metal to make them tight, which soon burns out and requires constant renewing.

Modern practice has demonstrated that the best efficiency and economy of the steam engine is reached by the highest steam pressure, and as there is practically no limit to the pressure that may be carried except "the means to the end," i.e., boilers capable of maintaining the desired pressure, and lubricants to stand the consequent rise in temperature, we may reasonable expect to see the standard raised much higher in the near future.

We are informed by the company that they lately filled orders and have other orders on file for their packing from a large number of well known concerns, including among whom are Westinghouse Air Brake Company; Cowls' Engineering Company; A. F Bartlett & Co., Saginaw, Mich.; N.Y., N.H. & H.R R. Co.; New York & Brooklyn Bridge Company; Brooklyn Brass & Copper Company; Frontier Iron Works, Detroit; Lehigh Valley R.R. Company, etc.

This packing is patented in Canada, United States, United Kingdom and other countries, and we understand the proprietors wish to sell the exclusive right to manufacture it in Canada.

The chief engineer of the steamer *Monmouth*, writing to the Forrest Silver Bronze Packing Company, says: "In reply to yours requesting me to inform you how your silver bronze packing has been working in the engine of the Sandy Hook steamer *Monmouth*, I take pleasure in stating that, notwithstanding the severe test to which it has been subjected, it has done the work perfectly, without using any fibrous packing whatever. Before applying the silver bronze packing, we were using the latest and most approved metallic packing, put in by the builders, Messrs. Cramp & Sons, but although this packing was supplemented with soft packing, which was removed almost daily, we were unable to stand on the working platform or feel of the journals below, without being scalded with steam or water. Since you put in the silver bronze packing, two years ago, we have had no trouble, and the boxes have been steam and water tight. I was favorably impressed with your packing when I first saw it, but it has exceeded in excellence my most sanguine expectations. In my opinion, it is not only the best, but the most economical packing for high steam and piston velocity in the world, and I shall be pleased at any time to afford any one interested an opportunity to examine my rods and packing for themselves. The *Monmouth* has two triple expansion engines, carries a steam pressure of 160 pounds and makes 160 revolutions per minute. The pistons are connected by main and tail rods, and owing to the constructional freedom at the crossheads, are very hard on packing."

THE CHATHAM MANUFACTURING COMPANY.

DURING the Toronto Industrial Exhibition last September a representative of a mercantile house in Kingston, Jamaica, inspected the different lines of wheel vehicles displayed there, and selected a number of those made by the Chatham Manufacturing Company, and these were accordingly sent to their destination in the West Indies. These wagons were of such excellent quality, and have answered the purposes for which they were intended so admirably, that other orders for them have been placed, and a very gratifying trade is growing up in them in that direction.

This is one of the largest, best organized and most important wagon manufacturing establishments in Canada, the output being about 3,000 vehicles a year. The factory proper is a two-story brick building, 270x40 feet, with annexes of corresponding dimensions for foundry, machine shop, paint shop, storerooms, etc., the total floor space aggregating an area of over two acres. Besides these there are two steam sawmills of the company in which the stock for the wagon work is cut, as well as the immense quantities of ship planks and similar stuff, for which the company enjoy a large trade. The grounds around these many buildings are many acres in extent, and are used not only as depositing grounds for the logs and timber brought to the mills to be sawed, but also as drying yards in which the sawed lumber is stacked so as to become air-seasoned preparatory to consumption. The steam engine which drives the machinery of the wagon factory is a magnificent Corliss of 75 horsepower, built by Messrs. Kerr Bros., of Walkerville, Ont., and which, we are informed, has not cost a dollar for repairs since it was set up where it is eight years ago. All the machinery in the establishment is of the very best and most modern construction, and some of it has no duplicate in Canada. Mr. D. R. Van Allen, the president and manager of the works is an inventive genius, and the results of his ingenuity are to be seen in many of the products of the concern. One of the most important of these is what Mr. Van Allen calls the "giant" axle, recently patented in Canada and the United States. In this axle the arms or thimble skeins are cast with a flat-topped stool on the upper side of shoulder, that the ends of sandboard and bolster are formed to rest upon and are firmly clipped to, by which the front axle and sandboard and rear axle and bolster form each a complete and solid truss, thus entirely transferring the pressure of the load from the axle to the very shoulder of the wheel, completely abolishing the old time breaking point of an axle, which all sorts of truss rods and hard running and costly steel skeins have been devised to reinforce, rendering these unnecessary and securing to farmers and teamsters the great boon of a marvellously strong and much lighter wagon, and the great ease of running of the properly set cast thimble skeins without much additional cost.

This company are very large manufacturers of hardwood lumber and ship plank, having a band saw mill for sawing short logs and a gang saw mill for sawing long timber into ship plank. The mills annually cut from two to four million feet each. The kinds of wood indigenous to this locality and which they make into lumber, are: white and red oak, white and black ash, hard and soft maple, sycamore, hickory, rock and soft elm, whitewood, basswood, balm, butternut, cherry, chestnut, and black walnut. The quality of the white oak, white ash, hickory and rock elm is unsurpassed, and affords very great advantages in the manufacturing of wagons. The company keep in stock at all times for the construction of 2,000 wagons, every piece of wood shaped and turned required, and they use no piece that is not bone dry and of the best quality.

In 1882, after the adoption by Canada of the National Policy, which he had for years advocated, Mr. Van Allen conceived the idea of forming a joint stock company for the purpose of manufacturing farm wagons by machinery, after the style of some of the great wagon building concerns in the United States. In carrying out this idea he was eminently successful, and the Chatham Manufacturing Company of to-day, of which he is the head and moving spirit, is the result of his ambitious efforts The enterprise has passed through some severe struggles, however, such as are incident to such undertakings, and now it is one of the most important and prosperous industrial works in the Dominion.

In 1862, Mr. Van Allen, at his own personal expense, exhibited at the great World's Fair, in London, England, a lot of planks of timber, which were each twelve feet long, four feet wide, and four inches thick, the varieties consisting of butternut, whitewood, sycamore, cherry, hard maple, black walnut, white ash, and white oak; a lot of logs from four to five feet in diameter, of sycamore, white ash, black walnut, and white oak; and a large number of sections, with the bark on, of smaller trees, the whole being specimens of the principal valuable timbers found growing in Ontario, in the vicinity of Chatham. The highest prize awarded at that exhibition—a bronze medal—was bestowed upon Mr. Van Allen for this remarkable display. Mr. Van Allen afterwards presented these specimens of Canadian woods to the Canadian Commissioners, who caused them to be cut into suitable sizes and distributed among museums of Europe.

A NEW application of natural gas is to the manufacture of ice, which is formed by the intense cold created by the expansion of the gas when liberated from the high pressure at which it issues from the wells. It is claimed that the ice-making industry by this process may be very economically conducted upon an extensive scale.

SOME twenty-one years ago attention was first called to the existence of copper ore on the McKinley grant, near Alma A party of St. John gentlemen numbering four, of whom Mr. James A. Fellows was one, visited the premises. The exhibit then consisted of specimens that had been turned over by Mr. McKinley when plowing in his field. No vein had then been discovered. Some years later Mr. Fellows found on this farm a small cross vein of three or four inches, and removed several tons of ore of a very fine quality, but, owing to the narrowness of the vein, it could not be profitably worked, and was abandoned. Of later date still, a boulder of about three hundred pounds, carrying about eighty per cent. of copper, was uncovered in a road ditch not many yards from the cross vein, and gave rise to numerous cuttings and tunnelling, without finding the parent vein, search for which was again abandoned. During the past autumn the Mineral Developing Company of this city instituted a further search by an expert of wide experience in copper and silver mining, with the result that discovery has been made of a very broad and lengthy fissure vein of copper-bearing quartz, extending for a mile or more, across and beyond the McKinley, Boyle and other grants, and supposed to carry the parent vein from which the cross vein is an off-shoot.—*St. John Gazette.*