Progress in Science.

The Gyroscopic Monorailroad.

IN the spring of 1907, Mr Louis Brennan, inventor of the Brennan torpedo, exhibited before the Royal Society of England a small car which travelled on a single rail or cableway, and kept its equilibrium perfectly even while rounding curves and when its load was shifted from one side to the other. This feat, an apparent defiance of the laws of gravity, aroused a great deal of interest, and it was predicted that it marked a revolution in railroad practice. The car was kept in equilibrium by means of a pair of wheels, that were rotated at high speed in opposite directions. The gyroscopic effect of these rotating masses prevented the car from toppling over, in the same way that a top is kept from falling while spinning at high speed. Since the first exhibition of the gyroscopic car, Mr Brennan has been at work developing details, which would permit of using the same principle on a much larger car suitable for carrying heavy loads. A couple of weeks ago Mr Brennan's invention, now reduced to practical dimensions, was again exhibited before the Royal Society. The car was 14 feet long, 13 feet high, and 10 feet wide, weighing 22 tons. Carrying a load of 40 passengers, the car travelled on a single rail around a circular track 220 yards in circumference. The balance was perfectly kept by means of two gyroscopes, weighing three-quarters of a ton each, and revolving at a speed of 3000 revolutions per minute. The wheels were encased, and ran in a vacuum, so as to reduce friction to a minimum. A gasolene engine was used to keep the gyroscopes spinning and also to propel the car. The car was subjected to the severest of tests, the passengers suddenly shifting from one side to the other in their endeavour to destroy the equilibrium, but the gyroscope wheels responded to the slightest disturbance, and restored the balance at once. One of the difficulties encountered in a car of this type is the precessional action accompanying the gyroscopic motion. This, however, was overcome by means of friction devices. The advantage of using a mono-rail is that the cost of construction is considerably less; but in addition to this, there is the fact that a slight deviation from a true line would result in no damage, whereas when two parallel tracks are used they must both be kept perfectly parallel and in perfect alignment, otherwise the car will run off the track or will rock violently if one side dips below the other. In other words, a double-rail track is more difficult to keep in repair than two monorails, for the reason that the two rails are inter-dependent, and variation in one must not take place without a corresponding variation in the other. In rounding curves there is always danger of spreading the tracks where a double-rail track is used, while with the mono-rail line, should the side thrust be sufficient to shift the rail, there would be no tendency for the car wheels to leave the track.

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Another Expedition to the Arctic.

Captain Roald Amunsden, the discoverer of the North West Passage, arrived in the United States recently. Captain Amunsden is making preparations for an expedition to the Arctic which he calculated would keep him away from civilisation probably more than five years. His primary object will be to explore the ocean depths of the region, to study the currents and temperatures and character of the ocean bottoms. He will start from San Francisco in July, 1911, in the 400-ton gasolene auxiliary schooner "Fram," which was used by Nansen in his trip to the North. The Norwegian Government has put up £5000 for the expedition, and there have been many private subscriptions from well-to-do Scandinavians interested in Polar exploration and desirous of having their own people win the glory of discovery. Capt. Amunsden says his calculations in regard to the drift of the "Gjoa" were verified by events, and that he believes the "Fram" will take the course that he is confident the drift will force her to take. He can assist in making that course pretty nearly across the pole by the use of his gasolene engine at periods when the pack will permit him to steer.

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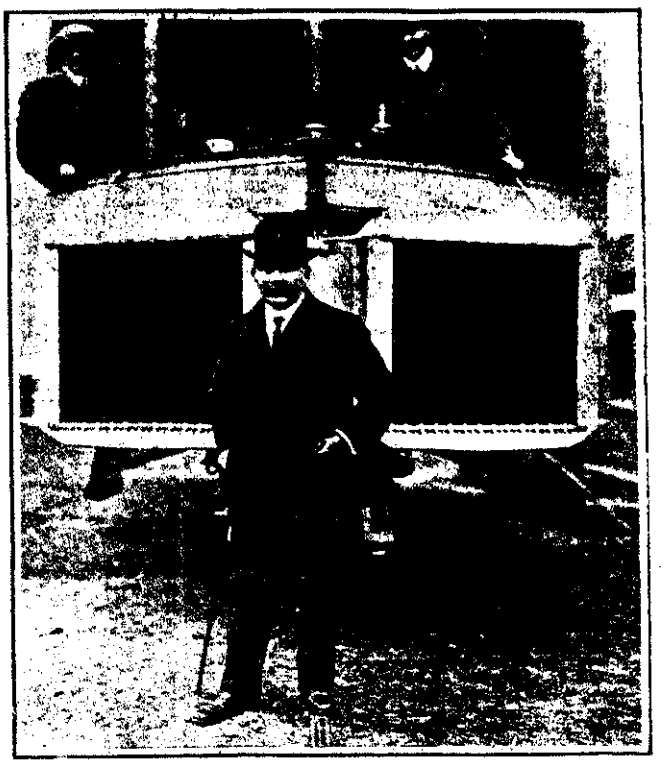
Electric Lamps Replace Gasoline.

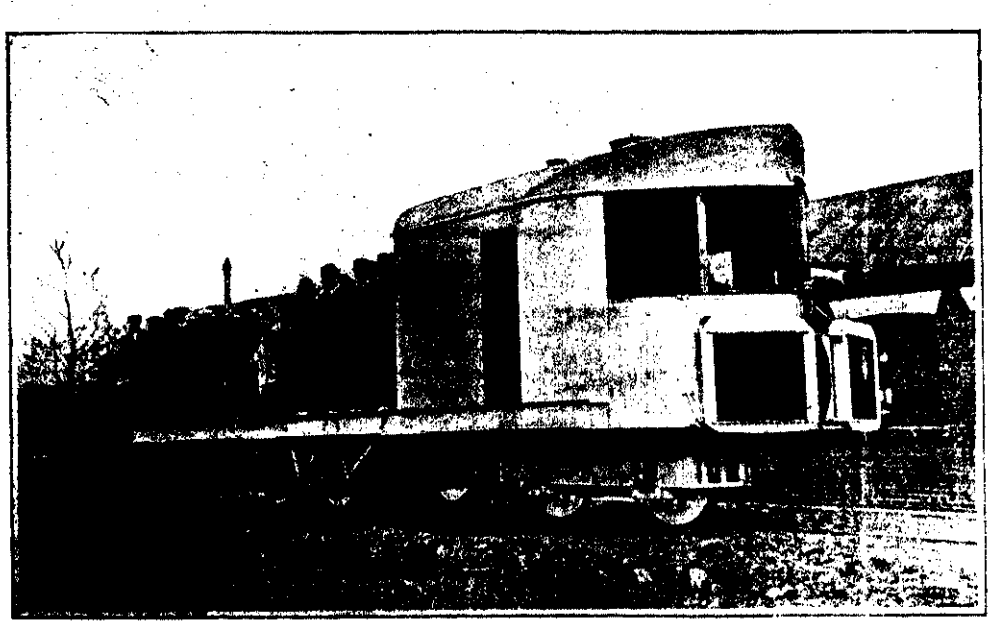
Central Park, New York, is to be illuminated with 1477 electric lamps in place of the 400 gasoline lamps now in use. Three reasons have been given for this change. In the first place, the park is insufficiently illuminated at present; secondly, the use of gasoline has resulted in the destruction of grass around each lamp post, due to dripping or leakage; and finally, the lamplighters have worn paths across the turf from one lamp to another. The use of electricity will not require unsightly overhead wires, as the circuits will be contained in armoured cables placed underground.



MR. LOUIS BRENNAN STANDING IN FRONT OF HIS GYROSCOPIC MONORAIL CAR.

The First German Aviator

Herr Hans Grade, the first German aviator to fly successfully with a monoplane of his own invention, has won the Lanq prize of £2,500 for the first kilometre flight by a German-built and piloted aeroplane. After first performing the required flight in 3min. 31sec. above the Mars field, at Bork, on October 17th (besides which he made three other flights of 6min. 20sec, 48sec., and 2min. 26sec. on the same day), Herr Grade took his monoplane to the aviation field at Johannisthal (where the flight for the prize was required to be made), and won the prize in short order on the 30th ult. The following day he made three flights of 3¼, 4½, and 5 minutes, respectively, and a fourth flight, in which he made one circuit of the field. The motor used by Herr Grade is a 4-cylinder, V-type, air cooled motor of his own invention, which develops twenty-four horse-power, and weighs seventy-seven pounds. It makes 1,200 to 1,400 revolutions per minute, and carries the propeller upon its crankshaft.



THE FOURTEEN-FOOT BRENNAN GYROSCOPIC MONORAIL CAR RECENTLY EXHIBITED BEFORE THE ROYAL SOCIETY, LONDON.