MECHANICS' MAGAZINE.

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Quebec does not at present seem inclined to remain far behind Ontario in the matter of roads. We have just witnessed the completion of a new short line to Boston viâ the Passumpsic R. R. The North Shore Road now seems to be an assured fact. A surveying party under charge of General Seymour left Quebec on the 14th inst. for Three Rivers in order to re-examine the North Shore between that place and Montreal, and at a recent meeting of the Board of Directors the President stated he had received information of the determination of the contractors to carry out the contract. The amount of local traffic along the North Shore is increasing very fast. We were very glad to see on passing Lanoraie recently a pile of new T rails and judge from this that it is the intention of the proprietors of the line between the St. Lawrence and Industry to replace immediately the old strap at present in use there by good rails. The shareholders of the Missisquoi and Black River Valley Railway have also recently met and negociations have been entered into for the early construction and equipment of this important road, should the municipalities, companies and others directly and indirectly interested, promptly extend the aid fairly expected of them.

The influence of the newspaper press seems to be extending itself in directions where such enterprise would hardly have been looked for. The N. Y. *Herald* sends a man to find out Livingstone in the centre of Africa. The task seemed hopeless but the result shewed how little we know what can be done in this age. The *Daily Graphic* of the same city now comes forward as the chief supporter of an attempt to cross the Atlantic Ocean in a ballon. The subject has frequently been talked of before, but now it has assumed definite proportions. There is no doubt but that the attempt will be made. As to the probabilities of success they are of such a nature as few if any men can talk about with any authority. There may very probably be an upper current of air constantly setting towards the old continent at a rate of from forty to one hundred and fifty miles an hour. It is stated that proofs of the existence of such a current have been established. If this current really exist the passage would certainly be deprived of most of its terrors. The most powerful auguries of success, however, are that the equipment will be of the most perfect and thorough character and that the enterprise is entered upon in no spirit of bravado but of quiet determination. As the *Graphic* says, "The balloon will not be exhibited to make a sensation, but as soon as it is finished will take its flight." As we said before, it is hard to say now a days what it is possible and what is not. It only remains to hope that the success which has so steadily borne the *Graphic* along hitherto may also be attendant upon this new enterprise.

According to latest accounts the interior of the Exhibition building at Vienna was at length in a completely finished state but some few arrangements remained to be made outside. The amount of work to be done there may be estimated from the fact that some people in Vienna said that the Exhibition would never be quite finished. We shall illustrate and describe as far as possible such exhibits as may be of interest to our readers. The Machinery Hall, one of the most interesting features to mechanics is probably the largest building of the kind in the world, being 2615 feet long by 164 feet wide. It consists of a central nave flanked by an aisle on either side. According to *Engineering* the shafting is arranged otherwise than is usually the case. There are two lines of main shafting carried by as many rows of cast-iron columns erected parallel to the axis of the building, each row being 3 metres distant from that axis, the columns are consequently 6 metres apart transversely, while longitudinally they are set at distances of 3.57 metres. Their heads in each row are connected together by massive plate girders, while transversely also every column is connected to the corresponding one of the opposite row. As a rule each column is a cast-iron tube 0.24 metre in diameter in the shaft, and swelling out at the base; but wherever a stationary engine is situated the arrangement is slightly different, for here, for the sake of greater security, four ordinary columns are grouped together and bolted into one. The shafting is 0.09 metre (3.6 in.) in diameter, and is carried on American adjustable bearings which can be raised or lowered vertically through a considerable distance by means of screws working in lugs which are cast on to the tubular columns. The boilers are all located outside the main building in separate sheds, each country exhibiting machinery in motion having its own boiler house. These consist merely of rectangular pits sunk in the earth to such a depth, that the tops of the boilers come up to about the level of the ground; the pits are of course bricked in, and access is gained to them by a flight of steps on either side, so that the public can view their contents as objects of exhibition; they are, moreover, each surrounded by brick parapets, and are covered over by plain shed roofs supported on open timber framing. Each house has its own chimney, consisting of a long tube of wrought-iron plate, standing on a brick pedestal