

THAT ROME WASN'T BUILT IN A DAY is a fact that has strongly impressed itself on the residents of Kingston. Following the destruction of the original dome on the city hall a somewhat protracted time was consumed in securing plans for a new one. One set of drawings was prepared and rejected; another set prepared and accepted. Then a further lapse occurred. Finally tenders were invited; some contractors were unable to get plans and friction arose. After estimates were submitted the figures were published, and then the tenders were thrown out. The contract has finally been let, and the city in general is rejoicing.

* * *

MICROSCOPIC EXAMINATION OF WOOD after it breaks in a testing apparatus has just been started by the office of wood utilization in the Forest Service of the United States. Every species of wood has several different kinds of cells, each of which has its own size and form. There is also a wide variation in the number and arrangement of the cells in different species. These differences in structure have their bearing on the strength of the wood. The application of microscopic work to tests recently conducted by the U. S. Forest Service is expected to give a better knowledge of the conditions on which the strength, stiffness and elasticity of wood depends, and how it may be used to best advantage in construction. Other problems connected with the structure of wood, such as the preparation of wood pulp and the treatment of wood with preservatives, will probably be aided by this new study.

* * *

REINFORCED CONCRETE BARGES and pontoons of considerable size have been in use for some time in Italy and have proved so satisfactory that the Italian Government has contracted for several large barges for use in harbor work. The first of these boats is of sufficient size and has been in use long enough to furnish a test of their utility. It is a double pontoon, built in 1897, 67 feet long and 27 feet out-to-out of the two parts on which is built a boat-house for the Rome Rowing Club. In 1905 the Italian Navy Department built the "Liguria," a reinforced concrete barge of 150 tons burden, 57 feet long and of 18 feet beam. This was first put upon the harbor work near Rome, but has since been towed to and from many of the ports of Italy. The Liguria was so successful that the Government built another 100-ton barge, on the model of which four others are now under contract. In several other places in the kingdom, notably across the River Po, near Pavia, pontoons of reinforced concrete are used to carry small or light bridges. Most of these constructions have been carried on by Messrs. Gabellini of Rome.

* * *

PAINTING CONCRETE can only be done successfully, according to an eminent concrete engineer, after the concrete has stood at least one summer. When the surface is thoroughly dry it must be washed with a 7 or 8 per cent. solution of muriatic acid, which should afterward be washed off with plenty of clean water. After the surface has been thoroughly dried, it should be given a priming coat containing so much turpentine that it is almost flat. It is considered best to use more turpentine and much less drier, as compared with ordinary painting, increasing the amount of oil for succeeding coats. Boiled linseed oil is considered preferable to raw oil. Each coat must be given time to dry thoroughly before the next is applied. For painting with water color or calcimine, the surface of the concrete should be washed with muriatic acid and clean water, as before stated. After it has dried thoroughly, it should be given a coat of alum size, or, still better, a coat of flat paint. When this is dry, the surface is ready for calcimining. One formula for size is one pound of acetic acid, one pound of alum and two gallons of water.

AN INTERESTING SERIES of experiments, says Engineering, an English publication, has been carried out at the National Physical Laboratory, at the instance of Sir John Brunner, to test the protective effect of cement concrete or steel; 8-inch specimens of mild steel bar, both turned and with scale left on, were embedded in blocks of good Portland cement concrete measuring 12 inches by 7½ inches by 7½ inches. The blocks were covered with water several times a week for a year, and for three months afterward were left in the open exposed to the weather. After 16 months one of the blocks has been broken up and the embedded specimens examined. No trace of any action of the cement could be detected, the scale on the rough specimen was undisturbed and the bright specimens showed no alteration on examination under the microscope. Further tests are to be carried out with the remaining blocks.

* * *

A SINGLE RAIL STREET CAR SERVICE is shortly to be introduced in New York City. Application has been made to the Public Service Commission by a syndicate who has recently acquired the Pelham Park and City Island Railroad, asking authority to change the motive power from horse to electricity, and to sanction the installation of the American monorail system. As soon as the legal formalities have been complied with, the construction work will be started by the Monoroad Construction Company, capitalized at \$1,500,000, which is to build and equip the road. It is expected that the road will be in operation three months after the work has been under way, and that it will be the first step in revolutionizing surface transportation throughout the city. The type of car to be used is fifty feet long and pointed at one end, running on four wheels placed under the car as in ordinary practice, but in tandem, two at each end, each wheel having double flanges, and being driven by two separate alternating motors. These wheels run on a single rail spiked to ties. Above the car at each end is a flexible arm, connected with an X-shaped truck, each truck containing four guide wheels, which run in two L-shaped overhead rails so arranged that the guide wheels cannot leave the rails without taking something apart. These guide rails, which are kept a uniform distance of thirty inches apart, conduct the electricity.

* * *

AN ELECTRO-MAGNETIC STREET CAR BRAKE, the invention of Mr. A. W. Maley, formerly assistant engineer of the Leeds Corporation Tramways, has recently been subjected to a series of important trials at Birmingham, England. It is generally believed that the problem of braking a runaway car on dangerous gradients has been solved. The contrivance is more elaborate than the present types of brakes, and adds about half a ton to the weight of the car. It is a combination of the principle of mechanical and electro-magnetic brakes, and among the many advantages claimed is the elimination of the danger of skidding, due to the fact that no braking is done on the wheels other than to drive the motors as generators, when descending a hill or making a stop. The current so generated is utilized for the track magnets, which in turn are attracted to the rail, and by their backward movement as the car goes forward throw into action mechanical rail shoes. There are three blocks on each rail, namely, a magnet and two slippers. While the brake action is thus extremely powerful, the blocks have a tendency to keep the rails clean. In addition to the electro-magnetic function the brake may be applied by hand from the driving platform, and for this purpose suitable levers and links are introduced. The magnets are excited either by the current taken from the motors acting as generators, or, by the operation of a special canopy switch, they may be energized direct from the trolley wire. The trials at Birmingham have been regarded as satisfactory.