

office, lest many more noble and worthy men fall victims to the supineness and indifference of inert corporate bodies.

We cannot recall the *dead*—but we should like to see a monument erected to their memory in Victoria Square, and such an epitaph engraved thereon that strangers and passers-by might read words of reproach and shame upon the city which, from apathy and mal-administration of its own laws, made the bodies of some of its bravest citizens a holocaust to their supineness and neglect.

Many months will elapse ere the wail of widows and little children will cease to be heard in the fatherless homes of those brave men who were sacrificed in the execution of their duty; some of whom in braving a dreadful death, in their efforts to rescue the crushed and mangled bodies of their comrades, performed as heroic a deed as any for which British officers receive the highest reward for acts of similar daring, and for which the highest distinction for deeds of bravery—the *Victoria Cross*—is placed upon their breasts by a British Sovereign.

**NEW DEVICE FOR RAISING WATER.**—M. Th. Foucault has recently produced a new apparatus for raising water by means of ammoniacal gas. The machine depends for its operation on the facts that water at 15° cent. absorbs 743 times its volume of ammoniacal gas, and gives it off again at 60° cent.; that at 100° cent. the tension of the vapour is seven and a half atmospheres; the petroleum and ammoniacal gas are without action upon each other; and that the same is true of petroleum and water. The apparatus consists substantially of a heater, which is partially filled with a strong aqueous solution of ammoniacal gas. This heater is connected by pipe with the upper part of a closed reservoir, the lowest part of the reservoir being connected by means of pipe and suitable valves with the stream or well from which, and the tank to which, water is to be raised. The reservoir contains a small quantity of petroleum, which forms a thin stratum on the surface of the water, and serves to keep the ammoniacal gas from contact with it, and, as the inventor expresses it, forms a fluid piston. The operation is as follows:—Supposing the reservoir full of water, the temperature of the heater is raised by suitable means, ammoniacal gas is given off, and passes over into the upper part of the reservoir, the stratum of petroleum preventing its being absorbed by the water there. A pressure is thus created in the reservoir, which forces the water there out and up to the tank to be filled. When all the water has been forced out of the reservoir the heater, as it cools, reabsorbs the ammoniacal gas from the reservoir and thus creates a vacuum, which the water from the stream or well rushes up to fill, and thus refills the reservoir. The heater is then heated, and so on, as before. The inventor claims that the consumption of fuel is almost insignificant as compared to that of a steam pump of the same capacity.

**REROLLING AND REDUCING OLD RAILS.**—A correspondent of the *Chicago Railway Age* writes from Girard, Ohio, as follows, concerning Mr. J. H. Jones's patent for rerolling and reducing old rails, or restoring them to their original size. The invention consists of an attachment to rolls by which old rails, either iron or steel, can be reduced to any size desired, either with or without steel caps: "Whether a steel cap could be perfectly welded has been a question on which many opinions have been expressed and until now, we believe, it has never been satisfactorily answered. In presence of a large number of persons an old fifty-pound rail was, in six passes, reduced to twelve pounds per yard, steel-capped and complete, with perfect weld, and can be done with one heat. By Mr Jones's invention the rerolling of rails is greatly reduced, as one man and three boys are all the force necessary to a set of rolls, while the advantage of steel and iron rails with reduction in cost, must prove to be of great advantage to narrow-gauge railroads, as the purchase and reducing of old rails of heavier weights to that required on such roads will greatly lessen the cost of construction, now so much less than that of the common gauge. The simplicity of the invention is of itself a recommendation. Any ordinary roller can work it, and from the heating furnace to the straightening bank it requires only six passes of the iron.

### PROPOSED FLORAL HALL AND AQUARIUM FOR SOUTHSEA.

(See page 164.)

In giving an illustration of a proposed Floral Hall and Aquarium for Southsea, in England, we would call the attention of those who take an interest in such matters, to the pleasure it would afford to the citizens of Montreal, if we possessed, even on a limited scale, a Floral Hall and Aquarium, — erected in a suitable place.

### MAYO MEMORIAL HALL, ALLAHABAD.

(See page 165.)

We are indebted to the *London Builder* for the illustration and description of the Mayo Memorial Hall, Allahabad:

This building, intended for municipal and public purposes, was built partly by voluntary subscriptions and partly by a grant from the Municipality of Allahabad. It consists, on the ground-floor, of a hall, 72 ft. by 40 ft., with galleries 5 ft. deep, and a clear internal height of 50 ft.; a ladies' drawing-room, 32 ft. by 20 ft. opening into the end of the hall; and a committee room, 20 ft. by 24 ft. On the upper floor is a dining or supper room, 60 ft. by 22 ft. It is built of brick and stone (a white stone from the neighbourhood), with strings and bands of Minton's tiles.

A moulded and carved panel at the entrance contains a slab of Silesian marble, engraved with the following inscription:— "Dedicated to the Memory of Richard Southwell Bourke, Earl of Mayo, K.P., M.A., P.C., LL.D., some time Viceroy and Governor-General of British India, who, after three and a half years of beneficent rule, during which he inaugurated many wise measures, and won the regard of all classes, fell beneath the hand of an assassin at Port Blair, Andaman Islands, on the 8th day of February, 1872." The inscription is surmounted by a carved shield of the Mayo arms, with supporters and the Earl's coronet and motto.

Medallion-heads, in red Mansfield stone, are carved in circles on the façade of the building; these represent Britannia, Europe, Asia, Africa, America, Polynesia. In the vestibule under the tower there is a floor of Silesian marble representing the sun, the twelve signs of the zodiac, and the four seasons.

The detached turret is for the use of servants in attendance during a dinner or supper, and as an exit for dishes.

Externally and internally the hall-roof is a pointed arch, the external surfaces keeping the same curve; the materials of the roof are concrete and cement on flat tiles, resting upon wrought-iron curved ribs without ties; the thickness is only 7 in. The clear span is 40 ft., the radius of inner surface being 26 ft.

The front upper verandah and that over the ladies' drawing-room have flat terrace roofs; the roof over the dining-room is covered with slates from Rewaree, near Delhi.

The shallow gallery fronts are of brass wire netting, with small gilt flowers at the intersections. These galleries are only intended for ladies, taking a single row of chairs loosely placed, not fixed

**REFERENCE** was recently made in this column to a curious Parisian clock. *The Scientific American* contains the following:— M. Cadot, of Paris, has recently invented a curious clock which deserves a prominent place among the number of similar ingenious devices which we lately described. It has two apparently free hands placed in the centre of a double pane, the two sheets of glass composing which are held in an ornamental frame. The clock is operated by concealed mechanism in the frame, which once a minute causes a slight and nearly invisible motion of one of the glasses. This causes the movement of the minute hand, and a minute train of gearing concealed in the pivot of the latter actuates the hour hand. Mr. Robert Heller, the conjurer, has lately been exhibiting a clock of his own invention, the mystery of which no one, we believe, has yet fathomed. It is a clear disc of glass, marked with the usual numbers. The hands have no bulb or other enlargement at the centre, where it might be imagined mechanism could be concealed, and appear to be simply pivoted to the face. A ring like that of a watch suffices for the support of the clock from two cords suspended from the ceiling. At the command of its owner, the clock marks any hour, moves backward or forward, and otherwise behaves in an astonishing manner. The use of the cord naturally suggests concealed wires and electricity, which is probably the secret of the movement. But this theory is somewhat damaged when the magician removes the clock from its cords, and, holding it with two fingers at arm's length, carries it in the midst of his audience and causes it to continue its performances under the very eyes of the people, allowing the closest inspection.