

BUILDING AN AIR SHIP.

Another Inventor Who Claims He Has Solved Aerial Navigation.

When Completed the "Alpha" Will Make Thirty-six Miles an Hour, Run in any Direction and Return to the Place of Starting.

If we could navigate the air as successfully as we have accomplished locomotion on the land, what a triumph would be achieved! If swift and safe progress above the surface of the earth could be achieved as readily as swift and safe movement on the face of the water, how much further along the road of progress would our slow and heavy human race have gone!

There was a time, doubtless, when the only safe movement from one place to another seemed to be by means of walking. Then man found that certain creatures of the brute creation could carry him, and he conquered them and subjected them to his will. But when he came to the margin of the water another problem confronted him, and he set about solving that. The rudest canoe, the first raft ever constructed, was the beginning of dominion over a second element. Later, wheels made progress more swift, more easy and more royal on land. Another step in overcoming distance had been taken.

And the lines of invention for centuries were along those two directions. Men learned to traverse the face of the solid earth with a swiftness that would have seemed miraculous to the ages that preceded them. And they had so far conquered the sea that they could cross 3,000 miles of ocean in less than a week of time. They can attain an even higher speed on the ground. Two elements have confessed the reign of man, but he has not been satisfied. For more years than any scholar can tell he has been directing his thought by day and his dreams by night to the problem of air navigation. He finds many things in that study to attract and encourage him. He finds a difficulty so stubborn, an element so elusive, that his genius is challenged. And he resolves to conquer this third of the elements.

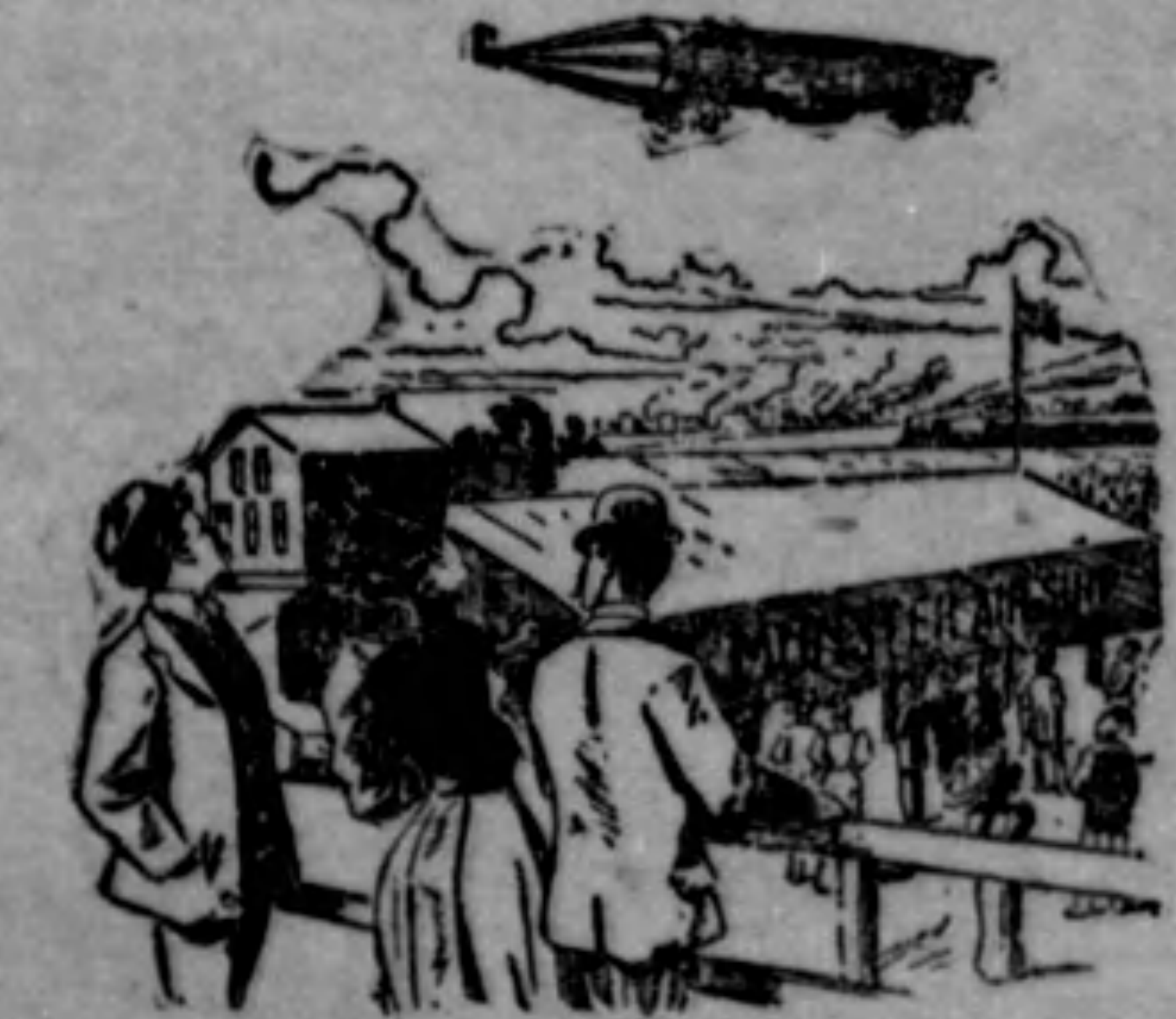
No problem in mechanics is so seductive; no task in applied science is so charged with a noble zest, so rich in promises, so perpetually approaching fulfillment. The man who hopes to build a machine in which he can navigate the air looks upon the land and water means of transportation as quite beneath him. He aims to conquer the clouds.

There is a man in Chicago who has, if mathematics are true, a plan which will result in the completion of a machine for navigating the air, more successful than any of those that have gone before it. That man is P. E. McDonnell, a machinist and inventor. McDonnell is well known among inventors in the west, having produced a number of ingenious contrivances that give him a high rank. He is a native of Chicago, having been born here just fifty years ago. He is the father of a large family, his sons assisting him in his studies and his labors.

Mr. McDonnell is striving towards the perfection of a machine which shall combine the principles of the flying machine with that of the buoyant chamber. His machine will, when completed, be supported by a bag of gas, much as in the case of the others, but it will not depend upon the escape of gas to lower it toward the earth, nor upon that same gas to gain its desired elevation. The lifting power of the gas will be three tons, and the weight of the entire machine, exclusive of the motor, will be two tons. But the motor alone will weigh 2,500 pounds, so that the lifting power of the gas will fall 500 pounds short of raising the machine from the ground.

There begins the scope of the flying-machine principle, and with it the buoyant chamber will be reinforced, and the whole affair will be raised from the ground, will be propelled through the air at a rate of speed that must be admitted is sufficient, and will be guided in any direction, at any elevation, and returned at any time to the point of departure. That is the successful machine.

The motive power will be supplied by three gasoline engines, each weighing 820 pounds and combine thirty-six horse power and are all connected to a shaft which runs from their location below the middle of the cigar-shaped buoyant chamber to the propeller wheels, which are located at either end of the machine. These wheels themselves mark an era in mechanical instruction. They are similar to the paddle wheels of a side-wheel steamer, two on each side of the gas bag and each armed with six blades of light frame work, covered with



THE TRIAL TRIP NEXT JULY.

stout canvas. Below each pair, and playing horizontally, is set a similar though smaller wheel.

Each of the six wheels is independent and may be managed separately from the engine. The forward right-hand and the hinder left-hand wheels may be run while the others rest, the effect being to turn the whole machine in the air, as a boat pulled by a single oar is turned in the water. But, what is still more important, the axes of the several wheels are supplied with cams, which can also be managed from the engine-room, and the beating of the air may be accomplished from any desired angle.

Supposing the machine to have been lifted to the required altitude. The wheels would then be made to strike the air in their backward motion, just as do the paddle wheels of the steamer. But if it was desired to rise higher, the cam would be

shifted, and the wheels would strike downward, as does a bird's wing; and the ship would be lifted. But there is this difference between the paddle wheels of the steamer just mentioned, and the paddle wheels of the air ship. These double blades strike with all their breadth in the direction desired, and then close together, as do the wings of a butterfly, presenting but the narrowest surface to the resistance of the air as they return to their position for force, when they are opened again, and again strike upon the air with all their lifting or propelling force.

In like manner the horizontal wheels may be made use of in gaining speed by shifting



AS THE ENGINEER WILL APPEAR IN THE CABIN.

their cams so they would only strike at the proper angle for that purpose.

Now, the weight of the entire machine being 500 pounds, or thereabouts, heavier than the buoyant chamber can lift, the power to be gained from the wheels must lift the balance. And this is the problem Mr. McDonnell has had to solve and the problem toward which he has not been afraid to address himself. The figuring of this weight and the power which must raise it is one of the nicest of mathematical calculations. But it is a matter of demonstration. Scholars have found that a certain area of surface, striking the air at a certain speed, exerts a certain force. And the totals of these forces exerted by the paddle wheels will constitute the power of the machines.

When completed the Alpha, which Mr. McDonnell has named his machine, will be 212 feet long, and will support a weight, aside from that of itself and the engines and necessary implements, of fully one ton. Twelve men can be carried without difficulty. The cabin in which they will be housed is about twenty feet long half as broad. It is supplied with windows, seats and all the conveniences of a modern car or steamboat cabin. And it will achieve a speed of thirty-six miles an hour.

GAIN A GREAT ADVANTAGE.

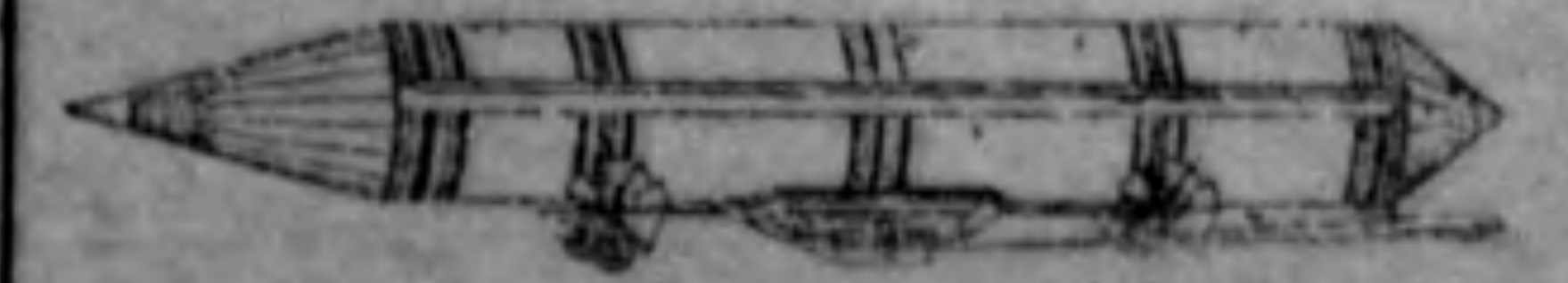
It will be observed that the car in the Alpha is not lashed at a great distance from the buoyant chamber. It is, in fact, close up against the under side of the bag. By this means none of the power will be lost, as was the case in the machines of the earlier makers, because the power will be applied directly. And there is no danger of the ship turning on its side or rolling clear over in the air, because the action of the blades of the wheels can at all times manage its movements. The two horizontal-acting wheels could alone counteract any tendency of that kind. And, also, when it is desired to descend to the earth the vertical wheels will simply strike downward, but less swiftly, exerting less power than is necessary to sustain the weight; and as the gas bag alone will not carry the ship it will sink just as slowly or as swiftly as the engineer wishes.

There is another element in the mechanism of the Alpha. Along each side of the buoyant chamber, the entire length, runs on each side a curved wing, like a longitudinal section of a cylinder. It also is of strong canvas, strongly supported, and it acts as a support, resting upon the air, wherever the ship may go. In descents, similarly, it will break the fall, after the principle of the parachute. But its straight lines will enable it to pass without resistance through the air when the ship is moving forward or backward.

A word in connection with the buoyant chamber is interesting. The entire tube is constructed in sections. Each is filled independently of the others. There is no communication between them. So if a blow or shot from the gun of an envious mortal on the earth should penetrate the side, letting out the gas in that compartment, the strength of the ship would only be affected by that much; while in a balloon, or in any of the air ships heretofore constructed, one hole in any part of the extended buoyant chamber would render worse than useless the entire machine.

Two kinds of economy will be observed in the arrangement of the applied power of this ship. In the first place, as the gas is not allowed to escape in order to lessen the altitude, the gas does not have to be renewed at intervals. In the second, as sand or other ballast does not have to be carried in order to increase the altitude when desired, so no loss for dead weight is necessitated, and no returns to the earth for a fresh supply of useless sand need be made.

Mr. McDonnell has been very fortunate in the selection of the materials, and has found one out of which his buoyant chamber is constructed which is almost entirely impervious to gas. The best that has so far been achieved in balloon building was a loss of 1 per cent. in forty-eight hours. But there is no loss in the Alpha. This is not altogether due to the material—which is simply a secret coating on the canvas bag—confining the gas. It is in a measure attributable to the fact that in all other machines of this kind the formation of the bag caused a constriction upon the volume of



THE ALPHA, MR. McDONNELL'S AIR SHIP, GAS CONTAINED. No matter how close the meshes of the weaving, while the air pressed from without the gas was squeezed through, and it escaped even from the excellent ground balloon as the world's fair grounds last summer. But here the framework which supports the gas bags is a

rigid framework. It will not allow the envelopes to collapse. Even if they were empty the pressure of the air from without could not crush them in.

While at rest upon the ground the Alpha will be supported on four wheels, light enough not to add materially to the weight of the ship and yet strong enough to support it while resting. And, as the whole contrivance, at whatever stage is rigid and not liable to collapse, the machine will run lightly on the ground propelled by the six paddle wheels just the same as if at an altitude of a hundred feet, and, when ready for starting, will so run forward if desired till the action of the motors is sufficiently downward to overcome gravity, when the whole ship will rise in the air. But if it is desired to lift it directly that can be easily accomplished by an adjustment of the cams, which will cause a downward strike instead of one pushing from the front backward.

WHAT AN AIR SHIP MEANS.

It is not easy to measure the value of such a machine when in actual operation. To travel it would be a boon beside which railway and steamboat progress is heavy, slow and crude. The great ocean of atmosphere which surrounds our earth is a ready and waiting highway for this better, more ingenious vehicle.

Think of the benefit science would derive. We know comparatively nothing now of the currents of the air. Then they might be studied at any altitude desired. In a larger ship than that on which Mr. McDonnell is now engaged a higher rate of speed could and would be attained, and a proportionately heavier load could be carried. "The speed of the wind would actually be exceeded and the problems over which our meteorological officers have been simply guessing in the past would reach an easy and certain solution.

Think of it in case of a war. You know those lines of Tennyson, referring to the navies which combated above the clouds. Well, that air ship, which can do what the Alpha is destined to do, could be a realization of that dream. But before so dread a consummation the air ship would have rendered war a custom known only to the memory, for the power of a single air ship would be greater in destroying armies and cities than could all the fleets and armies of the world. Coast defense would be guaranteed by half a dozen air ships, in the shadow of which all the ironclad afloat would be helpless and full of danger to the very men who managed them.

Armies that now exhaust treasures would become needless, because a single air ship, armed with a quarter ton of dynamite, could rout all enemies, pursue them, dropping destruction upon them, hover above them, shattering their forces and finally, with a sheer might from the heavens, silence all defiance to authority.

But it is in the gentler walks of peace that the McDonnell air ship would more vividly appear. No continent so broad that it might not be traversed while two days were passing. No forests so dense that their secrets could be hidden; no rivers so deep that their riches could elude man's search. No stress of temperature could be so severe as to penetrate within that cosy cabin, and no storm so severe as to blow it out of its course. The poles and the equator would become equally known and the hidden places of the earth be found.

Storm Warnings.

Storm warnings were first issued in Holland in 1860 through M. Buys Ballot. His "Law of the Winds" points out the relation between the direction of the wind and the atmospheric pressure. In Great Britain the Meteorological Department of the Board of Trade was established in 1855 under Admiral Fitzroy, but it was not until 1861 that they felt justified in issuing warnings as to storms, and on the 6th of February, 1861, the first cautionary or warning signals were issued by the office, and first published on the 31st of July, 1861. The warnings, which were suspended between December, 1866, and November, 1867, were reissued at Christmas, 1867; since which time they have been issued as occasion needed. Forecasts of the weather are prepared, under the authority of the Meteorological Council, three times a day, at 11 a. m., 3.30 p. m., and 8.30 p. m.

The forecasts at 11 a. m. refer to the probable weather between noon of the day of issue and noon of the following day.

They are exhibited in several places in London, including Mansion House, Lloyd's Rooms, Messrs. Stanfords', Charing Cross, and at the offices, 63 Victoria street, and are also supplied to the afternoon editions of the newspapers. The 3.30 p. m. forecasts are employed for storm warnings only. The 8.30 p. m. forecasts are specially prepared for publication in the morning newspapers, but all are available on application at Victoria street.

Storm warnings are furnished to 153 stations:—72 in England, 16 in Wales, 44 in Scotland, 15 in Ireland, 3 in the Isle of Man, and 3 in the Channel Islands. The complete successes of forecasts of the three years 1888-91 cover 49 per cent., and the partial or more than half successes 32 per cent., the average of successes over that period being 81 per cent.; 84 per cent. of those in 1892 were successful. On the death of Admiral Fitzroy in April, 1865, Mr. Robert H. Scott, M.A., F. R. S., took his place, which position he still holds.

TO HYPNOTIZE MRS. MAYBRICK.

Prof. Tyndall Will Sail for England With That Object in View.

Prof. Alex. J. McVicar Tyndall, of New York, who claims that he can discover the innocence of alleged criminals by hypnotism, has sailed for England on the steamer Gallia, for the purpose of persuading the English authorities to allow him to hypnotize Mrs. Maybrick, who is serving a life sentence in England for the murder of her husband, and while in that condition forcing her to recall all she knows about her husband's death, so that her guilt or innocence may be demonstrated.

Prof. Tyndall is the man who claims that he can hypnotize himself, remain apparently dead for days, and then come back to life. He offered to allow himself to be buried for thirty days in Chicago during the world's fair, but the Chicago authorities told him there was no vacancy for him in the Potter's field. Mrs. Maybrick is kept in close durance. There is no likelihood that Tyndall will be allowed to see her.

Australia is the only country in the world in which no native pipes have been found.

THE WEEK'S NEWS.

CANADIAN.

A deputation waited upon Sir Charles H. Tupper, at Ottawa, and urged him to open up the lakes in the Rat Portage district to fishing.

The Rev. Dr. Douglas and Mr. Duncan McIntyre, of Montreal, who have been seriously ill, are improving.

A local bankers' association, in affiliation with the Montreal Board of Trade, is being established.

Mr. John Callahan, a well-known resident of Peterborough, committed suicide by cutting his throat with a razor.

There is high authority for stating that a movement is now under way in Montreal to organize a branch of the P.P.A.

The Industrial Exhibition Association of Winnipeg will ask the Dominion Government for a grant of \$10,000 to this year's exhibition.

It is stated that several of the newly-elected aldermen of Hamilton are liable to be unseated, owing to a lack of proper qualification.

Nearly half a million dollars was realized in Ottawa by the sale of Messrs. Perley & Pattee's timber limits. The auctioneer was Mr. Peter Ryan, of Toronto.

Albert Stroebel, who murdered Marshall in a cabin in the Sumas district in British Columbia, suffered the full penalty of the law for his crime on the scaffold on the 30th.

Abbe Larue, acting superior of the Seminary of St. Sulpice, gives an emphatic denial to the report that the Seminary recently invested half a million dollars in bank stock.

The heirs of John Ross, of Quebec, are proceeding in the Exchequer Court with their claim for more than five hundred thousand dollars for work done on the Intercolonial railway.

Mr. W. W. Ogilvie, of Montreal, the great flour man, speaking of the reported distress in the North-West, said that he had never heard of less grumbling nor so little misery as this year.

Mr. O'Malley, a member of the Manitoba Legislature, has given notice that in addition to moving for the repeal of the Act incorporating the Law Society, he will move for the abolition of the Medical, Veterinary, and Land Surveyor's Societies.

Rev. C. O. Johnston, a Methodist minister of Kingston, Ont., has asked all the men attending his church who are not professing Christians to send him a post-card stating their reasons for their remaining outside the Church membership.

A schoolmaster named Robinson, of Hamilton, was fined two dollars for having whipped a boy. The Magistrate, after examining the rubber strap with which the punishment was administered, pronounced it a barbarous instrument in the hands of an able-bodied man. The case will be appealed.

Honore Mercier, jr., J. A. Pelland, and Paul Demartigny, the three young French-Canadians who attempted to blow up the Nelson monument in Montreal with dynamite, were severely lectured by Judge Dugas upon their offence, and the terrible consequences which might have ensued, and fined twenty-five dollars each.

BRITISH.

Sir Henry Ponsonby, the Queen's private secretary, who is sixty-nine years of age, is seriously ill.

The death is announced of Mrs. Austen, sole surviving sister of Cardinal Manning, whose senior she was.

The Prince of Wales says that owing to her poor health the Princess will not take part in social events this season.

Sir William Harcourt refuses to assent to the Radical appeal for a graduated income tax to meet the deficit in the budget.

The Khedive of Egypt will shortly visit England. He will be given a State reception and will reside at Buckingham palace.

Earl Dufferin is said to have exerted great pressure upon the Gladstone Government to bring about the promised naval reform.

The Irish Republic, published in New York, has an appeal to Irishmen calling upon them to use powder and dynamite to save Ireland from slavery.

The negotiations of the British Foreign Office with Russia as to the boundary of the Pamirs have resulted in an arrangement to which the Ameer of Afghanistan has consented.

Sir Henry Loch has despatched a messenger from Cape Town to King Lobengula, pledging in the Queen's name that if he surrenders his life and interests will be assured, and he will not be deported from Africa.

The English Colonial Office is in favour of a plan to subsidise the enterprise of laying a purely British cable to Australia via Canada; but the Post-Office Department cannot commit itself to the policy of a grant.

The Moir Company, calico printers, at Glasgow, Scotland, have issued a circular notifying their creditors that they have been compelled to suspend payment owing to complications in their financial arrangements.

In reply to a deputation asking an annual subsidy of twenty-five thousand pounds for ten years towards the Canadian-Australian Pacific steamship line, the Marquis of Ripon promised to give the matter his considerations, and to bring it before the Cabinet.

UNITED STATES.

Representative Johnson, of Ohio, will champion absolute free sugar without bounty or duty.

Mr. John Stewart, of Hamilton, Ont., who shot himself in a hotel at Buffalo, died there on Monday night.

Donald Kennedy, of Toronto, the alleged opium smuggler, was held to the grand jury by United States Commissioner Graves at Detroit.

Mrs. Alma Erhardt was placed in the asylum for the insane at Newark on Friday on account of a mental disorder caused by her love for another woman.

The worst snowstorm in years is reported from points in the northern part of California. Snow fell forty-eight inches in twenty-four hours.

The Charity hospital at Blackwell's Island, which contains eight hundred patients, has been quarantined, owing to an outbreak of smallpox.

Harry J. Woolley, the engineer who was charged with manslaughter in connection with the Battle Creek horror, has been dismissed from custody.

Nineteen of Levi P. Morton's Guernsey cows, which were infected with tuberculosis, were killed at Rhinebeck, N. Y. They were valued at \$7,000.

The Guion Steamship Company, which next to the Cunard, is the oldest transatlantic steamship line entering New York, has withdrawn from the passenger service.

The convicts in the State prison at Iglau, Moravia, revolted on Friday, and would not return to their cells until fired upon by the troops who had been called to restore order.

Col. Nicholas Lotz, of Reading, Pa., furnished supplies to General Washington's army at Valley Forge, and his heirs, asserting that he was never paid, intend presenting a claim to Congress for four million dollars.

The Buffalo Commercial (Republican) says that barley raised in a portion of Ontario is distinctly better than any other, and fetches in the United States market from ten to fifteen cents a bushel more than its American rival.

Jenkins Budlong, seventy-five years of age, who was associated with Edward S. Stokes at the time of the murder of Jim Fisk in a business worth five hundred thousand, is now dying in the pauper ward of a Chicago hospital.

A circle of King's Daughters at Park City, Ky., recently raised sufficient money to secure some coal for a poor family. The money was given to the family, who, instead of buying coal, had their photographs taken.

The Mayor of Cincinnati has been authorized to expend one hundred thousand dollars from the contingent fund of the city for the benefit of the unemployed. The plan is to use it in promoting repair and other work needed.

GENERAL.

It is reported that the Brazil insurgents are running short of provisions.

The decrees expelling ex-King Milan and ex-Queen Natalie from Serbia have been cancelled.

The French Chamber of Deputies has approved the treaty between France and Siam.

Grand Duke George, second son of the Czar, is suffering from consumption, and cannot live long.

Prince Bismarck will be received in Berlin with all the honour due to his rank, and he will be the guest of the Emperor at the Castle.

Admiral de Gama, in command of the insurgent fleet before Brazil, has received from Europe two torpedo boats and a steamer loaded with ammunition.

Gen. Saraiwa, with reinforcements of eight thousand troops for the Brazil insurgents, is reported to have arrived in Rio Janeiro bay.

Owing to the lack of work and scarcity of food among the poorer classes in parts of Spain, the bandits are becoming more numerous and daring.

The report that King Alexander was assassinated is without foundation. He is actively employed in endeavouring to end the crisis in the Servian Cabinet.

The Servian crisis for the present is at an end. Ex-King Milan has come to terms with the leaders of the Liberal Progressists, and a new Cabinet has been formed.

Emperor William recently sent Prince Bismarck a case of wine, and the Prince replied, thanking his Majesty, adding that when his health permitted he would visit Berlin and personally thank the Emperor.

A despatch from Bulawayo, dated January 14, says that King Lobengula, with a few of his followers, is entrenched close to the Zambesi river. Commissioner Jameson communicates that all is quiet elsewhere.

The Governor of Sicily has suspended the edict against the press, but has warned the various newspapers that they will be suppressed at once if they publish objectionable matter.

THE GUION LINE NO MORE.

The Big Steamship Company Said to Have Ceased to Exist.

A New York special says:—The Guion Steamship Company, which, next to the Cunard line, is the oldest trans-Atlantic steamship line entering this port, has practically ceased to exist. So far as its passenger service is concerned, it is a thing of the past. The Alaska was scheduled to sail April 7 and the Arizona on the same date from the other side, to resume the passenger business for the summer. News arrived by yesterday's steamers, however, that these two steamers had been transferred to the Anchor line and would be used in the service of that company the coming season. These two steamers never belonged to the Guion line. They were owned by the builders, John Elder & Co., of Glasgow. They were run in the interest of the owners by the Guion line. That line has also chartered a number of freight steamers during the winter and has run them to this port at regular intervals. The Guion line goes to Liverpool and the Anchor line to Glasgow. It is understood that hereafter the Anchor line will send steamers to both these ports.

Waiting Patiently for Annexation.

The Engineering News says that the proposed enlargement of the Erie Canal with dimensions sufficient to permit passage of light warships to the lakes and grain in unbroken bulk from Duluth to Europe is not approved of by State Engineer Schenck, who estimates the cost of such an improvement at \$500,000,000, and says that before it would be completed the present northern international boundary may have ceased to exist. Which means that the people of the United States recognize the value of the St. Lawrence route and its possibilities. The St. Lawrence route could be deepened for one-fifth of what the enlargement of the Erie Canal would cost. In addition, it would answer the requirements of two nations instead of one. It is the natural outlet to the sea. It is the shortest route to Europe. It has no rival. Canada has a trump card in her hands. The only debatable question is how and at what stage of the game she will play it.