and the guys are elongated by the intermediation of the chains over the distance, E' F'. The arm is lifted by the reverse operation. Steam is admitted into the cylinder, and the crane is swung upward until caught as before by the catches. We extract our engraving from the *Revue Industrielle.*

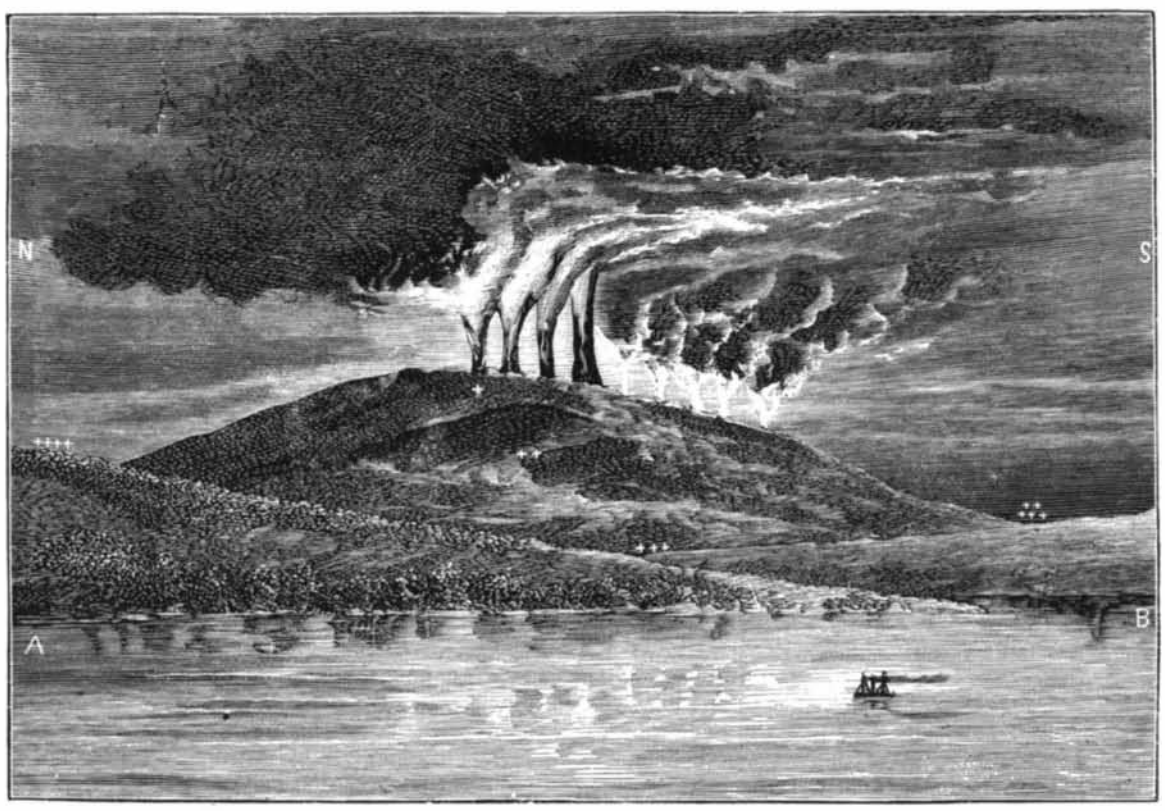
Wrought Iron Girder Work.

Mr. Graham Smith, in a paper read before the Liverpool Engineering Society upon wrought iron girder work, stated that one of the first and principal requirements in designing wrought iron girder work, was to have a proper sense of the limits of application of theoretical deductions. He then showed that, in order to be able to design an iron girder, something more than proficiency in mechanical calculations was necessary, many circumstances having to be taken into account which experience has shown materially affect the structure, when exposed to variations of strain and temperature. In the designing of their bridges, American engineers compared very favorably with their English brothers. The life of an iron girder depended upon the strains to which it was subjected being kept well within the elasticity of the iron; and when engines and rolling stock were increased in weight beyond what was originally estimated, and this limit was passed, we ought not to be surprised if a bridge did give way now and then. Another point upon which the durability of an iron structure depended, was the state of efficiency in which the paintwork was maintained. He gave some valuable remarks upon preparing ironwork for painting, laying special stress upon care being taken with work for abroad, in situations where it would subsequently receive but little attention. Mr. Smith thought engineers did not sufficiently consider the sizes of iron to be employed in executing their designs. It was well known to manufacturers that iron above certain sizes and weight commanded extra prices, and it was shown that carelessness in this matter would sometimes double the cost of a structure. It was considered very desirable to test all the iron to be used in constructing girders; and he showed how this was to be done in an efficient manner. Various small matters connected with the riveting and construction generally, were brought forward in an amusing manner, fully demonstrating the necessity of having a working inspector always on the ground. Mr. Smith then went at some length into the preparing of drawings and specifications, and concluded by referring to Barff's process of coating iron with magnetic oxide.

THE GREAT ERUPTION AT HAWAII.

M. Ballieu, Consul of France at Honolulu, has sent to his government a detailed account of the great volcanic eruption which occurred at Hawaii on February 14 last. The phenomenon took place on Mauna Loa, at about nine o'clock in the evening. Nine great jets of flame and smoke burst from the crater of Mokuaweoweo, and united in an immense column which rose to a height of 16,000 feet. The nine fires appeared to form two groups—one of four, the other of five columns, the latter being the more brilliant. The scene is depicted in the engravings herewith given, which we extract from *La Nature.* Fig. 1 also conveys an excellent idea of the location of the volcano. N and S respectively indicate the north and south points, + is the crater of Mokuaweoweo, ++ is Mauna Loa, +++ the central plateau, ++++ is the town of Kaw; A represents Kawaihe, and B Hualailai. Viewed from Hilo the jets all seemed joined in one vast spout of fire, as represented in Fig. 2.

The eruption, a full description of which we published some time ago, lasted but six hours, and was followed nine days afterwards by earthquakes and a submarine eruption near Heei Point.



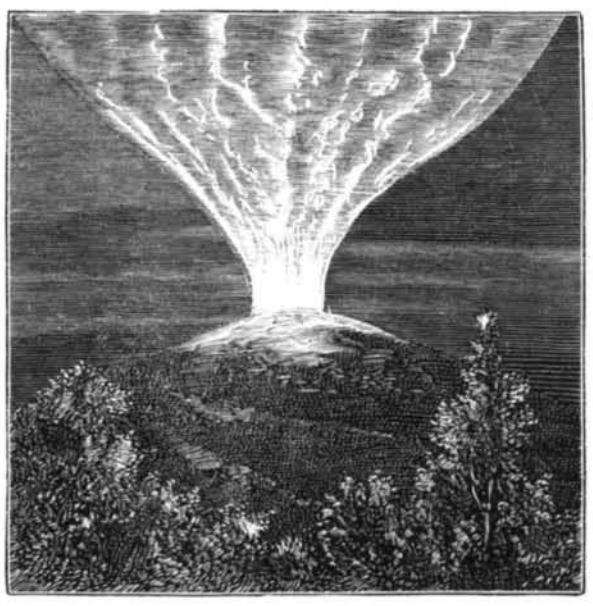
GREAT VOLCANIC ERUPTION AT HAWAII.—Fig. 1.

Singular Balloon Accident.

A fearful accident lately occurred at Hull, Eng., by which a large number of persons were seriously injured.

It appears that for several years a gala has been held every Whit Monday, in a large field in the Beverley Road, and this year one of the attractions advertised was the ascent of a balloon. Arrangements were made with the British Gas Company for a supply of gas, it being estimated the balloon would require for its inflation about 18,000 cubic feet. There being a strong wind at the time it was filled, the balloon, although securely fixed to the ground with ropes, swayed vigorously from side to side. We learn from the local papers that close to the ring in which the filling took place there was a "striking machine," against which, just as the ascent was about to take place, the balloon was driven, and a long slit was made in the silk, through which the gas began to escape rapidly. Close to the striking machine which had caused so much damage there was a stall for the sale of hot peas, a kind of refreshment greatly in demand at entertainments of this kind. Very shortly before the balloon drove upon this stall a naphtha lamp had been suspended thereon, and the escaping stream of gas coming in contact with this naked light, a fearful explosion followed.

Spectators of the scene state that what they saw was a vivid flash, as of lightning, followed by a dense white smoke,



VOLCANIC ERUPTION AT HAWAII.—Fig. 2.

this in turn being followed by a blaze which lasted so long as there was any of the varnished silk of which the balloon was composed remaining to be consumed. From the midst of this mass of smoke and flame there arose a mighty cry of anguish, and the excitement amongst the spectators was most intense. The policemen on duty at the gala, with many others who were not too much excited to act, at once rushed to the rescue, and soon one and another were hauled out from amongst the burning mass. When the balloon collapsed, owing to the escape and ignition of the gas, it fell upon quite a crowd of persons, who were completely covered by the silk and the netting in which it was inclosed, and these people, mostly young men and women and children, were rendered powerless to help themselves. Their position was, besides, rendered the more awful by the fact that the varnish with which the silk composing the balloon was covered, when it became heated, caused the burning material to stick to the hands and faces of the sufferers, and in numberless instances the skin was torn away from hands and faces as the unconsumed material was removed. Amongst the injured was a little girl, who was so frightfully burned that she expired the next day.

Five Centuries Buried.

The *Ariégeois* relates as follows the finding of the body of a bishop at Saint Lizier, France: "The discovery was made in the wall of the cathedral cloister. The skin is yellow, but not mummified. The arms were crossed over the breast, and the head slightly inclined to the left. The hands were still gloved, sandals were on the feet, and having been carefully removed, the members were found to be in a perfect state of preservation. No article of value was found in the tomb. A leathern cord around the neck must have carried the pastoral cross, which was sought for in vain. The body is proved to be that of Mgr. Auger II., of Montefalcone, Bishop of Couserans, who died in 1303."

New Method of Detecting Potash.

Ad. Carnot publishes a new and delicate test for potash. Dissolve one part (10 grains) of subnitrate of bismuth in a few drops of hydrochloric acid; then dissolve separately two parts (20 grains) crystallized hyposulphite of soda in a small quantity of water; pour the second solution into the first and add an excess of strong alcohol. If a portion of this reagent be brought into contact with a few drops of a soluble potash salt, a yellow precipitate is immediately formed; if the potash salt is not in solution a light yellow, but very distinct coloration is produced. All potash salts of the mineral acids give this reaction. Barium and strontium are the only metals that might be mistaken for potash, as they form white double salts with this reagent. As these bases seldom occur along with potash, it is easy to recognize and remove them. If a solution contains but a few grains of potash, it should be evaporated to a small volume or to dryness in order to obtain the reaction more distinctly. Another way is to saturate a strip of filter paper with this solution and dry it. The yellow color will be seen on the edges of the paper.

Owing to the remarkable solubility of all the simple and most of the double salts of potash, its detection has been quite difficult. The usual reagents hitherto in use were a solution of tartaric acid, which must be freshly prepared, and chloride of platinum, which is expensive and not very satisfactory, owing to the difficulty of perceiving a slight yellow precipitate in a deep yellow liquid.

The Preservation of Flowers.

A new method of preserving flowers, successfully adopted by Dr. Miergues, is reported in the *Gardener's Magazine.* Each flower, held by the extremity of the stalk, is plunged into a vessel of paraffin, quickly withdrawn, and twirled rapidly between the finger and thumb, so as to shake off the superfluous oil. Bouquets of flowers thus treated have been kept upwards of a twelvemonth without losing their shape or colors. Whether the smell of paraffin be equally persistent, the doctor has forgotten to inform us.

An Electrical Plant.

In a recent number of the *Hamburger Garten- und Blumenzeitung,* Levy describes a plant, which, if the statements of this traveler are true, must be a most remarkable wonder. It is one of the *phytolacca* which seems to be new, and has received the name of *phytolacca electrica.* The curious fact about this plant is its strongly marked electro-magnetic properties. On breaking off a twig a sensation is produced in the hand like that given by a Ruhmkorff induction coil. This sensation was so marked that he began to experiment with a small compass. The compass began to be affected by it at a distance of seven or eight paces. The needle vibrated on approaching nearer to it, and finally began to revolve rapidly. On receding, the phenomena were repeated in reversed order. In the soil where this plant grew, there was not a trace of iron or other magnetic metal, like nickel or cobalt, and there is no doubt that the plant itself possesses these peculiar properties. The strength of the phenomena varied with the time of day. During the night it is almost nothing, and reaches its maximum about two o'clock in the afternoon. When the weather is stormy the energy increases still more, and when it rains the plant appears withered. Levy also states that he never saw any insects or birds on or about this electrical plant.

Nathan R. Smith.

Professor Nathan R. Smith, the distinguished surgeon and medical practitioner, died in Baltimore in the eighty-first year of his age. For many years he had been the acknowledged head of the profession in that city, and up to within a few years past has been in full practice. The deceased was a native of Cornish, N.H. In 1825 he was appointed professor of surgery and anatomy in the University of Vermont, and organized the medical school of that institution. In 1827 he accepted the chair of surgery in the medical department of the University of Maryland, which he filled for many years. He was well known as a writer in various medical journals, and published a voluminous work on the surgical anatomy of the arteries, which was well received in this country and Europe.