RESIDENCE AT BRIDGEPORT, CONN.

The accompanying engraving represents the residence recently erected at Bridgeport, Conn., for Col. Mason. The engraving and the accompanying are taken from a recent issue of the Architect and Builder edition of the SCIENTIFIC AMERICAN:

The residence as now completed is one of the most picturesque, best appointed and most admired of its class in its vicinity. The underpinning is built of local bluestone, rock faced and laid up in black mortar; the superstructure above is of wood, clapboarded and painted colonial yellow, with white trimmings. Roof shingled and finished natural. Dimensions: Front 51, side 74, not including porte-cochere. Height of ceilings: Cellar, 8; first story, 11; second, 10; third, 8·6. The main hall and staircase are the special features. The arch in hall is supported on colonial columns with carved capitals. This hall is trimmed with antique oak, and it has a paneled wainscoting, an open fireplace, with a tiled hearth and mantel, a paneled divan, and a staircase with carved newels, which is lighted effectively with windows of beaded glass in delicate tints. Toilet is conveniently located under staircase. The parlor is trimmed in an elegant manner, with carved casings and cornice, and is finished in ivory white. It contains a fireplace, furnished with tiled hearth and facings, and a mantel of exquisite design. The library is a spacious apartment, and it is trimmed with mahogany and provided with nook, bay window, and a large open fireplace, with a tiled hearth and facings, wrought iron trimmings and mantel. Den is fitted up similarly. Dining room is trimmed with antique oak and it has a paneled wainscoting, ribbed ceiling, and fireplace with colonial mantel. Butler's pantry is trimmed with similar oak, and is furnished with a bowl and shelf of Italian marble, and dressers fitted up complete. Rear hall and kitchen are trimmed and wainscoted with ash and are provided with all the necessary fixtures in the best possible manner. The second floor is trimmed with whitewood, treated in colors, and it contains five bed rooms and bath room complete. Bath room is wainscoted, and it is complete with exposed plumbing. Floors of hard wood. The third floor contains the servants' apartments, with private staircase. Cemented cellar contains laundry, furnace and apartments. Cost about $25,000 complete. Francis H. Kimball, architect, No. 40 Broadway, New York.

Our engravings were made from photographs of the building taken especially for the SCIENTIFIC AMERICAN ARCHITECTS AND BUILDERS EDITION.

A RESIDENCE AT BRIDGEPORT CONN

Plant Lice and Fumigation.

E. E. REXFORD.

Whoever would grow house plants well must wage war diligently against insects. The frequency with which letters are received from amateur floriculturists, who complain of injury done by plant lice, mealy bugs and red spiders, shows that a great many persons do not know how to fight these pests effectively.

Tobacco, in some form, seems to be the best weapon to use against the aphis or green plant louse. Some prefer to use it in smoke. Fumigation is doubtless the most effective method of fighting this enemy, because smoke reaches all parts of the house or room in which plants are kept. An infusion of tobacco has to be applied with a sprinkler or syringe, and many portions of a plant are not reached, and consequently some aphides escape. As they breed with wonderful rapidity, the plants are soon covered again. The principal objection to the use of tobacco as a fumigation is that it leaves a stale, disagreeable odor behind it, which clings to everything for days. This prejudices many against it. I would advise putting the plants in some shed, outside the house.

Plants may be fumigated in a large box with strips of paper pasted over all cracks. One side or part of one side may be hung with hinges, like a door, to admit the plants to be fumigated, or the cover may be lifted. Cut a hole a foot square through the bottom. Set the box on blocks or some other support, so that it will be about eighteen inches from the ground. When you want to use it, make a fire in an iron pot, dampen tobacco stems, and put them on the fire. Live coals are preferable to any other kind of fire, as they last longer. Set the pot under the hole in the box, in such a manner as to force the smoke to enter it. Let the smoke fill the box, and allow the plant to remain in it from ten to fifteen minutes. At the end of that time, the aphides will nearly always be dead. On removing the plant, jar it sharply to dislodge any that may have become stupefied and fallen among the foliage, also sweep off all that have fallen on the surface of the soil, as it frequently happens, when the smoke has lacked intensity, that some of the insects revive. Then syringe the plant well with clear water. In this way it is an easy matter to thoroughly rid a plant of aphides without having the scent of tobacco all through the house.

The fitting up of a fumigating box is a comparatively trifling job, but persons often fail to attend to trifling matters, thereby putting themselves to great inconvenience. If you cannot do the work yourself, coax the boys to do it for you, or hire some man to do it. It will cost but little, and your box, once fitted, is good for years. You will appreciate it, I assure you, when you find what thorough, effective work can be done with it. All plants should be well fumigated before bringing them into the house in the fall. If clean, they can be kept so. But if you bring a few aphides in with them, in a very short time you will find some of your plants half covered with them, as warm rooms are favorable to their rapid increase.

If tobacco tea is used, I would advise dipping the plants into it, to be sure that all parts are reached. Have it the color of weak tea. Put one hand over the soil in the pot, spreading your fingers on each side the stalk of the plant, and dip the top completely in, shaking it about well to make sure that no insect escapes. This plan is much more satisfactory than syringing. Tobacco dust can be sprinkled over plants, after moistening the foliage, but I do not like this method of fighting the aphis, because it gives the plants a dirty look. The best way is to fumigate.—*Amer. Agriculturist.*

The Coloring of Oranges.

According to *Le Progres Medical*, a new industry has sprung up in Paris. It is that of transforming ordinary oranges into blood oranges by injecting into them Biebrich's scarlet, or rocelline, a harmless agent obtained from diazobenzol in a solution of β-naphthol.

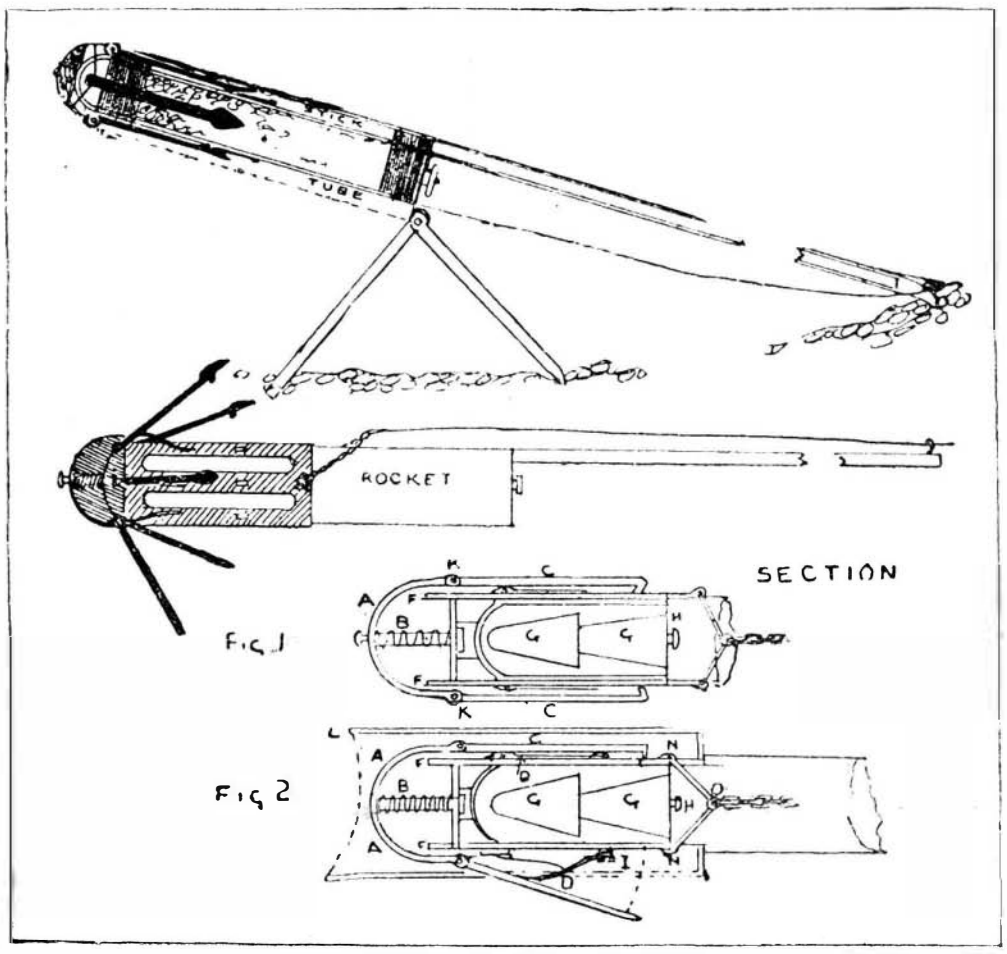
Manufacture of Alum in India.

In a recent issue of the *Indian Engineer* attention is drawn to the manufacture of alum at Kalabagh, on the Indus, at the western end of the Salt Range in the Punjab. The works are owned and superintended by a native khan, and as the expenses are small the profits are very considerable. The process of manufacture is divided into five stages—(*a*) burning the shale; (*b*) extracting the soluble matter from the burnt shale; (*c*) boiling it with salts of soda and potassium; (*d*) crystallizing the impure alum; (*e*) heating in earthen pots and recrystallizing. In the first stage the black alum shales, composed of clay and iron pyrites, are brought by coolies to the works, where they are broken up into lumps about 5 in. square. These lumps and brushwood are placed in alternate layers of about 1 ft. thick, and when the heap is about 15 ft. high it is ignited from below. As the pile burns and sinks down, more layers of brushwood and shale are added. After burning for about six months, the mass is allowed to become cold. The shale has become a bright red color, due to the oxidation of the iron, and is very friable. In the next stage the burnt clay is thrown into square earthen vats about 10 ft. long and 2 ft. deep. Water is then slowly added until its level is nearly up to that of the shale. The soaked portion of the shale is raked down a little at a time into that part of the vat containing the water, with which it is thoroughly mixed; it is afterward taken out with a perforated shovel.

The water containing the soluble part of the burnt shale is, after a time, drawn off into a similar vat, and any red solid suspended matter is allowed to settle. It is afterward drawn off into a shallow circular vat about 10 ft. diameter made of plates of sheet iron riveted together. The solution is then boiled with an impure sodium and potassium salt called *jamsan*, obtained from *reh*—the sodium sulphate and carbonate efflorescence so commonly found in the Punjab. The liquid, after further boiling, is decanted and allowed to crystallize in vats of sun-dried clay. The crystals are about ½ in. diameter, and of a light grayish-green color. These are stacked and allowed to drain for ten days. After this they are put into earthen pots holding about 1½ maunds (112 lb.) with a little water, and are heated in a kiln or oven. The earthen pots are broken open when cool, and large crystals of alum, some 6 in. long, are found inside. This is the form in which it is sold in the bazars. These works produce some 3,000 maunds per annum. From three to four seers of alum (7 to 9 lb.) is about the quantity obtained from each maund (75 lb.) of black shale.

The Height of Rooms.

According to the *Practitioner* for March, the English Local Government Board has addressed a memorandum to the sanitary authorities of England concerning the height of rooms used for habitation, a recent law having conferred upon them authority to regulate this matter. It is held that it is unnecessary to appoint a maximum height, but, as low-pitched rooms are more difficult to ventilate than rooms of greater height, especially sleeping rooms, in which the occupants are not able during sleep to vary the conditions of air movement through the rooms, a minimum height should be established. While a room may have sufficient floor space for a given number of people, whether this number will have enough breathing space to keep them in health will depend upon the height of the room. For example, if there is just enough breathing space when the height is eight feet, it is obvious that there will not be enough when the height is only seven feet. A minimum of nine feet is recommended, and the board will not approve of a smaller height than eight feet over the total area of the room. In a room of irregular height there must be a mean height of eight feet.



LIFE-SAVING ROCKET GRAPNEL.

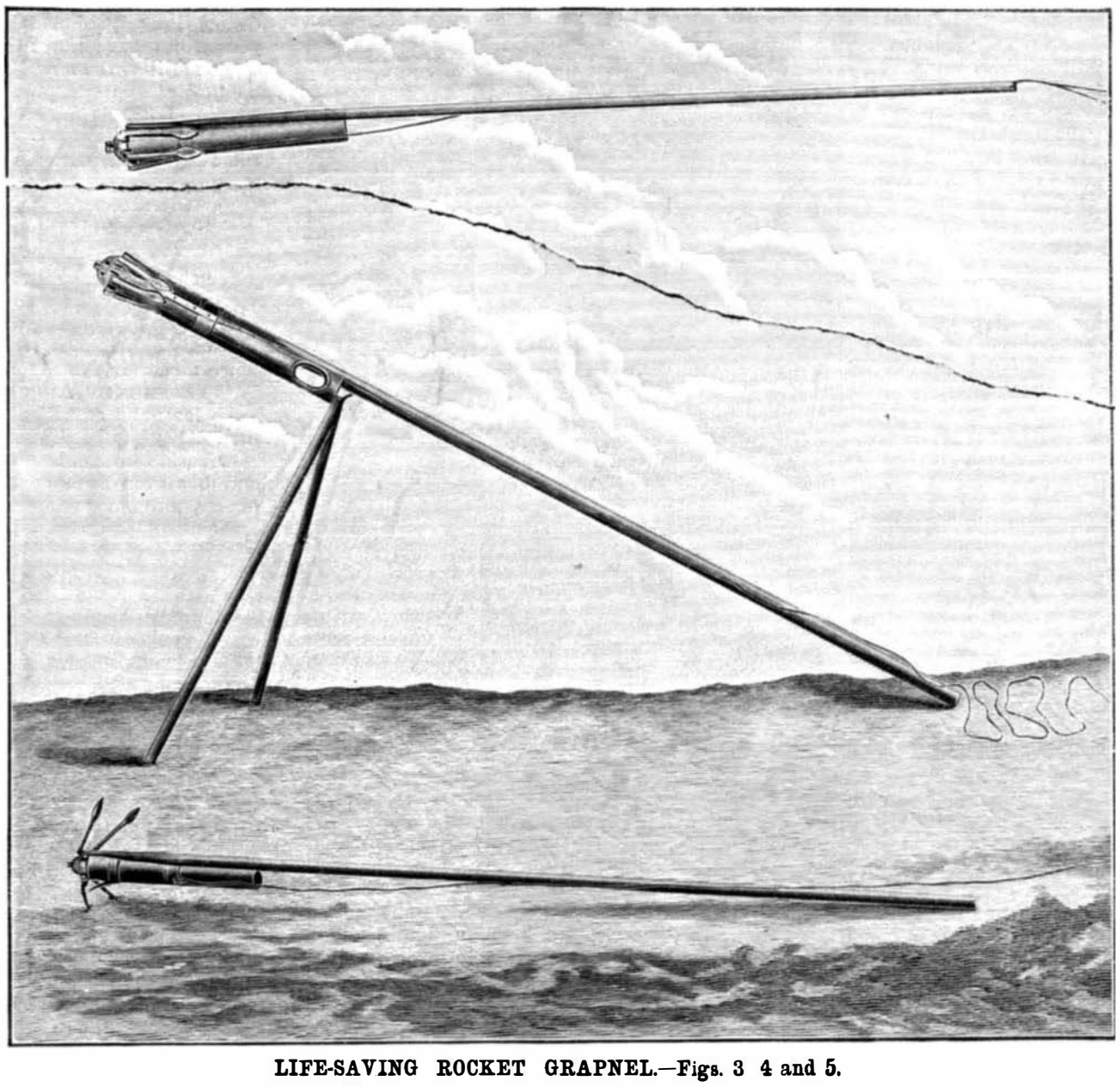
THE LIFE-SAVING ROCKET GRAPNEL.

Several months ago, when the steamship Eider, of the North German Lloyd's, was stranded, the efforts to save her were more or less nullified by the lack of proper appliances for establishing communication between ship and shore. This apparent lack of invention induced the proprietors of the London *Daily Graphic* to offer a prize of $500 to the inventor of the best means of communication between a stranded ship and the shore or a boat.

The responses to this offer were surprising. Within the short period from February 6, 1892, to March 31, 1892, when the competition closed, no less 1,899 projects were sent in, and soon afterward 300 more were presented, making 2,200 in all. Of this large number, all but one hundred came from Great Britain, and of the hundred Germany and Austria furnished the larger share; some came from France, but only a very few from the United States. Many of the plans resembled each other. Those that presented any special features of novelty were published in the *Daily Graphic* and have been reproduced in the SCIENTIFIC AMERICAN SUPPLEMENT. Very many of the plans lacked novelty.

The work of deciding to whom the prize should be awarded was intrusted to a board of judges, consisting of Rear Admiral Seymour, C.B., Captain Vyvyan, R.N.R., Elder Brother of the Trinity House, and Captain Wyatt. The devices submitted formed a wonderful collection of contrivances, embracing buoys, various forms of propelled boats, kites, balloons, guns, rockets, mortars, rafts, trained birds and dogs to carry lines, cranes, bridges. life boats, parachutes, harpoons, anchors, oil spreaders, aerial machines, electrical appliances, etc. Those who wish to know more particularly about these various devices will do well to consult the engravings of them given in the SCIENTIFIC AMERICAN SUPPLEMENT.

The judges, after long and careful consideration, finally decided to award the prize to Messrs. Thompson and Noble, of Southampton, for their rocket grapnel and line, of which we herewith present engravings. The diagrams, Figs. 1 and 2, show how the device is used. The upper sketch represents the grapnel and rocket in position ready for firing. The second represents the rocket after being fired, the grapnel having opened out as soon as the ground was touched. The two lower figures show sections Fig. 1 of the grapnel and Fig. 2 of the grapnel fixed on the rocket tube. A is the head of the cap or grapnel; B, the spring to relieve the arms when required; C, arms of grapnel; F, bolts from head to tube for spring; D, side springs to push out arms when required to grip. L is the tube which passes over the rocket and forms the shell of the entire grapnel; G, charge in the rocket; H, fuse; I, the slot for keeping the arms in position before firing; K, hinges and stops for arms of grapnel. N is the connection wire to swivel, ●, which is attached to the grapnel tube, and conducted by the wire line to the rocket line at the end of the



LIFE-SAVING ROCKET GRAPNEL.—Figs. 3 4 and 5.