

THE GYROSCOPE RAILWAY

Brilliant Use Made of a Neglected Principle.

CONSTRUCTION SIMPLE

An Uncomplicated Monorail Car That May Revolutionize Present Transportation Systems—Invention Amazes British Royal Academy—Explanation of the Discovery.

Those present at a recent meeting of the British Royal Society witnessed what appeared to be the most astonishing toy that they had ever seen, a small self-contained car and locomotive combined, running without lateral support on a single rail, rounding curves of small radius and ascending and descending slopes without difficulty. If a weight were placed on one side, the car after a slight oscillation turned slightly against the weight, bearing that side higher than the other. On running round a curve, the car, contrary to the laws of nature, leaned inwards instead of outwards, resisting the natural centrifugal tendency.

Before enlarging on the technical side of this discovery, let me give a brief description of the inventor and of the more obvious aspects of his car and single line railway, says a writer in the New York Post. Mr. Louis Brennan is an Irish-Australian whose self-steering torpedo was bought by the British Government some ten years ago for \$110,000. His car is one of the many monorail inventions which hitherto have received a limited and local support, but have never obtained commercial success. The car is not suspended from the rail, as in the case of the Behr and Lartgen systems, nor is it in any way dependent upon lateral support. All it will need is a permanent way with single rails similar to those in general use, supported on sleepers or ties of half the usual width. For its balance it depends entirely on its internal mechanism, and this is at once so secure and so impregnable that observers and testers are left astounded.

This result is obtained by the use of two gyroscopes with horizontal axes mounted in the car and rotated at high velocities in opposite directions. When these are running at the required speed, their influence is such that the car remains upright, either when at a standstill or when moving along its rail, notwithstanding the fact that its center of gravity is high above the latter. The gyroscope wheels are mounted in special bearings, and are rotated by means of electric motors, in a vacuum, so that both the bearing and air friction are very small. The energy stored up in the flywheels is sufficient to keep them revolving at a velocity for two and a half hours after the current is cut off. It is calculated that absolute security and stability for the car require that the weight of the gyroscope wheels should be 5 per cent. of the total weight of the loaded vehicle. Thus two revolving gyroscope wheels of half a ton each, representing the equivalent of the flywheels of a comparatively small engine, will keep in absolute steadiness a travelling carriage weighing two tons.

Mr. Brennan's adoption and utilization of the precession of the gyroscope was as follows. He said to himself: "If my gyroscope is revolving from left to right, that is, like a clock, in a horizontal plane, and a force like gravity tends to pull it downward on the side towards the east, the principal of the precession will cause it to tend to fall towards the south. Now, then, can I apply pressure so as to resist the original pressure downwards to the east? Clearly, I must exert a pressure to pull it downwards to the west. Now, there is only one pressure which will pull it downwards to the west, and that is pressure downwards to the south. I come, then, to this paradox: whenever I see my gyroscope apparently falling to the south, I know it is really falling to the east. If then, I press it downwards to the south, where it is apparently pulling, it will really tend to fall to the west—that is to say, it will resist the fall to the east and return to the upright position."

A single gyroscope revolving at great speed in a vertical plane can be fixed in a locomotive and adapted in a frame on the principal derrick above, so as to resist any overturning tendency likely to be applied. But it will also strongly resist any pitching tendency. In other words, it will retard progress up and down hill, and require excessive energy to produce great speed. Similarly, a gyroscope fixed in a vertical plane parallel with the line of progression of the locomotive will resist the overturning tendency, but also make the turning of corners impossible, except at slow speed. Mr. Brennan, therefore, adopted two gyroscopes in a vertical plane, revolving in opposite directions. The effect of each gyroscope is exactly to counterbalance the other.

The Subscribers Expense.
A Judge in Lancaster, Pa., rules that when a newspaper is stolen from the doorstep the subscriber is the aggrieved person. The Court says that from the moment of delivery by the carrier the paper is the subscriber's property.

CRIME IN NEW YORK CITY.

In Proportion to Population is Markedly on the Decrease.

Is crime on the increase in New York? "No; I should say it is diminishing."

District Attorney Wm. T. Jerome, of New York ought to know something about it. He has been the city's chief agent for the vindication of the law for years. He says, considering the constant increase in the population of the city, I should be strongly inclined to believe that the volume of crime is less than it was a decade or a generation ago. Considering the heterogeneous character of our population and the unique conditions which operate to make this city the scene of crimes which are not justly laid at the doors of its own people, I should hold that, so far as lawbreaking is concerned, we are growing better, not worse.

"You must remember, in the first place, that New York is a place absolutely unique among all the cities of the hemisphere. It is not simply that it is the biggest. It is constantly full of strangers, to a degree in which no other city begins to approach it. It is the landing place for the vast majority of the million of immigrants who come every year. Some of these join the best citizens of the country, but some are criminals fleeing from justice of their own land; with these we have to deal—the rogues and rascals of every country under heaven sure to undertake some form of lawbreaking as soon as they are off the steamer.

Here come constantly thousands of young men and women to make careers for themselves—some of them to be disappointed, to get out of money and clothes and to go hungry and to be tempted to crime. Here drift regiments of men out of work, to join, in many cases, the army of the desperate and the criminal.

"I believe that we live in one of the most moral, most decent, most law-abiding communities anywhere to be found, and I believe that the disposition to be moral, decent, and obedient to law is becoming stronger all the time. No city in the country of over 100,000 inhabitants excel it in this respect. You might find Springfield, Mass., or Hartford,



WILLIAM TRAVERS JEROME.

ford or a few other cities of that size of peculiarly quiet temperament more orderly than we are here, but taking the country over or the world over New York takes a very high place indeed for obedience to law.

"I don't see that anything like a recognizable criminal class is coming into existence, except in the respect that lawless living breaks down health and begets weak children, who may be easily led to crime. "What we call the predisposition to crime in the child of the criminal may often be his physical weakness. Of two boys born and brought up in poverty, in the same house, of the same parentage, one boy being strong and the other delicate, which is the likelier to go wrong? The delicate boy. The strong boy goes to work and doesn't mind it. His stomach is good. His blood runs warm and strong. Life isn't so bad. He has his rough jolly companions and they envy nobody. The delicate boy can't work. A pick and shovel, or any sort of labor he can find means physical exertion of which he simply is not capable. It isn't long before ways suggest themselves in which he can get money without hard labor; they are outside the law, but one must live. I tell you this question of bread and beer has a whole lot to do with crime.—New York Times.

Improving Their English.
According to a critic, the American people are becoming more accurate readers and writers of English than the English themselves. At Harvard university there are twenty professors of English, while at Oxford there is only one. America, Germany and France, he says, are all outdoing England in English scholarship.

Her Majesty's Etiquette.
Queen Alexandra, of England, is strict on such points of etiquette as make it a breach of decorum, for instance, to hand anything but new and unused coin, fresh from the mint, to the consort of the British sovereign. To make love to her Majesty is punishable, by the law of Britain, with death, unless, of course, one happens to be the King.

IMPROVED WALL STREET

How a Clever Youth Stole a Million Dollars.

IMPROVED SAFEGUARD

Spectacle of Bank Messengers Carrying Fortunes Has Become So Common As to Cease to Attract Notice—Caricatures Everywhere Evident During Banking Hours.

Things are constantly occurring in the financial world which furnish proof that Wall Street is par excellence the land of contradictions.

Recently a clerk walked out of the Trust Company of America shortly before noon with the last \$50,000 of bonds that went to complete a million dollar's default. He was a junior clerk, his escape was unimpeded as his stealings had been over more than a year. On the following week the Chemical National Bank, taking formal possession of its building, came into the use of a vault that was a marvel of mechanical and electrical device and the latest thing in its line. It cost perhaps \$75,000. When it closed that night, and on succeeding nights, nothing short of a young earthquake would have availed to open it.

The first incident was illustrative of Wall Street by day, the second of Wall Street by night. The common sight of a bank messenger running around the street without let or hindrance carrying perhaps hundreds of thousands of negotiable securities in his leather wallet, has ceased to attract attention. In the great institutions of finance the securities are passed around from clerk to clerk as if they were worth little more than the paper on which they are engraved. Once a year, to be sure, or perhaps semi-annually or quarterly, a committee of distinguished Directors sits gravely around a council table with gray-coated guards barring the entrance to the chamber, and counts the securities to see if in truth they are all there as the books have indicated. The rest of the time the certificates, worth a prince's ransom, are tossed around from counter to counter, from clerk to clerk, during the business day.

The clerks plan was very simple and easy one, given a clerk who was weak enough to be induced to handle the "inside" end and an accomplice skillful enough to negotiate the securities on the outside without attracting undue attention. Such is Wall Street's trust in human nature that a loan envelope with a list and specifications of securities on the outside, coming from a customer of known repute, is seldom opened for an examination of the collateral when presented at a bank. The specification on the outside is enough for the entries in the books, and Wall Street lets it go at that.

To bring out this contrast more strongly, one might well take a look at the great vault of the Chemical National Bank.

It is a two-story affair; you enter through the massive steel portals, and may go downstairs if you wish into another compartment as large as the one on the ground floor, but the vault really begins some distance outside its two-foot steel casement. It sets in a wall of masonry in which is embedded an iron grille work with rods and cross-bars two inches thick. Below and above is galvanized iron so that when the outer gate is once closed, it would take a pretty fair burglar quite a little while before he worked his way through and got a glimpse of the gleaming steel sheathing with which the vault itself is encased.

There is not a case on record in which a burglar bumped up against this particular difficulty and got out successfully—to say nothing of entering the vault. For the minute he placed his drill or his electric burner rightly against the tin foil curtain so as to puncture it in any way, a bell would ring in an office tucked away in the upper stories of a skyscraper near by, which would tell a man watching there that there was trouble.

One might go on describing what other troubles the burglar would have, if by any chance unrealistic and unimagined thus far, he should get by the electric curtain and burrow into the layer of steel beyond. But that is hardly necessary for the contrast which was suggested at the outset. The securities which were available to the clerk by day were guarded by inches of steel and marvelous mechanism by night. Small wonder is it that the rapidly disappearing generation of old-time bank breakers, kings of their profession in their day, look with envious eyes upon the modern generation of bank looters.

The Suffragist's Stamp.

That woman shall be independent of men even to the point of having a specific trademark is the purpose of a German suffragist, who has designed a suffrage stamp. Every communication sent out from suffrage headquarters in the German Empire bears the suffragist's stamp. It shows a woman holding a broken letter, while behind her the sun rises.

FUTURE OF ROMANIA.

Fear of An English Regency Over-shadowing the People.

The 6,000,000 inhabitants of this Kingdom created by Alexander John I. of the House of Giza, when in 1859 he proclaimed the union of the Principalities of Moldavia and Wallachia, are intensely patriotic.

They have never resented a monarchial way assumed by Turkey, because Constantinople has been too busy to make the bonds cut. Moreover, the power and patriotism of the present King, the beloved Charles, has sufficed to serve as a check on plans that ambitious and covetous nobles might have in contemplation.

But now arises a more serious condition.

King Charles is going to die. Death is hovering over him, and contingencies are portending the instant he passes from life.

Nor in this crisis will Roumania have the help of the worshipped Queen, the lovely Elisabeth, better



CROWN PRINCE FERDINAND.

known the world over as a musician and writer under the pen name of "Carmen Sylva." She, too, is tottering on the brink of the grave the victim of an incurable disease that would sap the patience of a nature less beautiful than hers.

The heir to the throne is Prince Ferdinand, but he is so far removed from the direct line that the citizens of the country place little reliance in him. Had they only been fortunate enough to have a son from the King and Queen all might have been well, but unfortunately Charles and Elisabeth have been denied offspring.

The original heir to the throne was Prince Leopold of Hohenzollern-Sigmaringen, a brother of King Charles. It had been confidently expected by the Roumanians that Leopold would take the reins of Government, and they were content, for he is very popular, but unfortunately the brother of the present monarch had no inclination in the direction of governing. He declined the place of heir and appointed in his stead his son, Prince Wilhelm.

Again the Roumanians were content, but once more they had to submit to a disappointment, for Prince Wilhelm, following the example of his father, also declined the throne, which went begging till it reached Prince Ferdinand. He is a younger brother of Wilhelm.

Ferdinand promptly accepted the place of heir, and in the event of the death of Charles will take the throne. Ferdinand is not personally unpopular, but his wife is. Crown Princess Marie is too thoroughly of English stock, too completely out of sympathy with the people of Roumania to be regarded as an ideal Queen.

Crown Princess Marie makes no secret of her intense partisanship for the English. Nor is this entirely surprising, since by birth she is allied with the royal family of Great Britain.

But the misfortune does not stop there, for it is a probability of the very near future that she will be the absolute ruler of the Nation.

Ferdinand is a victim of consumption, which must in a very few years at most carry him off. This will bring to the throne Prince Carol, but at this time is under 10 years of age his mother will have to act for him as Queen Regent.

But the fear is that when he is gone there will be no check on the will of the beautiful headstrong Princess, and that, given a free reign, she will commit her own whims to a point that must eventually involve her in a serious dispute with the Ministry and Legislature.

These are high intensely patriotic, and no obligation to the ruler will ever suffice to make the claims of the Nation secondary.

Should such a quarrel arise Marie would not let the interests of her son suffer and would go the limit of an appeal to her uncle, King Edward of England. It is some such action as this that the Roumanians most fear.

The 45 years that have elapsed since under John Alexander, Roumania began a national life have been stormy ones, and the Nation has any survived because of the fixed policy of the rulers to avoid giving any action of Europe any undue potency at Bucharest.

Don't conceal your weapons. Carry them openly.

THE U.S. A NAVAL POWER

England the Only Nation Better Equipped.

REVIVAL OF OUR NAVY

Steady Program of the United States Has Carried Her Into Second Place—Interesting Facts About the Battleship Kansas—Whitney's Appeal to Congress.

When the United States battleship Kansas went into commission the cherished dream of half a dozen generations of the Navy was accomplished, and Uncle Sam had taken second place in the world's naval powers.

Not so long ago, during Grover Cleveland's first administration, in fact, three other nations in addition to England, boasted a stronger navy than Uncle Sam.

Germany, France and Italy all outstripped the Nation which was still in its infancy, had been strong enough to defeat Great Britain in the distasteful naval war of 1895.

From the conclusion of that struggle to the Civil War, the policy of the Government toward the naval branch of its service was curiously indifferent. In the one way of importance that came during that period, the easy conquest of Mexico there was no occasion for the naval arm, and so the Civil War started with Washington almost as badly off as the Confederacy.

But American genius soon arose to the occasion, and before the conflict between the North and South ended, the naval warfare of the world had been revolutionized by the development of the ironclad ship. Merimac and the Monitor of Captain Ericsson.

Europe learned much from the lesson of the War of the Rebellion, but the United States, smitten with living settled its own terrible internecine struggle, and content with the belief that its own fleet would assure it immunity from any nation of Europe sufficiently strong to oppose the stretching American republic to the danger of an attack, let its navy go along without attention till it ran behind almost to the point of uselessness.

The late William C. Whitney was the father of the revival of the American Navy. He appealed strongly to Congress for the need of starting a program which should result in rebuilding the Nation's floating defenders. His request was speedily granted.

Nor must the part be forgotten that Theodore Roosevelt played when he was Assistant Secretary of the Navy under Long, just before the outbreak of the Spanish-American war. He is given the credit by many experts for having done much of the work that helped put the American warships in such perfect shape to go against their Spanish foes.

The Kansas is interesting for herself alone, independently of the fact that she is the fully equipped core of the Nation that shows the United States to have stepped into second place as a naval power.

The new battleship casually wears the title that has so often been applied to navy ships, in fact, nearly always goes to the last one turned out, "The Queen of the Navy."

Such a title seems more than a tradition when applied to the Kansas. She represents the very latest work, the best we have been able to do to date. And this is the same as saying that the Kansas would have at least as great chance with anything afloat.

Uncle Sam thought enough of the Kansas to spend four million dollars for this ship, two million pounds more. Eight hundred men have just been enrolled as the permanent hands of this superb creation of steel and machinery, and it is in accord with the new equipment otherwise they represent the plan of Uncle Sam's mechanical fleet—battleships, cruisers, destroyers, submarines, and fighting ships generally.

The most powerful feature of her equipment is her 16-inch main battery, 12 low angle apices, weighing 62 tons each, and throwing a projectile weighing 350 pounds. It takes 18 pounds of powder to fire this huge engine of death, and nothing within 13 miles is safe on its range.

Just as a part of this time these four millions that will bear the brunt of battle are eight high inch guns, heavy armor, gun some twenty-five inches and thirty smaller ones, daily getting down to business guns that would be used when the antagonist is too close to shoot.

The towers of the Kansas are considered to be the finest ever built on any American battleship. Though they weigh some hundred tons a piece, they are so perfectly balanced that they can be moved around with the greatest ease. No other the well-graded, barber's chair wheels around as easily as these huge compounds of steel.

The new engine that drives this wonderful creation through the water have the power to send her along at the rate of 18 knots an hour. The engines are made in duplicate so that if in battle one of them should be disabled another can immediately be substituted in its place.

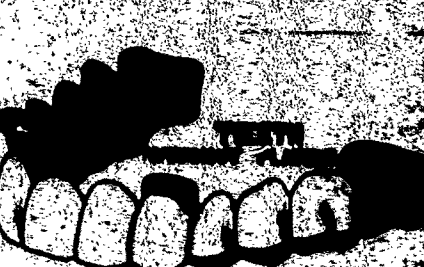


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