

SIR HENRY TYLER will continue negotiations regarding the L. & P. S. Railway only on condition that the city of London will build \$135,000 worth of bridges. He will then agree to pay 30 per cent. of the gross receipts as rental.

THE engineer's estimate for the Sault Canal lock-gates was \$30,000, and the estimate of the Hamilton Bridge Works (whose tender was the lowest) was so much below this that there exists some diffidence about accepting it.

THE G. T. R. are going to put in a curve at Hamilton to connect the main line with the branch running up to the King street station. This curve will do away with the backing which is now necessary in changing from one line to the other.

THE Richelieu & Ontario Steam Navigation Co. are still undecided where to rebuild their workshops, which were burnt down at Sorel some days ago. They consider themselves entitled to a bonus, and will build in the city which offers the best inducements.

MR. DE BERTRAM, who purchased the Buctouche & Moncton Railway, is going to rebuild the Buctouche bridge, and is also making arrangements for constructing a branch to Richibucto. He is employing engineers to inspect the road with a view to a thorough overhauling.

THE steamer "Boyrout Trevice," plying between Rondeau Harbor and Cleveland, was burned the other day at Leamington, Ont., dock. The fire is supposed to have been caused by the explosion of a lamp. Two of the crew were suffocated and the cook was drowned. Loss, \$25,000.

Brief, but Interesting.

A GUN has just been tested in France which is over 47 feet in length. The velocity surpasses all previous records, being 4,000 feet per second.

A MACHINE has been invented for electrically forging round shapes. Its manufacturers claim that it can roll successfully steel, from that of the highest grade down to open hearth and Bessemer steel. It can also manufacture anti-friction steel balls from $\frac{1}{8}$ to 2 inches in diameter.

A GOOD cement for leather belting may be made by dissolving two parts (by weight) of gutta percha in five parts of carbon bisulphide and one part of oil of turpentine, and then adding two parts of Syrian asphalt, and allowing the mixture to stand. Before application, the leather should be washed with benzine on the side to be cemented, so as to get rid of any fat.

A RECENTLY invented air-bag has just been successfully tested in the anthracite coal mines in Pennsylvania. The apparatus consists chiefly of a bag, made of stout canvas, from the top of which a rubber tube runs to the wearer's mouth. Its usefulness is made manifest after an explosion, when it is dangerous to enter a mine owing to the rapid accumulation of fire damp.

REVIEW OF THE METAL TRADES.

Montreal, Oct. 11th, 1893.

There are no special new features in the market report. Business does not show very much improvement, although in some lines considerable activity prevails. The miners' strike in England continues to affect importations to quite an extent. This is more marked in some metals than others. The importations of pig iron are small, and we hardly think that much stock will be stored here this winter. Prices are a little too high, and buyers do not seem inclined to purchase at the present figures. But very little business is doing, only an occasional order, and dullness is the characteristic of the market.

Some good orders for galvanized iron have been placed, and there has been quite a good sale for this metal during the past week or two. This, however, may not continue long, and in the course of a month or so but little will be done, excepting the usual number of small jobbing orders.

We know of some large orders for steel sheets for importation that have been placed, but notwithstanding the advance in the price of sheets in England, buyers here are talking a figure that leaves but little margin to the importer, and prices obtainable are just about the same as have ruled the market for the past summer. Of course, as the season of navigation draws to a close and winter freights have to be paid, prices must necessarily advance accordingly. This is applicable to all importations.

In rolling mill stock nothing is doing. There has been an enquiry out for 400 or 500 tons of steel scrap, but no business has resulted.

Taking a general view of the market, there is not the usual amount of business that is generally put through at this season of the year. We think, however, that the volume of trade during the winter months will be larger on this account than is usual, and we don't think, taking the whole season, that metal merchants have much to complain of. Collections are much better and there appear to be more funds in circulation, and an easier feeling pervades the trade, although the practical results of this are not felt much yet.

When trade in Great Britain is once more placed on a proper footing by an amicable adjustment of the miners' strike, which we can only trust will soon be brought about, and the industries in the United States again in active operation, we cannot but expect the result to give an impetus to trade here. This market appears to have lost some of its usual activity through these two causes, but we hope to report in our next issue that the metal trade shows more signs of improvement.

TESTS FOR STRUCTURAL STEEL.

Alfred E. Hunt, of Pittsburgh Testing Laboratory, says that the disadvantages of the present methods of testing structural steel are the time, the expense, the lack of a sufficient number of tests in any given case, the varying results obtained by specimens from different parts of the ingot and from varying methods of testing, as, for example, in the time and the method of application of strains. A further disadvantage, although not inherent, is the narrowing of the allowable limits of results to an excessive exclusion of material. This is unjust to the mills, unsatisfactory to the shops, and is actually prejudicial to the interests of the engineers who draw the specifications, and sometimes to the quality of the metal entering into the structure, as it tends to lower the ideas of the "practical men" as to the utility of specifications. Again, bending and drifting tests do not give results in numerical quantities convenient for reference and comparison. Mr. Hunt proposes a method of punching or otherwise shearing, cutting or drifting pieces of a given thickness, and comparing the force required in this work with that required to treat standard pieces in a similar manner. The comparison can be made also with the work done at different stages of the punching, etc., with results obtained in treating standard pieces in a similar manner. He uses the term "work" to express the force necessary to punch a given hole, to cut a given notch or drift a given hole, multiplied by the space through which the force moves, and by the time during which the force acts. In practice a combination of the first of these factors with the second or third is often used, and it is the combination of force and space that so far has been found to be the best and most accurate way of using the method. The most convenient application of this method is by plotting curves in which the ordinates represent the force in pounds and the abscissæ represent the increments of space, and he uses a mechanism by which the curve is drawn as the work is done. By this method tests can be readily made on crop end of pieces rolled from each ingot in any given lot, or crop ends taken from each end of large plates or bars, and this ease of getting samples and making tests is a great practical advantage. In fact, it will be practicable to equip the punches used in shops in actual practice with some device for measuring the work done in punching, and so a record can be kept of the characteristics of every piece of metal punched. The characteristics of the metal developed by this method are ductility as compared with its tensile and shearing strength; and experiments show that the means of selecting good structural steel and discarding that which is unsuitable can be devised by this method of testing its quality. Mr. Hunt does not claim that this will give in all cases the tensile strength of the metal, but that it suggests a means of testing for that combination of strength and ductility desired in structural steel. It does not, for instance, distinguish steel of 65,000 pounds from that of a higher tensile strength, unless the ductility is correspondingly low. Steel of 70,000 with 27 per cent. elongation in eight inches, might be accepted by this method in place of steel 65,000 pounds on account of its exceedingly good ductility, but steel of 70,000 pounds tensile strength and an elongation of 18 per cent. in eight inches would be rejected. In his judgment this system of testing the quality of steel can be safely and conveniently used for structural material, and that it is sufficiently sensitive to exclude all questions of bad steel and that which is unsuitable, but that it will take a large amount of testing and experience to develop all the facts regarding this.