

other end the large spur wheel, which gears into an endless screw sliding upon a shaft running alongside the bed of the machine. One of the handles shown on the right-hand side of the machine is used for turning this shaft, and by differently arranging the change wheels on the left-hand side of the machine, any desired pitch may be obtained. The second handle on the right-hand side of the machine is used for working a screw by means of which the whole tool-holder can be moved forward and backward during the operation of cutting screw wheels.

#### ANOTHER RAPID TRANSIT SCHEME.

A mechanic of Bridgeport, Conn., Mr. E. A. Coggeshall, proposes an elevated rapid transit railway for the city. His plan, which we illustrate on page 311, is to occupy about eight feet of one side of a street with two elevated tracks, supported on two rows of ornamental wrought-iron columns, the outside row to stand eight feet from the curb. The upper track is to be for steam-cars, and three feet below he proposes a track for horse-cars carrying way passengers. All the cars are to run up one street and down another, a block apart. Should it be necessary to have an up and down track on each avenue he would occupy eight feet more of the street, with another row of columns, as before described, and construct double tracks, running all cars on one track the same way, thus avoiding the possibility of collisions.

He would have a station at one corner of every block for the way passengers, and one for the through line at every six blocks—the depots on the through being one story higher than those of the way line, which will be suspended from the structure, and no obstruction of the sidewalk except at the foot of the staircase. Passengers could alight at the stations of the through line, descend to the way station below, and take the way-car to any point they may wish to stop at. By having continuous rails with hard rubber between them and their bearings, all noise would be obviated, and the trains would run comparatively quiet. The way-cars would be about twelve feet above the street, and suspended from the lower track, the motive-power being placed directly on the top of the car and working on the same principle as an ordinary locomotive, thus enabling the cars to be propelled either way.—*Frank Leslie.*

#### CAPTAIN BARRETT'S APPARATUS FOR HANDLING SMALL BOATS AT SEA.

The difficulty attending the lowering and detaching of boats in a sea-way, and the danger of the sea striking them on the roll-boards of the ship, calls for an apparatus which, at a moment's notice, can free the boat from its tackles, and permit it to be shoved off. The contrivance here described was invented by Captain Edward Barrett, who commanded the U. S. steamer *Ticonderoga* during the recent naval manoeuvres at Key West. A man attends the lever, and at the proper time throws it back, loosening and detaching the bolts.

A greater difficulty is that of attaching or hooking on boats in a sea-way. Thus far only one system has been in operation, that of a hook attached to the straps of the block. The new mode offered is the application of a check stopper to the lower block—a stopper which permits the men detailed to hook the falls to do so at leisure, and to clasp the chain at the right moment; that is, when the sea throws up the boat and permits the chain to be shortened in. The detaching process requires one man, and the attaching two. The following describes our illustration:—A, Attaching bolts; B, Clasps, kept in place by the bars C, attached to lever D. By throwing back the lever (D) the bolts (A) are detached. The lower block (E) of the fall has a clasp (F) attached to it; the chain (G) runs through an opening of the clasps (F).—*Frank Leslie.*

An extensive deposit of hematite iron ore has been discovered on the banks of Bolton's Creek, Bathurst, by Mr. George Mitchell, of Perth, who in prospecting for minerals came across this treasure, hid up to this from the praying eyes of mankind. The deposit is apparently inexhaustible, and the ore contains a very large percentage of pure iron. Mr. Mitchell, having at once opened up successful negotiations for the lease of the property, has now several men employed in getting out ore, which will be shipped to the American market.

#### PUBLIC BATHS.

The low death rate of the enormous city of London is one of the most interesting facts in modern scientific and medical experience. One of the secrets of this satisfactory condition of things will be explained to a certain extent by our illustrations on pages 314 and 315. They represent the public baths and wash-houses recently erected for the parish of Paddington, and are described as follows by the *Builder*, to which interesting journal we are indebted for our illustrations.

The keynote of the design is the position of the men's first-class swimming-bath. As it is the largest and most important of the various departments into which the establishment is divided, it occupies, so to speak, the place of honour,—the centre of the site,—the other buildings being grouped in respect to the same in such position as their relative importance and uses would suggest.

This bath is 90 ft. long by 40 ft. wide, and will hold, when filled, 100,000 gallons of water. It will be provided with fifty boxes for bathers, and will have a spring-board at its eastern end, and an ornamental fountain at its other extremity.

The men's second and third class swimming-baths are placed in the rear of the first-class swimming-bath, end to end, and are each 70 ft. long by 30 ft. wide, provided with forty boxes for bathers.

The ladies' swimming-bath is 45 ft. long by 36 ft. wide, and is fitted up with a dozen dressing-boxes. Each class of bathers is provided with a separate waiting-room, with the necessary water-closet and other accommodation. The whole of the swimming-baths are lighted from the roof.

The private bath-rooms are in square compartments; made of slate, the first class being 7 ft. long by 6 ft. wide; the second class being 6 ft. square. It is proposed to enamel the slate partitions dividing the first-class baths, but simply to oil those of the second class. The first-class baths will be made of porcelain the second of copper japanned.

The washhouse is 75 ft. long by 40 ft. wide, subdivided into groups of compartments, and immediately adjoining are the ironing-room and house laundry. A residence for the engineer in charge and a smith's shop are also provided. It should be noted that provision has been made to enable the engineer and other officials to proceed from the front to the rear of the establishment without going into the open air.

The first floor is devoted to a board-room, clerk's office, and superintendent's apartments and the rooms on the second floor will be used as bed-rooms only.

The style of architecture adopted is Italian, the materials employed in the front elevation being white Suffolk bricks and Portland stone.

The total expense of the erection is in the neighbourhood of \$100,000.

There is much need for something of this kind in our Canadian cities, whose death rate would undoubtedly be sensibly affected by the opening of public baths. During our long winter, when the body is covered up by multitudinous wrappers, the far greater part of the population live in houses unprovided with baths, and so the excretions of the body remain a prolific cause of fevers and by no means a hindrance to the spread of smallpox and other infectious diseases.

ALL the paper used to print the United States national currency is said to be made in the Glen Mills, near Westchester, Philadelphia, by a sixty-two-inch Fourdrinier machine. The principal peculiarity is that short pieces of red silk thread are mixed with the pulp, and it is poured on the wire cloth without going through a sieve, as this would retain the threads. Next from a separate contrivance worked in a very peculiar manner, a shower of short blue-silk threads falls in strips on the paper while it is in the process of formation. One side of the paper is thus covered with blue lines, formed by the blue silk thread, and this is used for the front of the green-back, on which these threads are distinctly visible, conform to the manner in which they were superficially distributed, notwithstanding they are deeply enough embedded in the texture of the paper. The peculiarity of this machine is to make a paper so peculiar as to be practically impossible to imitate; and this is one of the principal guarantees against forgery in the possession of the Government.