Progress in Science.

The Edison Concrete House.

ALTHOUGH Mr. Edison has left his mark upon more different developments of the world's progress than perhaps any other living scientist, and is now past the age at which the majority are most productive, he is now giving most of his time to an invention which he himself considers the greatest thing he has ever done.

The name of Edison is associated in the popular mind principally with electricity, the wide range of the inventor's improvements in telegraphy, telephony, and lighting being principally concerned with ingenious cajoling of that mysterious fluid; but his present work is far removed from delicate electrical devices as monolithic masonry. Even more widely known than his electrical devices are Mr. Edison's inventions of which the principal use is the amusement of the people, the phonograph and the kinetoscope, the former of which, considered by itself apart from its commercial or industrial value, remains perhaps the most wonderful machine of all; but Mr. Edison now goes on from the amusement and recreation of the masses to the amelioration of their material surroundings, and thereby to increasing their self-respect. This, as Mr. Edison says, is surely worth doing, and in its intended effect in the betterment of mankind is truly more a philanthropic than a commercial undertaking.

The ultimate object of the present invention is no less than the provision of a means whereby individual workingmen's homes—artistic, comfortable, sanitary, and not monotonously uniform—may be turned out in such quantity and so cheaply that their rent, including car fare to and from tenant's work, will not exceed, say, 36/ a month. Mr. Edison hopes thereby to depopulate the swarming tenements of congested cities, and provide their occupants with surroundings morally, mentally, and physically more healthful.

Reinforced concrete is the material adopted; and by Mr. Edison's method, after the erection of suitable moulds, an entire house, including walls, floors, roof, moulding, cornices, bath and laundry tubs, is "poured" at one operation, much as one might squeeze paint out of a compressible tube and leave it to set.

Rumours of this intention have been in the air for some time, and have been received with more or less incredulity or derision by the technical Press, but experiments upon a practical scale have now reached a stage of progress at which Mr. Edison is confident of ultimate success.

The typical house shown in our illustration has a floor plan 25 x 30 feet, intended to be built on lots 40 x 60. The front porch is 8 feet and the back 3 feet wide. On the first floor is a living room 14 x 23 x 9½ feet high, and a kitchen 14 x 20 x 9½ feet at the back. From the corner of the living room a staircase leads to the second floor, containing two roomy bedrooms and a bathroom 7½ x 7½ x 8 feet. The third floor contains two large low attic rooms, but each room has large windows, providing an abundance of light and fresh air. A cellar 7½ feet high extends under the whole house, containing boiler, wash tubs, coal bins, etc.

All the mouldings and decorations are cast in the concrete, and not applique as hitherto in concrete work.

The inside walls require no plaster finish, the special mixture used leaving a perfectly smooth surface, which can be tinted as desired. Only the doors and window frames and the pipes for water, gas, or electric light wires are of wood or metal, making the house not only water-proof and vermin-proof, but practically fire-proof, reducing if not eliminating insurance cost.

The mixture used is much more liquid than usual concrete, in order to obtain free flow, in spite of which there is no segregation of the material or settlement of the heavier aggregate.

Mr. Edison thinks it will be possible to assemble the moulds complete in four days, to fill the form with concrete in six hours, and, after allowing six days for setting, to remove the moulds in another four days. A complete set of moulds would therefore be occupied for fourteen days in the building of one house, or would be available for about 21 houses in a year; but owing to the interchangeability of parts, Mr. Edison estimates that with six complete sets of moulds, 144 houses may be built in a year.

The greatest care is taken to make all the mould sections interchangeable. Such are the finish of the moulds and the nature of the colloid concrete, that there is absolutely no adherence of the latter to the former. The marks of the joints between the moulds are rarely traceable on the finished wall, and the moulds may be used over and over again indefinitely. With the present use of wood for forms, it is almost impossible to use the latter over again, owing to breakage and adhesion, and it is cost of the wood that renders the expense of monolithic concrete dwellings prohibitive.

ASSEMBLING THE CAST-IRON MOULDS OF THE "FORM."
Showing form of cellar walls and extension for front stoop.

TYPICAL HOUSE CAST IN ONE PIECE.

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A New Electric Generator.

At the Winnipeg meeting of the British Association for the Advancement of Science a model was exhibited by Mr. S. H. Schneider, which he claims will revolutionise the generation of electricity. It consists of a collapsible airtight box, which when closed sinks in water by its own weight. On reaching the bottom it is expanded by a magnet, when, being lighter than the water displaced, it rises to the surface, where it again folds up and sinks. The inventor states that a full-sized "generator," weighing 600,000 pounds and displacing 10,000 cubic feet, would generate 50,000 horse-power at practically no cost of operation.

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A Big Submarine.

The submarine is advancing steadily in size and capacity. France has lately launched the Archimedes, whose displacement of 800 tons constitutes her the largest submersible boat afloat. She is 229ft 8in in length, and is driven by twin-screw engines at a speed of 15 knots on the surface and 10 submerged. Her steaming radius is 2500 miles.

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The Annual Fuel Bill.

The United States Government is now purchasing its coal on the basis of its heating value, which is ascertained by analyses of samples. The new system of purchase applies to 40 buildings in Washington, over 300 public buildings throughout the United States, the navy yards and arsenals, and the Panama Canal. Already the Government has effected a saving of £50,000 on its annual fuel bill of £2,000,000.

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Training the Motormen.

Electric-car motormen in Berlin are subjected to three weeks' training, comprising 20 hours in the classroom and 40 on the cars in each week. The course comprises the usual practice of a dummy platform, and study of every detail of car equipment, as well as sufficient instruction in overhead and track equipment to enable the motormen intelligently to report accidents. After the recruit has completed the course, he must pass separate examinations by the car engineer and the district traffic inspector. Candidates receive half-pay during instruction, but to cover the cost of training each must deposit 16 dollars, which is refunded in full after one year's employment.

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A Wireless Telephone.

Conversation by a wireless telephone, the invention of two lieutenants of the French Navy, is said to have been carried on between Toulon and Port Vendres, a distance of 155 miles.

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Telephone Train Dispatching.

Many of the American railways are arranging to employ telephones for train dispatching, the Northern Pacific having already 470 miles of telephone in service and 250 more projected, while the New York Central will have its whole route to Chicago under telephone control when 200 miles of equipment, in addition to the present 250 upon the Michigan Central, is complete.

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Indian Railways.

The total length of railway under construction or immediately projected in India is 3222 miles, of which about one-third is by the British Government, and the rest by private companies. The estimated cost is over £2,000,000.