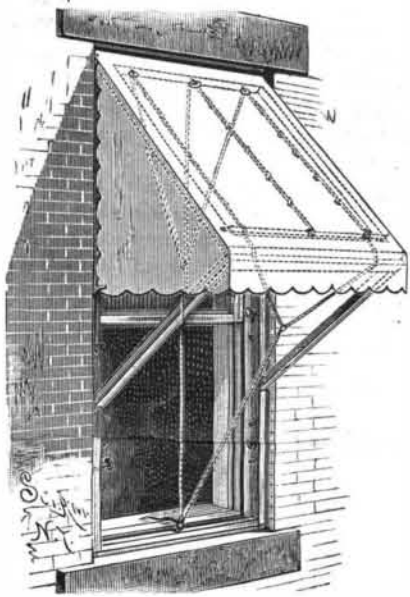


AN EASILY ADJUSTED AWNING FOR DOORS OR WINDOWS.

An improved awning, by which the admission of the sun and light may be easily controlled, without interfering materially with the access of air to the rooms of a store or dwelling, is shown in the accompanying illustration, the contrivance being the subject of a patent issued to Belle D. Pennington, of 418 Chandler Avenue, Evansville, Ind. The main frame is made in a form adapted to be secured in a window frame, outside of

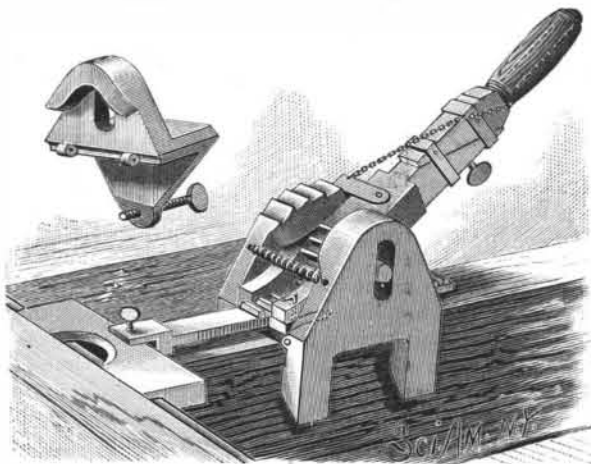


PENNINGTON'S PORTABLE AWNING.

the outer sash, and held in position by thumbscrews, while to its top portion is hinged another frame, composed of two sections hinged to each other, the lower section having hooks at each side adapted to engage screw eyes on the inner surface of the two vertical members of the main frame, the awning frame being more or less raised or lowered, according as the hooks on the lower hinged section are placed in eyes that are higher or lower on the main frame. The awning is fastened at the top to the upper crossbar of the outer folding frame, and carries a rod at or near its lower outer edge, three cords being attached to the rod, which pass up through rings on the under side of the awning to eyes on the under side of the top crossbar, and thence downward, the cords being joined so that the three can be drawn upon by a single cord within convenient reach, and thus fastened to a hook or an eye at the center in the bottom bar of the main frame. Outer cords also extend downward from the rod attached to the lower end of the awning, and are joined in a single cord for convenient attachment to a hook or eye in the bottom of the main frame, these cords, together with a vertical cord to which the side portions of the awning are attached, affording a ready means of raising or lowering the awning without disturbing the frame. When the awning is not required, the folding frame swings inward against the main frame in such position as to be quite out of the way, and the awning itself is entirely drawn to the top of the frame by the cords. The whole device can be easily put in place or taken down without the aid of any special or expert help.

AN IMPROVED JACK.

The invention illustrated herewith provides a jack more especially designed for holding the boards in po-



BRADLEY'S FLOOR JACK.

sition in laying floors, but the device may also be used as an ordinary lifting or pressure jack. It has spring-connected side pieces, hinged to a central box with open ends and top, the side pieces having ribbed jaws adapted to take a firm grip upon the floor beam, and there being a rack-faced sliding bar in the bottom of the box, the outer end of the bar being enlarged and slotted to hold detachably a grooved and recessed block to receive the tongue of the floor strip to be jacked into position. Upon the upper inner surface of each side piece is formed a segmental cam surface, the entire upper semicircular surface of one of them being provided with transverse rearwardly inclined teeth. A lever is pivoted in apertures in the sides of the central box, the pin whereby the lever is journaled being made to project through vertical slots in the side pieces, and the lower end of the lever being made circular, with teeth adapted to mesh with the rack sur-

face of the slide bar, to propel it backward or forward in the box. Each side of the lever has wedge-shaped lugs to engage the faces of the cam projections of the side pieces when the device is placed upon a floor beam, and force the teeth or ribs of the jaws into the beam as the slide bar is carried forward, and also to limit the backward and forward throw of the lever. The manner of attaching the handle is plainly shown in the illustration, but the part grasped by the hand is on a sleeve and connected with a spiral, by which, through a chain and pawl, the latter may be made to engage the teeth upon the upper surface of one of the side pieces, to hold the slide bar in the position to which it is carried when the lever is operated, the chain being of such length that when the sleeve is in its normal position the pawl will be elevated above the teeth. The spiral spring shown across the front of the jack serves to steady the side pieces in position, and just below it, attached to one side of the box, near the bottom, is a spring having one end bent at right angles over the front edge of the box, the angular end of this spring being adapted to engage the teeth of the slide bar to retain the latter in a given or fixed position. The recess in the grooved block abutting against the floor strip affords room for conveniently driving a nail, and the device can then be easily and quickly removed and entered in a similar manner upon the next beam. The small figure shows an extension piece designed for use in place of one of the side pieces when the floor beams are more than two inches thick.

This invention has been patented by Mr. William E. Bradley, and for further particulars address the Giant Floor Jack Co., Roscoe, N. Y. Patents have also been taken out upon it in foreign countries.

AN IMPROVED FEEDER FOR STOVES.

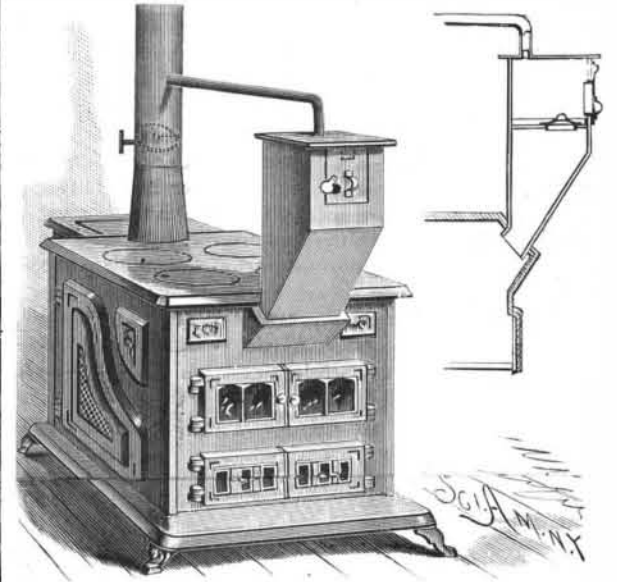
A device especially designed for feeding cooking stoves, and intended to be particularly useful where a rapid-burning fuel is employed, is shown in the accompanying illustration. It forms the subject of a patent recently issued to Mr. Melburn S. Briggs, of Oxford, Nebraska. The magazine or feeder is intended to fit upon and be supported by that portion of the stove usually adapted for a feed opening, as many stoves are now made, although it may be of different construction for stoves with other kinds of feed openings. As will be seen by the sectional view, the feeder is divided into an upper and a lower part, the latter being the fuel box, so shaped as to facilitate the downward feed of the fuel by gravity. The upper part is an air and smoke chamber, in communication by a small pipe with the main smoke pipe, and having an opening, covered by a lid, to the fuel box below. There is a door in this top part for putting in fuel, at which times the lid of the fuel box is removed, the small pipe then conveying away any smoke which might otherwise escape, and also affording a means of assisting in the ventilation of the room, when a small damper in the door of the top chamber is opened. The small pipe also assists to prevent smoke in the room when the damper in the main pipe is too much closed, or when the top covers of the stove are removed.

MANUFACTURE OF LARGE GUNS.

The London Graphic, describing the works of Sir William Armstrong at Elswick, says:

The great ingot out of which a gun barrel is to be made comes from the steel works of the required length and a little more than the needed girth; and it is first taken to the shop to be rough turned and rough bored. The boring machine, composed of an arrangement of chisels carried on the end of a revolving horizontal shaft, is made to work against the solid ingot, so as to take out a center cutting of 9½ inches. This first cut is necessarily made in

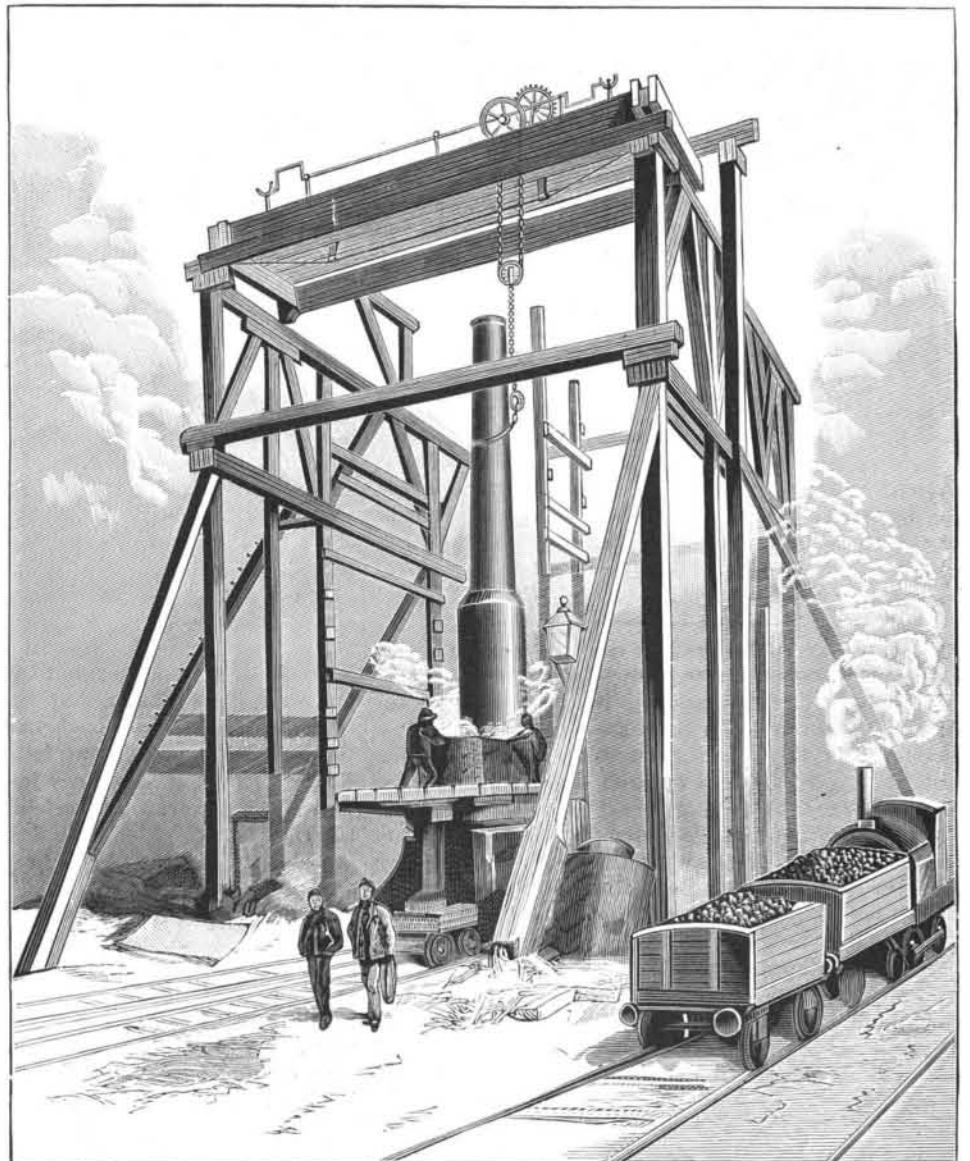
thrusting fashion, but the two others, which enlarge the bore as far as is necessary at this stage, are made by drawing the cutter through the tube. The work is very slow, but the action is virtually automatic, the rate of progress being from four to five inches per hour. The machine goes on night and day, the only stoppages being to examine the work and insure absolute accuracy. After rough boring, the barrel is taken to another shop to be heated and plunged into a bath of oil, to be hardened and tough-



BRIGGS' STOVE FEEDER.

ened; after which it is annealed and then passed on to be fine bored, a delicate and a time-consuming process. Next, the barrel is turned in the lathe—a most powerful machine when heavy gun barrels and cylinders have to be operated upon; and being smoothed inside and out, it is ready to be placed in the shrinking pit to have the successive "jackets" placed upon it, of which the modern steel gun is built up.

When guns were made of iron, the outer jackets were coiled on; but coiling is now superseded, and the shed once devoted to this interesting operation is now employed for other purposes. Steel, unlike forged iron, cannot be welded out of coiled rods or plates, and it is deemed sufficient to give the increased strength required at the breech end by successive coats of metal, which are tightly shrunk on the top of each other. To insure absolute closeness of contact, with some degree of compression, each cylinder is bored so as to be slightly smaller than that which it is to inclose. When heated nearly to redness, it expands so as to slip on



SHRINKING A COIL ON A 110 TON GUN.

with ease; but, as it cools, it grasps more tightly than the clutch of a miser's palm. The largest sized guns are composed of five separate cylinders, counting the barrel, which is inclosed by the first jacket to the muzzle point. There are scientific reasons relating to the laws of expansion under the strain of explosion which determine the degree of compression exercised by these outer cylinders; but with these we need not trouble the reader.

As it takes from fourteen to fifteen months to build up a 110 ton gun, one of these large pieces of ordnance may at any time be seen standing in the shrinking pit as it is sketched by our artist, and the visitor may easily be lucky enough to see one of its "jackets" put on. The building up being finished, the joinings of the cylinders must be turned and planed; after which the bore of the gun has to be ganged and accurately ground. The compression of the outer hoops always contracts the bore more at the breech than the muzzle end; and this has to be cut and ground out. It is then ready for rifling—another operation consuming much time. It is performed by an ingenious machine working upon a long shaft, and so constructed as to revolve as it cuts correspondingly to the twist of the groove. The cutter has to travel eight to twelve times through

will reassemble for purposes of organization in halls assigned them. In the afternoon the sections will meet, and the vice-presidents will deliver their addresses. In the evening Prof. Morse will deliver his presidential address.

The list of eminent names of vice-presidents and secretaries insures a valuable series of papers, and we believe that the New York meeting will certainly compare in interest with the Montreal meeting of 1885. The association has a future before it, and for the sake of that future, should meet with all encouragement. An affiliation with the foreign associations of like name and constitution is to be hoped for, and movements in that direction have already been inaugurated.

THE NEW BRITISH RACING YACHT THISTLE.

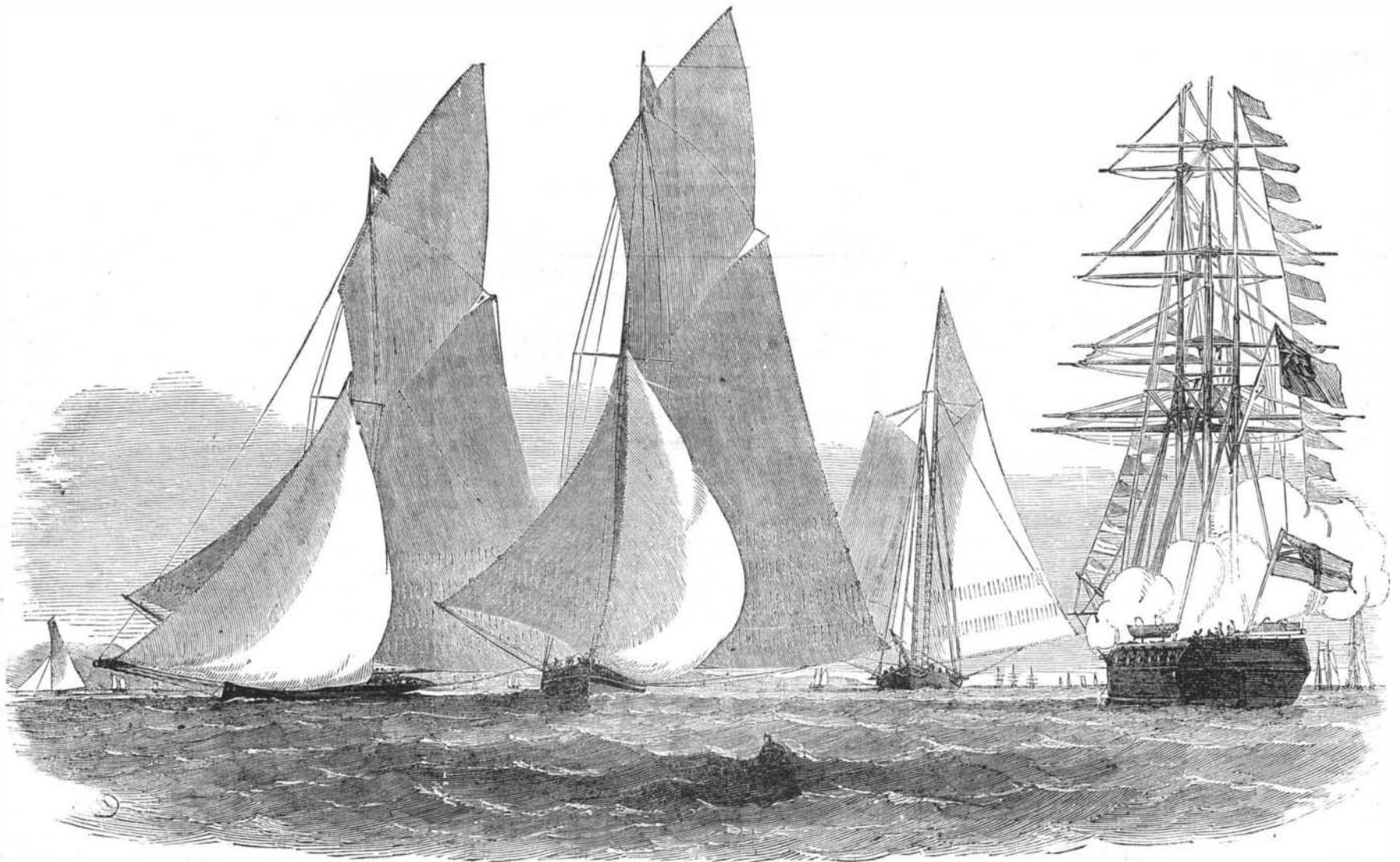
Shortly after the disastrous defeat of the Galatea in American waters last fall, it was rumored that a final and desperate effort was to be made to wrest the famous America or Queen's cup from this side of the Atlantic, and to that end a new craft was being built, the design and details of which, it was said, would be different from anything hitherto seen. The rumor was finally confirmed, but the whole matter was kept

she is said to have crossed the line with a speed of 13 knots an hour.

The Thistle was built by Messrs. Henderson & Co., of Glasgow, Scotland, and is owned jointly by Mr. James Bell, of Glasgow, and (it is reported) by Mr. Clark, the famous Scotch thread manufacturer of Newark, N. J. She is built throughout of steel, and she measures 85 feet on the load water line; extreme breadth, 20 ft. 4 in.; depth of hold, 14 ft. 1 in.; registered tonnage, 100 tons, or 140 tons rating. The mast is of Oregon pine, and the spars and canvas are American, inasmuch as they are the biggest on record. The ease with which she has defeated all the English crack yachts makes her a most serious competitor, and it is to be hoped that General Paine's new unnamed yacht will prove to be all that is expected of her, and that the international contest of September 26 will be marked by the manly spirit of honest rivalry that has characterized each of these competitions since the Queen's cup was first captured by the America in 1851. In this connection we reproduce a picture of this event, taken from an early print of the period.

Effects of Lead.

Mr. Wynter Blyth has had an opportunity of exam-



MOSQUITO.

ARROW.

AMERICA.

BRILLIANT.

ROYAL YACHT CLUB REGATTA.—[From Print published in 1851.]

the guns in making one groove; and in the largest sized guns there are as many as eighty grooves. It is not surprising, therefore, to hear that it takes at least a month to rifle a 110 ton gun. It need not be said that the most absolute accuracy is necessary, and that at any of these later stages of manufacture a mistake which might easily spoil the gun irretrievably would be a calamity.

The Thirty-sixth Meeting of the American Association for the Advancement of Science.

New York, for the first time in the history of the American Association, is to be the place for its annual meeting. It is to last from Wednesday morning, August 10, until Tuesday evening, August 16. Matters in this city are in charge of a local committee, of which President Barnard, of Columbia College, is chairman. At his request, the trustees of Columbia College have tendered the use of the several halls and offices of the college for the purposes of the association.

Everything is hoped for from this meeting. Last year the meeting was held in Buffalo, and the attendance seriously fell off, but the attractions of the metropolis and the favorable auspices of the place of meeting will, it is believed, prove an attraction, and cause the members to assemble in greater numbers than ever before. The president, Prof. Edward L. Morse, of Salem, Mass., will call the meeting to order on the first day, and will resign in favor of Prof. S. P. Langley, of Washington, the incoming president. The general meeting will adjourn, and the different sections

shrouded in mystery; and although it was finally known where and by whom the new yacht was being built, no admission to the yard was attainable, and she was only visible to a favored pledged few. Attempts were made by American yachting men to obtain some clues as to her probable size, but even this was not successful.

At one time a clew was thought to be discovered, and a rich and patriotic New Yorker immediately ordered the laying of a keel for a yacht of smaller size than the Genesta and Galatea; but when the Thistle was launched, it was found that these rumors were incorrect, and that the new boat was about the size of the Galatea, being, in fact, two feet less on the water line. General Paine, of Mayflower fame, at once decided to try and improve on this celebrated racer, and is now having built for him, from designs by Mr. Burgess, a steel yacht, which will also be of a different type from anything now afloat.

Much interest has suddenly been developed in the result of this experiment, owing to the remarkable record that has so far been made by the Britisher. Out of seven races in which she has so far taken part, she has secured three first prizes, one second, and one third prize. On the other two occasions she was out of the race, owing to having missed the buoy in a fog and having at another time run into a calm. On May 28 she won the new Thames Channel match from South-end to Harwich, a distance of 50 miles, beating her nearest competitors, the Genesta (our former rival) and Irex, by nearly two hours and three-quarters. In this race

ining portions of the bodies of two out of five persons who have at different times died more or less suddenly from, as it is believed, the effects of lead poisoning. In one case he separated about a third of a grain of sulphate of lead from the liver and about the thirteenth of a grain from one kidney, besides finding lead qualitatively in the brain. In the other he was able to examine the brain with more minuteness, and estimated that here the cerebrum contained about a grain and a half and the cerebellum about a quarter of a grain of sulphate of lead. Mr. Blyth went on to remark, in the paper he read to the Chemical Society of London on these investigations: "There has hitherto been no reasonable hypothesis to explain the profound nervous effects of the assimilation of minute quantities of lead, but if it is allowed that lead forms definite compounds with essential portions of the nervous system, it may then be assumed that in effect it withdraws such portions from the body. In other words, the symptoms are produced, not by poisoning, in the ordinary sense of the term, but rather by destruction—a destruction, it may be, of important nerve centers."—*Lancet*.

Photographs in the National Park.

One of the most skilled and distinguished of practical photographic artists is Mr. F. Jay Haynes, of Fargo, Dakota. He is the official photographer to the Northern Pacific Railway. A series of new pictures by him consist of a number of admirable views in the National Park, Colorado, showing the great geysers in operation, snow scenes, etc.