

Repairs are made on locomotives in England for about every 50,000 miles run, while in the United States it is customary to run engines from 70,000 to 120,000 miles between general repairs.

The hydroscope is an invention by Signor Pino, an Italian, by which the eye is enabled to penetrate the sea to an enormous radius. The invention ought to nullify the dangerous character of submarine boats.

Dr. Lunden, a German scientist, claims to have proved by experiments that rays reflected from radium enable the blind to see more or less clearly. He instances the cases of two Russian blind boys, who permanently regained their sight through the use of these rays.

Artificial clay, for use in the manufacture of artificial stone tiles, etc., is made in Germany. It is made up of sand, chalk, cement, liquid glue and petroleum, intimately mixed. A chalklike mass is the result, which is easily moulded and made hard by the application of heat. The product is fire proof, resists the weather, and does not absorb moisture.

Kuhlow says that unless the world looks to its forestry, iron will before long replace wood for railway sleepers. The life of the latter is about equal to that of steel rails. Wooden sleepers give a better road, more comfortable to travel on and less destructive to the rolling stock, less liable to accidents from broken rails, and affording facilities for repairs and alterations for junctions and sidings.

A Swiss life preserver consists of a hollow tank fastened to the back, which serves to keep the person afloat, and a provision and drink chamber fitted on the chest. The latter is divided into three compartments, containing drinking water, alcohol and air. Access to the water and stimulants may be had through tubes. Condensed food is carried in three tins on the top of the water tank. There is also a compass, chart, pistol, and ammunition for signalling, and a small sail and signal of distress.

It is known that the radio-active substances like radium impart radio-activity to other substances, and R. Geigel has attempted to show whether the absorption of energy is accompanied by any increase in weight. He was unable to detect any such effect. With a much more sensitive apparatus, Carl Forche has repeated the work, making numerous weighings of 56 grains of lead, and has found that a large mass of active material half an inch below the lead increased the weight of the latter about one part in 25,000,000.

Coherers, instruments that respond to electric waves, are of many forms. That used by Marconi, a tube of metal filings that the waves make conducting and cause to pass dot and dash signals, is unsatisfactory and often unreliable, and require constant tapping to keep the particles separated. The Lodge-Muirhead apparatus, requiring no tapping, is claimed to work regularly in all weather. This coherer consists of a small fine edged steel disc rotated by clockwork upon a globule of mercury, from which it is separated by a film of oil, and its action depends upon the breaking down of the film by the electric oscillations, which thus close the local circuit and cause the signals to be given. The system of telegraphy, of which this forms the essential part, has been in course of development since 1894.

An apparatus, patented by a native of Dusseldorf, for receiving, cooling, and transporting bars, after they have passed through a rolling mill or straightening apparatus, consists of two fixed rails, on which the bars rest, and are moved forwards step by step by means of a long carriage mounted on wheels between the fixed rails. The carriage is reciprocated by a rack and pinion, and fitted with pawls which catch on the rails in the forward movement, but turn down and pass under the rails in the backward movement. When bars have to be removed from a straightening apparatus with a hydraulic cylinder, the receiving end of the carriage is bent downwards, in order to lift the bar over the straightening bench. The intervals between the ends of the rails facilitate cooling. A rotating cylinder at the delivery end of the table discharges the bars to one side.

Dr. Knot, the celebrated æronaut, as the result of experiments, states that nausea and ultimately death of balloonists at high altitudes result from escaping gas due to the decrease of atmospheric pressure, and not from atmospheric conditions. He says he and others experienced no change in their physical condition till the gas made itself felt. Inconvenience might be experienced, but a post mortem has never shown that death has resulted from decreased atmospheric pressure. A height of six miles has been reached and Dr. Knot thinks much greater altitudes could be reached if a balloon could be constructed from which the gas could be prevented from descending on the æronauts.

Professor Sir William Crookes, before the International Chemical Congress, dealt with the possibility of reducing all the elements of matter to one, and of ultimately finding this resolvable into a single form of energy. The subject was "Modern Views on Matter-the Realization of a Dream." Sir William cited the utterances of Sir Humphrey Davy and Faraday, as anticipating the possibility of reducing the elements to simpler bases, and sketched the significance of the Roentgen rays and Becquerel rays, and the experiments of Curie and others, and said: "All these observations find internal connection in the discovery of radium, which is probably the basis of the coarser chemical elements here. Probably masses of molecules dissolve themselves into the ether waves of the universe, or into electrical energy. Thus we stand on the border line where matter and force pass into each other. In this borderland lie the greatest scientific problems of the future. The one element suggested is radium.



Negotiations are going on to have all the electrical wires in Montreal put underground.

The Ontario & Quebec Power Co. has obtained the right to build a dam at the Little Chaudiere Falls, one mile above Ottawa.

Rat Portage has been given the right to expropriate land at the entrance to the Winnipeg river, and will develop 5,000-h.p. by water power for manufacturing purposes.

The Clergue Co., which possesses valuable waterpower privileges on the Kaministiquia river, announces that it will proceed with the development of that power at once.

The town of Red Deer, N.W.T., has contracted with the Western Telephone Co. for the installation of an up-todate telephone system, and has also made an agreement for the erection of a power-house and electric plant of the finest modern class to furnish light and power. The cost will be about \$30,000.

Long distance telephone communication will be established this year between Lethbridge and Cardston and Calgary and Edmonton. Cardston and Calgary will be connected next year, thus completing the chain. Two rival companies are canvassing for telephone franchises in Cardston and Magrath.

The Cataract Power Co., of Hamilton, is entering into power development on a large scale. They are now developing 9,500-h.p. on Twelve Mile Creek, thirty miles from the city, and expect within a year to transmit 50,000-h.p., most of which has been contracted for. The Deering works will take a considerable quantity at half the cost of energy produced by steam.

The importance of careful wiring where electric current is used was shown at the public buildings at Ottawa recently, when it was discovered that the high voltage electric wires had set fire to the cedar ducts through which they enter the western departmental block, which was partially burned some years ago. Little damage was done before the fire was discovered.

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