith an engraving, which we take from *La Nature*, of a form of pneumatic clock that has been in use for some time in France. It is a large town clock, something like the one which has been in use at Notre Dame since 1867.

The transmission of time by the compressed air and vacuum is effected by means of a piston that moves freely in a pump barrel. The piston is of considerable length and is air-packed, so that little or no air escapes around it.

Every minute, or every half minute, the clock elevates the piston, creating an air pressure in the pneumatic tube, which operates the hands of a distant clock. The piston is allowed to descend after each upward stroke, producing a vacuum, which returns the parts to their original position preparatory to another forward movement of the hands as the piston again descends.

Active Volcanoes in Java.

The latest accounts from Singapore state that the volcanoes in both the eastern and western districts of Java are in full activity. A broad river of fiery lava was flowing from the crater of Smeru down to the southern coast, illuminating all the neighborhood at night with its ruddy light. The Gedeh mountain was ejecting an enormous amount of cinders, which were completely covering all the surrounding district.

A Toy City.

A notable example of patient, long-continued, ingenious, but utterly useless labor, is described by a correspondent of the *Amherst (Mass.) Transcript* as on exhibition in Boston. It is the work of a German-American cabinetmaker, Joseph Bergmann, who has been engaged upon it for seventeen years. It represents a city, built in the Swiss style, with mansard roofs, bay windows, and a series of balconies with verandas, etc. The structure stands on a base, representing a hillside, a ledge of rocks with underground railways, etc. There are sixty-five automatic workmen, at work in the mills and about the village, as natural as life. The motive power of the mills is furnished by two overshot water wheels, the lower one taking the waste water and running at right angles with the upper one. The remainder of the machinery, as well as the automatic workmen, is run by weights. The city, or village, is surrounded by trees and

shrubby, drives and walks, a playing fountain, a running stream, a miniature lake, and all that goes to make up the picturesque in nature. The basement of the principal building is occupied by a linseed oil stamp mill in full operation, with three workmen. On either side is a tunnel through which trains of cars pass. At the rear of the building is a blacksmith's shop; the bellows are blowing, the fire on the forge glows, and two blacksmiths are busily engaged in alternately heating a bar of iron and pounding it on the anvil, the strokes of their hammers being distinctly audible. A third is shoeing a horse, the proprietor is at work, and the wife of the last is just entering, bearing her husband's dinner. The third story is occupied by a grist mill, the smut mill being below, both in full operation. One man is dressing the stone for the hopper, while a second supplies the hopper with grain from a neighboring room; the latter empties his measure from his shoulder, returns it in a natural manner, and passes in and out at the door, closing it after him each time. An elevator ascends on the outside from the basement with a load of grain, dumps it, and descends again to be refilled. Just below the elevator the millwright goes up and down on a ladder. Under an oak tree's kindly shade, near the banks of a murmuring stream, sit two lovers, who, by their motions and gestures, would appear to be carrying on an animated conversation. To the right center of the building is a sawmill. The log is propelled on the carriage, the upright saw passes through it slowly, it is then giggered back, the man at the end sets the log for a new cut, and a fellow workman opens the flume gate, restarting the machinery. A third man is engaged sharpening a hand-spike with an ax. The fifth and top floor of the edifice is supposed to be the residence of the proprietor. The windows are sashed, the doors paneled, and the floor made of

characteristic of all anthracite coal. There are three veins of the coal, one of which is seven feet thick, another two and one half feet, and the third of unknown thickness, while there are indications of a seam lying beneath the seven foot vein—the one now worked—of the same or greater thickness. Outcroppings of the veins are traced for many miles. The analysis of this coal as compared with the average grade of Pennsylvania anthracite is as follows:

| | Sonora Coal. | Pennsylvania Coal. |
|-----------------------|------------------|--------------------|
| Fixed carbon..... | 94 to 96 per ct. | 85 per ct.(about). |
| Ash..... | 3 to 4 do. | 10 do. |
| Moisture..... | 1 to 2 do. | 4 to 5 do. |
| Sulphur..... | 00 do. | a trace. |
| Bitumen..... | 00 do. | a trace. |
| Specific gravity..... | 1.77 | 1.50 |

The dip of the discovery is 26° toward the opening, rendering the mine easy of drainage and cheaply worked. The length of the branch from the main line at Noria del Valle (32 miles from Guaymas) necessary to reach the mine is 98 miles. It is estimated that after the construction of the road the coal may be marketed in San Francisco and South American ports at \$8 to \$9 per ton.

Medical Photography.

At a recent meeting of the Photo Section of the American Institute, in this city, Mr. Mason exhibited to the Section some photographs of subjects taken at his studio in Bellevue Hospital. In his remarks he said:

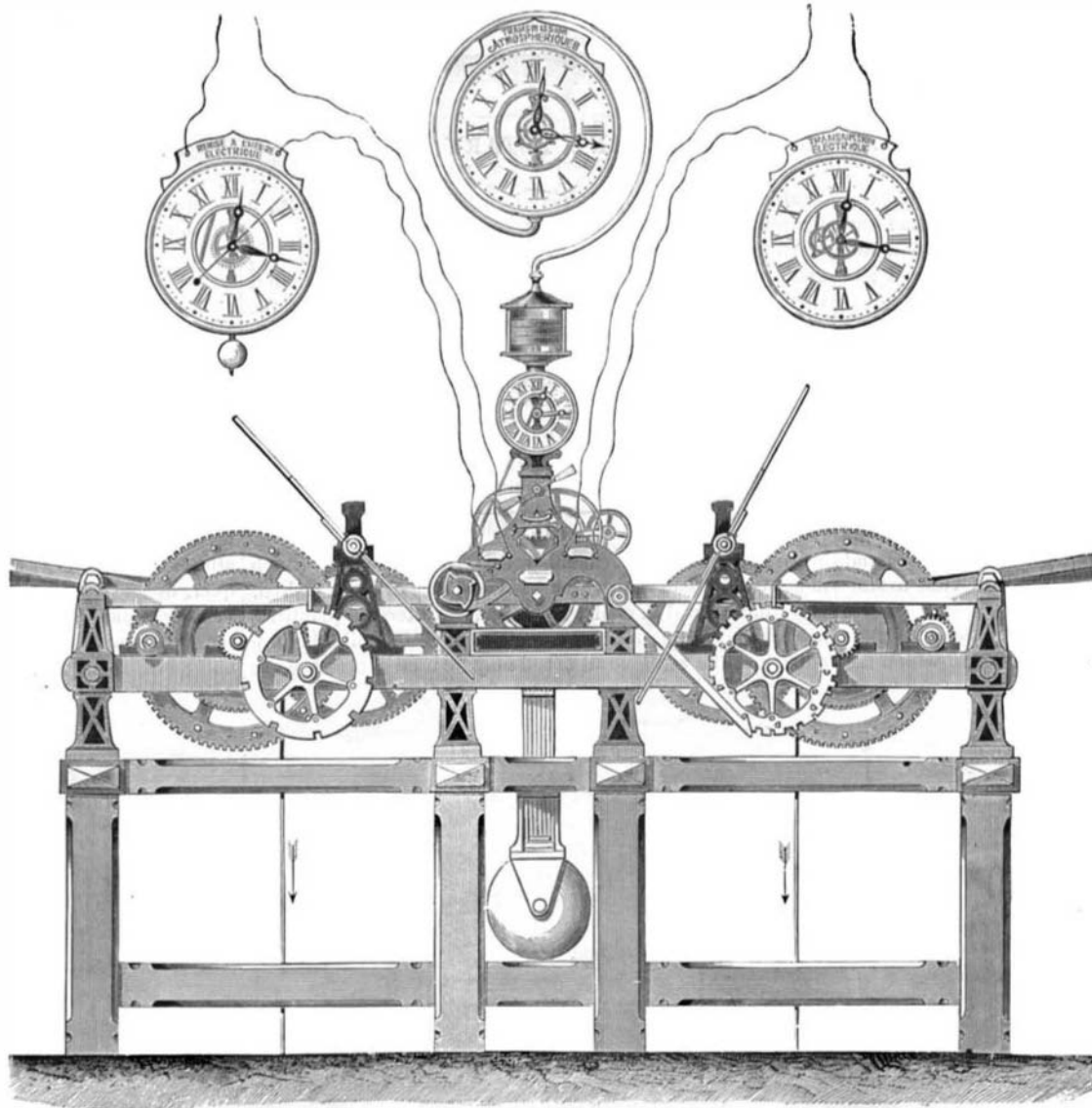
I do not exhibit these prints as specimens of fine photographic work, but as curiosities of disease and how photography is used to illustrate disease. Some of them show the patient both before and after treatment. Such subjects are not very easy to keep still a long time, because most of them are in pain. Something more than ten years ago I was requested by several members of the surgical staff

to illustrate the diseases treated at the hospital, and, after considering the matter some months, finally accepted the proposition, and was appointed the official photographer for the department. There were at that time only three surgeons on the staff who seemed to have an idea that photography could be made useful, or, rather, that it might prove an important adjunct to their work. These three had their most important cases photographed when they were received, and after an operation or when they were discharged. After two or three years other members of the staff, seeing the importance of the work, slowly came in for their share, until at the present day the men who first took little or no interest in the introduction of photography patronize it the most extensively. I made for some of these surgeons a large number of prints of important cases, of which some are sent to Europe to illustrate the processes used in the treatment of diseases in New York. I make three copies, which I furnish free—one to the visiting surgeon in attendance, another to the house surgeon who has charge of the case, and another print I mount in the books of the hospital. Other prints are made on the

surgeons' private orders at little more than cost price. When you refer to the hospital books provided for the last few years, you can find the most important surgical cases not only fully described but illustrated. Many observers have thus been able to avoid mistakes and errors which have been brought to their notice through the means of photography. Thus we see that the surgeons and histologists, like most other scientific men, are more or less dependent on photography in recording for others what they are doing.

Unshod Horses.

It has been before stated that an experienced farrier in England was advocating the abolishment of horseshoeing, and now a writer in the *London Times* has been trying the experiment, and thus reports: "When my pony's shoes were worn out I had them removed, and gave him a month's rest at grass, with an occasional drive of a mile or two on the high-road while his hoofs were hardening. The result at first seemed doubtful. The hoof was a thin shell, and kept chipping away until it had worked down beyond the holes of the nails by which the shoes had been fastened. After this the hoof grew thick and hard, quite unlike what it had been be-



COLLEN'S PNEUMATIC CLOCK.

matched boards not over an eighth of an inch wide. Paintings, with gilt frames, and lace curtains adorn the apartment, which is complete in all the details belonging to a drawing room. A similar exhibition in Brooklyn recently gave no evidence of the skillful labor attributed to Bergmann's work, as described above. Whether it was the same or not, we do not know.

Anthracite Coal in Mexico.

According to the *San Francisco Mining and Scientific Press* Sonora possesses a vast field of anthracite coal—the only anthracite yet discovered on the Pacific coast. It is said to belong to a very old geological formation, probably Silurian or Devonian. The only outcrop which is at present worked lies about 120 miles northeast of Guaymas, and a branch line of the Sonora railway is contemplated to develop it. The mine is a few miles north of the flourishing mining towns of La Barranca and Los Bronces, each supporting some 2,000 inhabitants. The coal has been used for two years for steam purposes at the Barranca quartz mill, it containing less ash and leaving no clinkers on the grate. It burns with the short blue flame of carbonic oxide, which is

fore. I now put the pony to full work, and he stands it well. He is more sure-footed; his tread is almost noiseless; his hoofs are in no danger from the rough hand of the farrier; and the change altogether has been a clear gain, without anything to set against it. My pony, I may add, was between four and five years old—rising four. I fancy, is the correct phrase. He had been regularly shod up to the present year.”

RECENT MECHANICAL INVENTIONS.

An improved hand stamp for canceling postage stamps, and printing, dating, and marking generally, has been patented by Mr. Wm. J. Blackwell, of Waynesborough, Va. The press has a cam shaft which moves the stamping devices, and a sliding plate, in such a way that when the plate is moved back to uncover the ink pads the canceling stamps are forced down upon the pads.

An improved brake for wagons has been patented by Mr. William de Ray, of Murray, Ky. It is constructed so that it will be applied by the team in holding back, and will be taken off as the team draws forward. It is provided with means for locking it in either position.

Mr. John H. Jenner, of Leavenworth, Ind., has patented an improved brake lever for wagons. It consists of two levers, the principal one fulcrumed to the wagon body or frame, and the other pivoted to it and connected with the brake rod. The slack motion is taken up by the second lever, and the brake is applied by the principal lever.

An improvement in magazine firearms has been patented by Mr. Peder Bergersan, of Cheyenne, Wyoming Ter. The breech mechanism is opened and closed by means of a lever hung on a pin that passes through ears projecting from the underside of the trigger plate. The firing bolt or hammer is straight and is operated by a spiral spring. The gun may be used as a magazine gun or as a single breech loading rifle.

An improved machine for flinching, grooving, and beveling barrel staves when set up in barrel form, has been patented by Mr. Thomas McKeever, of Pittsburg, Pa. It consists in a hollow cutter head carrying the grooving and crozing knives, and in peculiar mechanism for holding the barrel while being grooved and crozed.

Mr. C. Sullivan, of Three Rivers, Mass., has patented an improved spooling guide, which consists of a flanged and slotted head in which is a slotted plate held in a horizontal position by set screws. From this plate rises the guide, which is composed of two crescent shaped arms turned in opposite directions; with this device the yarn can be fed very evenly.

Mr. Wilson N. Fort, of Lewisville, Ark., has patented an improved rotary engine, which consists in a peculiar arrangement of a double rock valve, and hollow inlet and outlet valves, the whole being arranged with a view to simplicity and durability.

Messrs. John E. Duncan and Alanson B. Alden, of Bos-cobel, Wis., have patented a permutation lock, in which the combination is set by the act of locking, and in unlocking the parts are readjusted, so that the combination is not set while the lock is unlocked.

An improved hair trigger for firearms, which is complete in itself and may be applied to any kind of firearm without change in its construction, has been patented by Mr. Emil A. F. Toepperwein, of Boerne, Texas.

Messrs. N. B. Gunn and A. D. Mendenhall, of Elwood, Ind., have patented an improved apple corer and cutter, in which the tube and its radial knives are detachably secured to the slotted sliding board, so that the machine may be readily taken apart for cleaning.

An improvement in gun locks, patented by Mr. Thomas Duncan, of West New Annan, Nova Scotia, consists in a stop pivoted under the end of the mainspring close to the swivel and controlled by the trigger and a spring.

Mr. F. H. Purenton, of Brunswick, Me., has invented an improved sectional steam boiler, having a lower section or water chamber surrounding the fire chamber, and connected with an upper section by means of inclined pipes, the said upper section being provided with curved flues that communicate with the smoke stack.

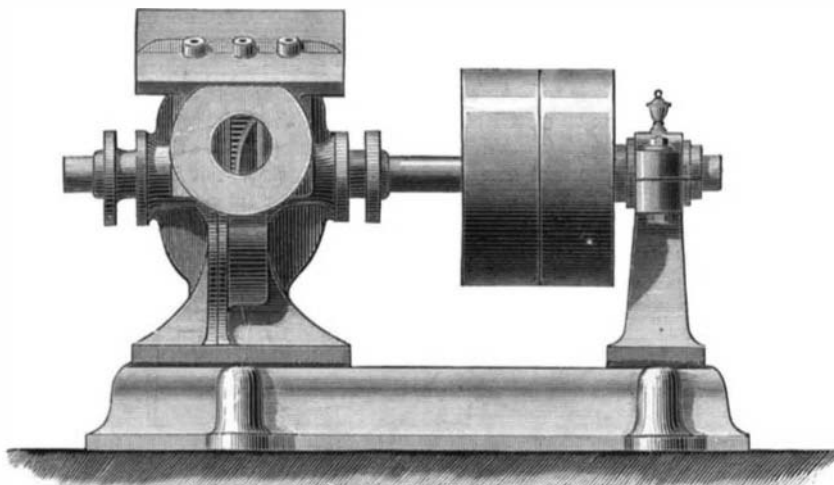
Spontaneous Combustion.

The St. Louis *Republican* gives this account of the origin of a recent mysterious fire in that city: A well authenticated case of spontaneous combustion occurred recently in the suburbs of Oak Hill, the residence of Mr. Edward Mead,

the jeweler, furnishing the sensation. The circumstances of the fire were, fortunately, such as to leave no doubt regarding its cause, and these circumstances are especially interesting in a city where fires of a mysterious origin have been remarkably frequent. The fire proved to be the result of spontaneous combustion, and from a cause which has been the one usually credited with effects of the kind. Some of the floors in Mr. Mead's house had lately received a thorough coating of colored varnish, and, in the polishing, hemp cloths (squares cut from sacks) had been used. One of these sacks, saturated with the varnish, had been put in the basket for further use. It had of itself smoldered, and finally produced the fire. The case is a curious one, and of value from the knowledge it affords of a dangerous combination.

A NOVEL ROTARY PUMP.

Ortman's rotary pump, which is shown in the accompanying engravings, is made by Messrs. Van Goethen &



ORTMAN'S ROTARY PUMP.

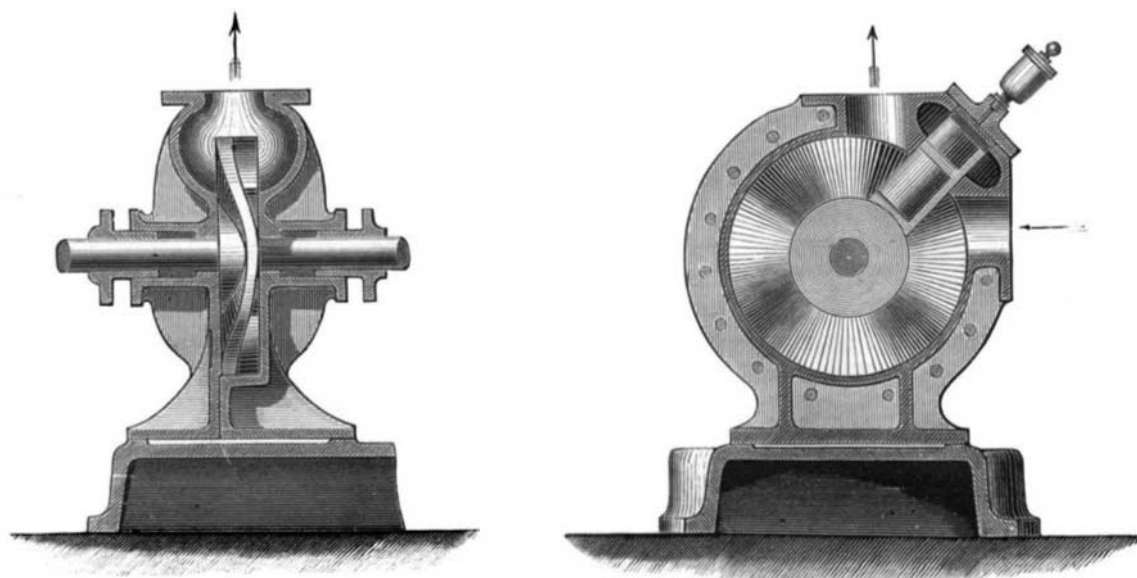
Reallier, of Brussels. It may be used either as a pump, a hydraulic motor, or an air compressor.

An undulated disk is fitted accurately to the pump casing, and in a transverse chamber, which intersects the cylinder, there is a slide, which is slotted to receive the edge of the undulated disk. At opposite sides of the slide there are openings in the casing for the ingress and egress of water. The slide acts as the abutment, and the undulated disk as the piston.

A pump of this kind, having a 39 inch disk, will deliver nearly 18 gallons per revolution and may be driven at the rate of 150 revolutions per minute.—*Cronique Industrielle*.

Glue.

Carpenters should remember that fresh glue dries much more readily than that which has been once or twice melted. Dry glue steeped in cold water absorbs different quantities of water according to the quality of the glue, while the proportion of the water so absorbed may be used as a test of the



ORTMAN'S ROTARY PUMP.—VERTICAL SECTIONS.

quality of the glue. From careful experiments with dry glue immersed for twenty-four hours in water at 60° Fah., and thereby transformed into a jelly, it was found that the finest ordinary glue, or that made from white bones, absorbs twelve times its weight of water in twenty-four hours; from dark bones, the glue absorbs nine times its weight of water; while the ordinary glue, made from animal refuse, absorbs but three to five times its weight of water.—*Building News*.

Carriage Pigeons.

The carrier-pigeon service is now in full operation in France. The number of birds fed by the government is 6,000. These pigeons are located in Paris and twelve other large fortified towns. A number of soldiers and officers

have been taught the art of pigeon breeding, and carriers are constantly sent from place to place. The Minister of Public Instruction and the Minister of Agriculture have established prizes for pigeon races.

Splitting Paper.

It is one of the most remarkable properties of that wonderful product, paper, that it can be split into two or even three parts, however thin the sheet. We have seen a leaf of the *Illustrated News* thus divided into three parts, or three thin leaves. One consisted of the surface on which the engravings are printed; another was the side containing the letter press, and a perfectly blank piece on each side was the paper that lay between. Many people who have not seen this done might think it impossible; yet it is not only possible, but extremely easy, as we shall show.

Get a piece of plate glass and place on it a sheet of paper; then let the latter be thoroughly soaked. With care and a little dexterity the sheet can be split by the top surface being removed. But the best plan is to paste a piece of cloth or strong paper to each side of the sheet to be split. When dry, violently and without hesitation pull the two pieces asunder, when part of the sheet will be found to have adhered to one and part to the other. Soften the paste in water and the pieces can be easily removed from the cloth.

The process is generally demonstrated as a matter of curiosity, yet it can be utilized in various ways. If we want to paste in a scrap-book a newspaper article printed on both sides of the paper, and possess only one copy, it is very convenient to know how to detach the one side from the other. The paper, when split, as may be imagined, is more transparent than it was before being subjected to the operation, and the printing ink is somewhat duller; otherwise the two pieces present the appearance of the original if again brought together.

Some time ago the information of how to do this splitting was advertised to be sold for a considerable sum. We now impart it to all our readers gratuitously.—*B. and O. Printer and Stationer*.

Sir Henry Bessemer.

Mr. Henry Bessemer, of Denmark-hill, Camberwell, on whom her Majesty has been graciously pleased to confer the honor of knighthood, in recognition of his services in the manufacture of malleable iron and steel, and in numerous other inventions, is a son of the late Mr. Anthony Bessemer, of Old Broad street, London, and subsequently of Charlton, Hertfordshire, where he was born on the 19th of January, 1813. He was, to a very great extent, self-taught, and at twenty years of age exhibited a design at the Royal Academy, then located at Somerset House. He first attracted the attention of Lord Althorp, then Chancellor of the Exchequer, by an ingenious contrivance which he made for preventing frauds which were carried on upon a large scale by the transference of stamps from old documents to new ones; but, though the saving to the public purse was estimated at nearly £400,000 a year, he never received any remuneration for his ingenuity. In 1856 he read before the British Association, at Cheltenham, his first paper on the manufacture of malleable iron and steel, which has given him a world-wide name—literally so, for the Americans have christened after him a thriving new town on the Cincinnati Railway, and “Bessemer metal” has become current in most of the languages of civilized communities. Mr. Bessemer's great inventions have been recognized both at home and abroad, for the Emperor of Austria conferred on him the rank of a Knight Commander of the Order of Francis Joseph, and the late Emperor of the French offered to his acceptance the Grand Cross of the Legion of Honor, in consequence of a report from the

jurors of the Universal Exhibition of 1867 that his invention was of exceptional merit. He has also been the recipient of the Albert Gold Medal, presented to him by the hand of the Prince of Wales. It is stated by Blanch, in his “History of Camberwell,” that in the course of his various experiments, Mr. Bessemer has taken out more than one hundred patents, and has paid to the Crown as much as £10,000 for stamps alone.

A PLAGUE of locusts fell upon the province of Caucasus, Russia, during April. Vineyards and fruit gardens were utterly destroyed. The water courses were choked by the swarming pests, and the village streets were so blocked by them that the shops were shut and all traffic suspended.