insure the contact of the fuse with the vessel. The system of firing shown in Fig. 6 is that generally adopted with the torpedoes to be used with the launches which are being at present built for foreign countries. The launches may be divided into two classes, namely, those intended for river service, and those meant for ocean purposes. Fig. 7 represents a river launch similar to those constructed by Messrs. Yarrow and Hedley, of Poplar. The one shown is 45 feet long and 7 feet 6 inches beam, calculated to have a speed of 14 knots, built either of iron or steel, the plating being $\frac{1}{8}$ inch at the keel, and $\frac{3}{32}$ inch at the gunwale.

The draft is 3 feet 6 inches, and the freeboard 2 feet. There is a steel turtle-back shield, *g*, forward, $\frac{1}{8}$ inch full thick, to afford protection to the men and steering wheel, and throw off the water which might come on board from the explosion of the torpedo. The engines and boilers are also provided with steel sliding covers. The boilers are locomotive, with a total heating surface of 140 feet, the barrel plates being of $\frac{1}{4}$ inch. Lowmoor iron throughout, with $\frac{3}{8}$ inches butt straps inside and out, double riveted; and the engines are non-condensing direct-acting, of 55 horse power, working up to 140 pounds pressure. The diameter of cylinders is $6\frac{1}{2}$ inches and length of stroke $7\frac{1}{2}$ inches. The frames are made of 1 inch angle irons with $\frac{3}{4}$ inch reverse irons.

The spar, *c*, for the torpedo is shipped amidships, and can be run out over a roller. A pocket, *a*, suggested by Captain Davidson, is provided to allow the spar to have a greater depression than in the old plan of running it out over a roller on the top of the stem. Two stanchions, *f*, provided with pinholes, allow of the spar being depressed through an angle of 35°, a noiseless exhaust chamber, *k*, preventing the approach of the boat being heard. In this chamber the condensing is effected against a portion of the skin of the boat, the plates there being increased in thickness. It is surprising what a small effective surface is required to condense the steam in cases where the object is simply to condense it in order to avoid the noise, or to get the fresh water back into the boiler, and not with the object of obtaining a vacuum.

### Fireless Locomotives.

It will be interesting to know that fireless locomotives are in constant and successful operation on a city and suburban railway in New Orleans, namely, the New Orleans and Carrollton Railway, under the able management of General G. T. Beauregard, who is a skillful engineer, and yet who is is alive to, and keeps pace with the improvements of the age. This success has been achieved, too, under the most adverse and unpromising circumstances. The road under other running arrangements had become nearly valueless, its stock having gone down to 7 cents; but it is now a paying and valuable road. The road is about six miles in length. From the center to the outskirts of the city it is operated by mule power; there the mule is taken from the car, and the little fireless locomotive is attached, which is accomplished in less time than would be occupied in attaching another mule. The train is then off like a rocket, the driver still on the platform of the car working the engine, managing the brakes, and making change, as usual; there is no other person on the train to attend these duties. The car is started and stopped quicker than when drawn by the mule. The railway (double track) is in the middle of a very wide street, and is a little raised, so that it cannot be crossed by carriages except at the street crossings; thus, being somewhat isolated, high speed is admissible. The locomotive is simply a cylinder of boiler iron, perhaps 3 feet in diameter and 10 feet long, mounted on four wheels, and partly filled with water. The engine—a double vertical—is attached to the end of the cylinder next the car, being within reach of the driver. The cylinder is then filled with steam at a proper pressure, from a stationary boiler at Carrollton, when the locomotive is ready, and it will run to the city and back without care or expense. There is no fire, no ashes, no pump, no danger, and less noise than from the hoofs of horses. The expense of this means of propulsion, General Beauregard assured me, is less than by mules. The cost of the locomotives is $1,250 each, which includes the builder's profit.—*New York Times.*

### Responsibility for Employees' Injuries.

It has been established that failing to make reasonable provision for the safety of employees is a negligence employers are liable for; but judges and juries have failed to uniformly determine just what is a "reasonable provision." The nearest approach to the settlement of this matter we find in the court news of a recent number of the Boston *Herald*, in a case in the Supreme Court, of M. F. Avilla *vs.* N. C. Nash *et al.*

"The action was brought to recover damages for personal injuries resulting from the fall of an elevator in the defendants' refinery. At the trial there was evidence that the defendants had given directions to their foreman to forbid workmen riding on the elevator. The court ruled as a matter of law that, if the defendants had so directed the foreman, then, even in case he had not informed the plaintiff, the action could not be maintained against the defendants, for the accident was the result of the carelessness or negligence of a fellow workman, the foreman. The jury returned a verdict for the defendants, and the plaintiffs excepted. The full bench have now sent down a rescript sustaining the exceptions, and have ordered a new trial."

The point turns upon the fact as to whether Messrs. Nash had cautioned their foreman and directed him to forbid the workmen using the elevator.

It is hardly proper to surmise what the results of a new trial will be, but the decision already secured by Messrs. Nash will have an important bearing to all manufacturers, and the case as above cited should be placed in the hands of all superintendents and foremen, that they may be fully apprised of the responsibility they assume in not enforcing a strict compliance with orders for the security of life and limb.

## Correspondence.

### Hard Rubber Thermometers.

*To the Editor of the Scientific American:*

In 1852, I noticed the electric properties of hard rubber or vulcanite; and in 1853, I made arrangements with the owners of the patent for the manufacture of insulators for telegraph wire from this substance. The first orders for them were received from California; and as transportation was very expensive on the Isthmus route, they were made very light, weighing but half an ounce each. On arrival they were heated to about 300° Fah., by which they were expanded; and while in this condition, they were placed upon iron pins, to which they were held firmly by contraction.

My attention having been thus called to the dilatability of hard rubber, several thermometers were made from it. One was made by riveting it to a thin strip of steel, about a foot in length, and one fourth of an inch in width. The bottom of this was held fast, while the top was free to move, and so to indicate the temperature on a graduated arc. This one, now in use, has a range from zero to 90° Fah., and is as sensitive as the common mercurial thermometer. It is well adapted for the ordinary range of the atmosphere, but is not suitable for indicating high degrees of heat, as the rubber softens at about 200° Fah. One of them was made by perforating a thin strip of steel, at intervals of an inch, and placing upon it a strip of rubber compound when in a plastic state. This was coiled, with an intermediate strip of metal, which forced the rubber through the holes. It was then vulcanized in the usual manner; and when cold, the intermediate strip was withdrawn, leaving an open space between the coils. This saved the trouble of riveting, and gave to the rubber an unbroken and smooth surface. The coil is held fast at the center, and the outer end is left free to move. Another thermometer was made of glass and hard rubber, the latter in the form of an arc, being riveted at both of its ends to a glass plate, which formed the chord.

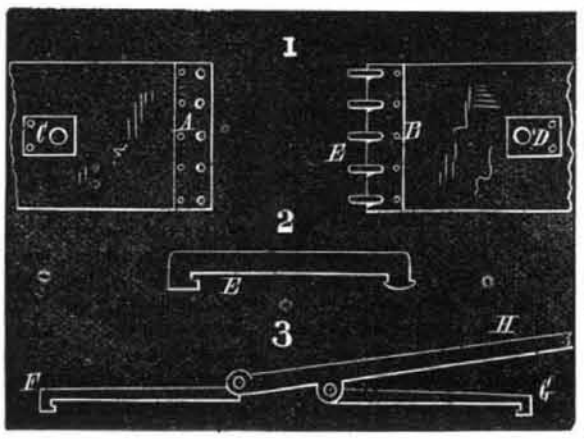
Instruments of this kind are much better than mercurial thermometers for making electric connection with alarm bells to indicate excess of heat.

Boston, Mass. J. M. B.

### Coupling Machine Belts.

*To the Editor of the Scientific American:*

Seeing a query in your issue of March 13 about putting together belts which have to be frequently uncoupled, I send you an illustration of a 6-inch belt, which I have been running for over a year, reversing it from one to four times a week.




In Fig. 1, A, B, C, and D are pieces of No. 16 sheet iron, riveted to the ends of the belt; E E are hooks, shown in the natural size in Fig. 2, riveted to B. After the belt is laid over the pulleys, the hooks, F and G, of the lever, shown in Fig. 3, are placed in the holes at C and D. Now the two ends of the belt are drawn together by the lever, H; and the hooks, E, are put in their places at A. Then the lever is taken out, leaving the joint finished.

By this method, two men can set and couple a belt in the least possible time, obtaining an effectual joint, which will never allow the belt to run out of true or to reverse.

W. Kapp.

### HOUSEHOLD HINTS.—I.

"The melancholy days have come, the saddest of the year," ejaculates paterfamilias as he lugs the stove down into the cellar. There has been for the last twenty-four hours a reeking atmosphere of soap and soda and step ladders and moist scrub women pervading the house. Rest, there has been none for him indoors, and so he has made a virtue of necessity and has worked manfully at taking down the stoves, wrapping them, we hope, in old carpet, and fastening the legs and pipe together so that they cannot escape and hide themselves in ingeniously inaccessible places, as he vehemently affirmed they did, when he found them in the garret and under the coal and in the chicken house last fall. Materfamilias, we trust, has fully perused the recipes we have been publishing for the last six months, and the knowledge thus gained has been practically applied in cleaning the paint and the windows, destroying vermin, and putting the house in "apple pie" order generally. At last it is all over, the rooms are "painfully clean," and the bright sunlight pouring into the open windows is revealing the threadbare spots in the carpets, and the cracks and knocks on the furniture only too plainly. A high court of inquiry has been held, and the superanuated veterans which have done long and faithful service on the floors, or have survived many a year's hard usage about the rooms, are at last condemned. Then the heads of the family, who, like sensible people, have waited for the high prices peculiar to Mayday to subside, prepare to sally forth on visits to carpet and furniture stores, and paterfamilias figures up his check book or draws his winter's savings from the savings' bank ready to withstand the coming financial strain.

("I don't see nuthin' about Science in all that. What's it got to do with masheens?" interrupted the practical man who happened into our sanctum just in time to hear us read over the foregoing paragraph to ourselves. "Nothing, excellent and anti-theoretical friend," wereply, "nothing about 'masheens' is therein contained; but as to Science, it relates to the science of home, the science of making one's life something more than one "demnition grind" for existence, by—as you will perceive if you continue looking over our shoulder as we proceed with our writing—rendering that home more attractive, more cheerful, and so making for yourself and yours a sanctuary, at the doors of which the cares of labor may be laid aside." He said that it must have cost "an awful lot to polish that 'ere model with the file," from which we inferred that our previous remark was lost upon him, so we resumed our pen, oblivious to his further presence.)

We were about to observe that, before buying furniture and carpets—if we may venture to intrude upon the family discussion which is taking place previous to the exodus to the shops above mentioned—there are several facts well worth remembering, which may assist one in selecting goods, and besides tend to save money; and at the same time there are a few more hints which we have to offer which mainly relate to simple decoration, and which, we think, may result in making the rooms which are to be renovated look perhaps a little more tasteful and pretty. Let us suppose that a sitting room which also does duty for a parlor is to be newly furnished. The walls are now either plain white or else the old paper has been scraped off and new hangings are required. The first question is of a carpet. Some people believe that the English article is the best; so it is we think, as a general rule, so far as colors are concerned, but if durability is considered a first requisite, then the American goods, if of first quality, are fully equal to those of foreign make. A good carpet is thick, pliable, and well woven, and it is better economy to buy a good article like a real Brussels at the outset. Ingrains are now made to go with Venetian borders, but these do not wear equal to Brussels, and besides with the border costs nearly as much. In this city the best body Brussels costs from $1.75 to $2.50 per yard, and the lining (which consists of layers of stout brown paper with cotton batting between, and which saves carpets wonderfully, particularly if the floor be at all uneven), is easily made, or costs when bought 10 cents a yard. For those who can afford a little extra expense, it may be well either to mat the floor or else plane it very smooth, putty up all the cracks, and stain brown, finishing with a coat or two of shellac dissolved in alcohol. Then cover the middle with a large rug, leaving a yard of uncovered space around the walls. Handsome druggets can be bought very reasonably for this purpose; or two Turkish rugs (each about 4x6 feet, such as are sold for $15 to $18 a piece), placed side by side, would be large enough for a good-sized apartment, though costing more than the drugget. These can be easily taken up and shaken, or in summer can be removed altogether, leaving the cool matted or painted floor. Turkish rugs, besides, are like camel's hair shawls; they will accord with any color of furniture or wall, and are almost indestructible by wear.

To return to the carpet: supposing such to be the choice: we should advise the selection of that and the wall paper at the same time. It is a good plan to procure a roll of the intended hangings as a sample, and carry it to the carpet store for direct comparison. This will save many awkward contrasts of color. If a green carpet be decided upon, then a plain paper of a rose tint, or with that shade prevailing, accords handsomely; the same paper goes well with the unobtrusive gray-patterned carpets now very much in fashion. If the walls be tinted French gray, in kalsomine or paint, this shade will suit almost any colored carpet, especially red or crimson. Big-figured papers and huge medallion carpets are abominations only fit for hotels and steamboats. Bright tinted papers may go with a rich-toned carpet, or with one in which the colors are mingled; but we never should select hangings printed with impossible birds and animals, or a carpet covered with gaudy flowers, hideous designs in red and yellow which look like a petrified firework explosion, or incomprehensible and huge scroll work. A neat, small, quiet figure is by far the most genteel and appropriate, while it is much more economical, as none of the stuff is ever wasted in matching.

Before laying the carpet, if moths are suspected, it is well to rub the boards over with turpentine; sprinkling with very dilute carbolic acid, about a tablespoonful to a gallon of water, is also a good precaution. This last should be rubbed over the walls before the paper is put on.

Now comes the matter of furniture. Do not buy the so-called "cottage" stuff. It has no merit save that of cheapness, and our own experience in its use has left us with the firm conviction that glue was too expensive and it was stuck together with gum arabic. A hearty sneeze from a stout person is ordinarily sufficient to completely disorganize the chair he may be sitting on. Besides, it is usually of pine wood, for which bedbugs have an extraordinary predilection. Do not buy veneered furniture, especially if there be furnace

heat, for the veneering, generally after short wear, manifests a strong desire to part company with the wood. Buy good substantial solid work, not machine-made, as it is termed in contradiction to hand-made. Machine furniture is sold by the cheaper dealers, and it is put together with wooden dowels. It is, besides, turned out in large quantities of the same pattern at a time, and too often hastily glued together. It looks well enough at the start, but its lasting qualities are poor. Hand-made furniture, though its integral parts are of course machine work, is produced with greater care. The wood used is thicker and more carefully selected, and iron dowels are used as fastenings. It is well to look carefully to this difference, as it much more than compensates for the disparity in price.

In our next issue we shall have something further to say about furniture, before passing to the other subjects to which, in these papers, we propose to allude.

## ARCTIC NOTES.

Captain Nares, who is in command of the new British arctic expedition, recently made an address at Winchester, before the college boys, in which he gave a variety of interesting particulars connected with his previous experience in the frozen regions.

### ICE WATER AS A HEATER.

Speaking of sledge expeditions, he said they always made it a point to encamp on the level snow, over the water, the heat given off by the water underneath warming them considerably, and the tent was warmer when spread over the ice than over the snow.

### BOOTS AND OTHER CLOTHING.

He next described the interior of the tent, the clothing, etc., and stated that their footgear was the only thing they took off. When they took their boots off, they were necessarily damp, and unless they put them under their beds they would freeze; so they lay on them all night to keep them warm for the morning.

While on board the ship, taking short walks and retiring to a dry cabin, sealskin clothes, he said, were very good; but as soon as they started on a traveling expedition, having only a common light tent to which to retire, they could wear nothing but flannel and cloth clothes, covered with a light, outer duck suit, which caught the snow. They started wearing their skin dresses, but though they were limp enough the first evening, in the morning they found them frozen as hard as boards. It was impossible to put them on, and they were left on the ice for the bears.

### FREEZING OF WATER BOTTLES.

Captain Nares next referred to the water bottle, which was worn inside the dress next the skin. Though the inner side of the bottle was warm, the outer skin froze. A layer of ice collected on the outer side of the bottle, and day by day gradually became thicker, and in a week they were all thrown away. For the present expedition they were trying to cover the bottles with flannel, but these would be just the same.

He called attention to the fact that they gradually became reconciled to the want of water, and they merely had half a tumblerful in the middle of the day when they stopped for lunch. This was exactly the experience of all arctic travellers. He mentioned that when the men in his party, on leaving the tent, were offered an extra quantity of either tea or grog, they all chose the tea.

### ARCTIC TEMPERATURE.

On the 4th of November, Captain Nares's party saw the sun for the last time until the 5th of February, after an absence of 93 days. He stated that the coldest temperature of all was 62° below zero, which was equal to 92° of cold, or the same amount of cold as would balance a hot temperature of 126°, and this agreed with the highest heat ever registered. As long as they were on board the ship in calm, they could walk about, but immediately there was the slightest wind they were frostbitten.

### AIMS OF THE NEW EXPEDITION.

Captain Nares said, in conclusion, that in the present expedition it would all depend on the favorable or unfavorable state of the ice how far they got north, and where they should leave the depot ships. Should they be fortunate enough to reach latitude 82°, as Hall did easily (to which they knew the land extended), they would have every prospect of being able to journey the 500 miles still cutting them off from the pole. Of course, if there were land there, they could only skirt round the shores. If there were water, one of the ships would be taken up as far as possible. The previous expeditions in this direction had never been sufficiently equipped for traveling. In the last voyage, by the Polaris, no traveling, to speak of, was attempted, and they merely knew that the land extended to some 50 or 60 miles further on without any appearance of its coming to an end. Of course, in the present expedition, they would push as near the pole as possible; but after the first week in September one ran the risk of the ship never being actually stationary in a harbor, and unable, therefore, to be made the base of departures for sledge journeys. She might even be drifted by the current ignominiously and helplessly to the southward, perhaps passing the consort, who would necessarily be snugly posted in a protected harbor. However, with God's help, they would do their best, and the meeting might depend on it they would not fail through want of perseverance.

### ARCTIC AMUSEMENTS.

A sick man in the arctic circle would not only be a burden to himself, but so handicap his messmates as probably to put in jeopardy the success of the undertaking. Absolute health has, therefore, been made a *sine qua non*; and it may be assumed that all truly healthy men are of a cheerful disposition.

But the expedition is provided with artificial aids to good fellowship. The Admiralty have not made it a condition that the officers should be able to sing a good song or dance a hornpipe, but such like accomplishments are of great importance under the circumstances, and measures will be taken to encourage the histrionic powers of the ships' companies.

Mr. Clements Markham remarks that the "most valuable" qualifications for arctic service are aptitude for taking part in those "winter amusements which give life to the expedition during the months of forced inaction," and in his arctic navy list he has recorded the part which each officer took in the polar theatricals. Captain Nares, while mate under Kellett, sustained the character of Lady Clara in the historical drama of *Charles II.*; and he will probably see that the stage of the Alert does not lack novelties. Admiral Sherard Osborn was manager of "the Arctic Philharmonic Entertainments," on board the Pioneer; Admiral Ommanney was manager of the "Royal Arctic Theater," on board the Assistance, and acted the part of Mrs. Crank in the farce of *Did you ever Send your Wife to Camberwell?* Admiral Nias performed Sir Simon in *Miss in her Teens*, Perriwinkle in *A Bold Stroke for a Wife*, and other parts; General Sir Edward Sabine was also a member of the now historic "Arctic Theater," and acted Lord Minnikin in *Bon Ton*.

In fact, the majority of our most noted arctic navigators were, from the exigencies of their position, admirable amateur performers; and in furnishing a theatrical wardrobe and appurtenances, the government are contributing in no mean degree, and, perhaps, to a much greater extent than they suppose, to the success of the arctic expedition of 1875.

## Patent Rights.

Among the many improvements in commercial law recently advocated in England, one of the most remarkable is the demand for the abolition of patent right. Not only, it is said, is the advancement of the nation in material prosperity hindered by the protection hitherto accorded to inventors, but those unfortunate persons are themselves injured by the laws intended to preserve to them the fruit of their time and labor. It is urged that the inventor cannot be restrained from inventing; and that there should be a system of national rewards for conspicuous improvements, and that purely honorary distinctions should be liberally bestowed. Interference with the freedom of trade is, moreover, declared to be only one of the evils arising from the protection of the inventor, and a whole catalogue of difficulties is assigned to the same source. English manufacturers are said to be put at a disadvantage compared with those of other countries where there is no patent law. A patent once granted bars the way for further improvements in the same direction; patents are granted for useless things, and for already old contrivances. In addition to these disadvantages, the existence of patents gives rise to expensive and tedious litigation; and to sum up, patentees are themselves, in the gross, great losers.

In a paper "On the Expediency of Protection for Inventions," recently read before the London Society of Arts, these objections, not to the present patent law prevailing in England, but to all patent laws whatever, were very ably combated, and the rights of the poet, even, if his creative faculty take a mechanical turn, were vigorously maintained. Those who peruse the history of inventions can hardly lay aside the sad narrative without a feeling of pity for the melancholy destiny of the men whose patient thought has enriched the world. Palissy burned the bed from under him to feed his furnace; Dud Dudley was ruined by the sheer brute strength opposed to him; and Crompton, the inventor of the spinning mule, who, to protect his unpatented invention, commenced a secret manufacture at his house, called the "Hall in the Woods," found it besieged, and ultimately broken into and rifled by those who were destined to profit by his labors. Over and over again occurs the same dreary story of hope deferred, resources exhausted, and health broken. For it must be remembered that the contriver of a great improvement in the machinery of an important industry, although a benefactor of his species, by no means appears in this enviable light to those whose work he designs to improve. The wealthy manufacturer doing a profitable business dislikes to stop his costly and extensive works to test a new invention, and his work people resent any attempt to teach them new ways. Hence the poor inventor is often regarded rather as a nuisance than a benefactor, and finds himself opposed instead of encouraged.

The charge that the growing strength of foreign competition in departments of industry over which England has been accustomed to reign supreme is due to patent rights can hardly be sustained. The practical answer lies in the fact that Great Britain, the United States, and France all have efficient patent laws, and yet in no other countries are manufactures so vigorous and improvement so rife. Few countries claiming to be civilized are without patent law. Switzerland has none, but the only manufactures for which that country is famous are alpen stocks and long hotel bills.—*Inter-Ocean.*

WHEN it is not convenient to take a lock apart to fit a new key, the key blank should be smoked over a candle, inserted in the keyhole, and pressed firmly against the opposing wards of the lock. The indentations in the smoked portion made by the wards will show where to file.

## An Old Prophecy.

One of our New England exchanges has come across an old almanac, dated 1755, edited by Dr. Nathaniel Ames, who lived in Dedham, Mass., published in Boston, and in one of its articles Dr. Ames made use of these prophetic words:

"There lie buried in all this vast region materials for the art and ingenuity of man to work upon—treasures of immense worth, concealed from the poor, ignorant, aboriginal natives. The curious have observed that the progress of human literature, like the sun, is from the east to the west; thus it has traveled through Asia and Europe, and now has arrived at the eastern shore of America. As the celestial light of the Gospel was directed here by the finger of God, it will doubtless finally drive the long, long night of heathenish darkness from America. So arts and science will change the face of nature in their tour from hence over the Appalachian Mountains to the western ocean; and as they march through the vast desert, the residence of wild beasts will be broken up and their obscene howl cease forever, instead of which the stones and trees will dance together at the music of Orpheus, the rocks will disclose their hidden gems, and the inestimable treasures of gold and silver be broken. Huge mountains of ore will be discovered, and vast stores reserved for future generations. This metal, more useful than gold and silver, will employ millions of hands, not only to form the martial sword and peaceful share alternately, but an infinity of utensils, improved in the exercise of art and handicraft among men. Nature through all her works has stamped authority on this law, namely, 'that all fit matter shall be improved to its best purposes.' Shall not, then, those vast quarries that teem with mechanic stones—those for structure be piled into great cities, and those for sculpture into statues to perpetuate the honor of renowned heroes, even those who shall now save their country? Oh! ye unborn inhabitants of America, should this page escape its destined conflagration at the year's end, and those alphabetical letters remain legible, when your eyes behold the sun after he has rolled the seasons round for a century to come, you will know that in Anno Domini, 1755, we dreamed of your times!"

## The Electric Light.

Dr. Wilde, of the Academy of Sciences of St. Petersburgh, and Director of the Central Physical Observatory, has recently made a report to the Academy upon the new mode of producing the electric light proposed by M. Ladiguin, of that city, and mentioned on page 227 of the SCIENTIFIC AMERICAN, present volume. Since the discovery of the voltaic arc in 1821 by Davy, many attempts have been made to utilize it practically for illumination. But in spite of the regulators devised for the purpose, it still remains variable and inconstant; being too intense, used at a single point, it is yet incapable of division. Since the improved magneto-electric machines have reduced the cost of the electric light to only one third that of coal gas, these efforts to utilize it have been redoubled. And, as a result, M. Ladiguin has made an invention which, in a very simple way, resolves both problems, rendering the light steady, and at the same time capable of division. It has long been known that the electric light proper comes from the intensely heated carbons which the current traverses, the resistance of the air between them developing this heat. So the resistance of a platinum wire placed in circuit causes it to be highly heated; but the light thus obtained, though constant and entirely controllable, is too feeble for practical use. M. Ladiguin has conceived the idea of replacing the platinum wire in this experiment with a thin rod of gas carbon, and with complete success. Carbon possesses, even at the same temperature, a much greater light-radiating power than platinum; its calorific capacity is less than one half that of platinum; it is, moreover, a sufficiently good conductor of heat; so that the same quantity of heat elevates the temperature of a small rod of carbon to nearly double that of a wire of platinum of the same size. Again, the resistance of the carbon employed is 350 times greater than that of platinum; hence it follows that a rod of carbon may be fifteen times as thick as a wire of platinum the same length, and yet be heated by the same current to the same degree. Finally, the carbon may be heated to the most intense whiteness without the danger of fusion, to which platinum is liable. These are some of the advantages of carbon; its only disadvantage is that heated in air it burns, and so gradually wastes. But M. Ladiguin has happily obviated this difficulty by enclosing the rod of carbon in a glass cylinder containing no oxygen and hermetically sealed. Dr. Wilde asks, in conclusion, that the Academy recognize the fact that M. Ladiguin has resolved the grand problem of dividing and rendering steady the electric light, in the simplest possible manner, and that they award him, in consequence, the Lomonossow prize.

## White Ants at St. Helena.

White ants were introduced into the island in 1840 in some timber from a slave ship. Mr. M'Lachlan has identified the species *termes tenuis*, Hagen, peculiar to South America. The mischief which it has done is almost incredible, and it appears to have simply gradually destroyed the whole of Jamestown. A considerable portion of the books in the public library, especially theological literature, was devoured by them, and the whole of the interior would be destroyed without the exterior of the volumes seeming otherwise than intact.

A GOOD cement for chemical and electrical apparatus may be prepared by mixing 5 lbs. resin, 1 lb. wax, 1 lb. red ocher, and 2 ozs. plaster of Paris, melting the whole with moderate heat.