

**The Making of Steel.**

Until the days of Bessemer, William Killy, Captain Jones and Alexander Holley, the cost of its production was so great that steel was not available for the immense field it fills today. Cheap steel was the question of the hour when men began to see dimly, through a haze, the possibilities of railroad and industrial development if steel could be made at a price that would permit its general use.

Equal to the task, American brains and energy solved the problem—and then began an era that biggers description—a very riot of progress that staggers imagination—opening the floodgates of fortune and pouring down upon the astonished ironmasters a river of gold that swept them from their feet and well-nigh engulfed them in its glittering stream.

In 1810 the United States produced 917 tons of steel; in 1831, 1,600 tons. By 1850 the demand had increased, and 6,000 tons came from American furnaces. With the close of the Civil War came the revolution, for it was then that the first Bessemer steel was placed on the market, reducing the price to less than a sixth of what it had been. In 1867, 19,963 tons answered the wild, continuous call of progress for steel. Today the mills of Pittsburgh's flaming furnaces, and the other plants throughout the country, are belching forth 50,000,000 tons a year.

The Bessemer process gave the first impetus to the industry, but Bessemer steel has limits to its usefulness, and modern developments of the open hearth system are gradually pushing it into the background. In the Siemens Martin furnace it has met a worthy challenger for supremacy.

The Bessemer process is cheap and quick. A roar, a rain of sparks, and in a few minutes the work is done. Naturally, the result secured is a product less uniform than that obtained by a slower method. Without going into details, the process consists in forcing a blast of air through molten, in a container, until the silicon, manganese and carbon are burned out, and then introducing into mixture a definite amount of carbon.

The container is called a converter. It is a pear or jagged vessel of steel, lined with some refractory material, the lining used depending upon the character of the pig; that is to say, the percentage and nature of its impurities. It takes from seven to twelve minutes to convert the molten iron into steel. More and more open hearth steel is being used every day, largely because of the invention of Siemens, in 1850, and Martin, in 1864.

Crude iron always contains more or less foreign matter. Among the impurities are sulphur, phosphorus, carbon, silicon, and manganese. Stated briefly, the purpose of the open hearth process is to eliminate from the iron the amount of these impurities in excess of that required for steel. In modern days the "charge," or material placed in the hearth, consists of pig iron and steel scrap. This is reduced to a fluid state by exposure to the direct action of flame, the intense heat serving in various ways to free it from the objectionable matter.

A standard open hearth furnace has a capacity of about fifty tons. The "bath" or hearth proper in such a furnace will be about thirty-five feet long, perhaps fifteen feet wide, and about twenty-four inches deep. The hearth, which may be either a fixed structure, or arranged so that it can be tilted, consists of a steel and iron plate shell lined with some refractory material. If the process employed is that known as the acid process this lining consists of a layer of clay brick with two or three layers of silica sand, each layer of which has been fused into a solid mass by heat, the top finally "washed" with melted slag to fill the crevices and produce a glazed surface. This lining is used where the proportion of phosphorus and sulphur in the charge is known, and is intended to remain in the finished product. The basic lining consists of a thin layer of brick, followed by layers of a special kind of limestone and tar, applied in the same manner as the sand. The result is a lining which will permit the use of lime, which is employed in the basic process for the purpose of taking up the phosphorus contained in the charge. The acid lining would take up some of the lime.

At first acid-lined furnaces only were employed in both the Bessemer and open hearth systems. The basic process was developed at a later date. The practical application of the invention was due to the efforts of Sidney G. Thomas and P. C. Gilchrist. It was first made public in 1878. Essentially it consisted in the substitution of a basic lining and the addition of a quantity of quicklime during the process. The addition of the lime permitted the use of iron containing a large percentage of phosphorus. The success of the method was demonstrated in 1879. Its effect was revolutionary. It made available the immense deposits of iron ores high in phosphorus which until that time had been excluded from us in the two great steel-making processes. A very large proportion of the deposits in the

**Aching Joints**

In the fingers, toes, arms, and other parts of the body, are joints that are inflamed and swollen by rheumatism—that acid condition of the blood which affects the muscles also.

Suffered dread to move, especially after sitting or lying long, and their condition is commonly worse in wet weather.

"I suffered dreadfully from rheumatism but have been completely cured by Hood's Sarsaparilla, for which I am deeply grateful." Miss Frances Barry, Prescott, Ont.

"I had an attack of the grip which left me weak and helpless and suffering from rheumatism. I began taking Hood's Sarsaparilla and this medicine has entirely cured me. I have no hesitation in saying it saved my life." Mr. J. McVoy, Toronto, Ont.

**Hood's Sarsaparilla**  
Removes the cause of rheumatism—no outward application can. Take it.

United States are of this character, and that country more than any other was benefited.

The hearth is set in what is known as a regenerating furnace. The essential parts of the furnace are the two chambers, one on each side of the hearth, in which the air and gas, introduced from the bottom, is heated and ignited. Each of these chambers is nearly filled with a sort of cob-house work of brick. When in operation, the brick in one chamber is heated to a white heat, the gas passes through it, is ignited, reaching the space above the metal in the hearth in a fierce flame, and passes down through the second chamber. In its passage it heats the brick of this second chamber and then escapes through the chimney flue at the bottom. When the brick work in the first chamber cools below a certain point, the current of the gases is reversed by means of valves, passing through the second chamber, over the hearth, and into the first chamber. This reversing of the current renders it possible to maintain a steady and intense heat at all times.

On the same level as the hearth, in front of the furnace, is the melting or working platform. Above it there are usually a couple of electric travelling cranes, for handling materials, etc. On the opposite side of the furnace, hung at the proper level to receive the product of the "heat," is the fifty ton ladle.

The stock yard is located at some convenient point. Here the material for the charge is loaded in steel boxes. These boxes are carried on small cars along a track which passes between the melting platform and the line of furnaces, the boxes standing at the proper height to be acted upon by the charging machine on the platform. The principle feature of this machine is a long bar with a foot on the end which can be dropped into a socket in the charging box. By its means the box is lifted from the car, thrust into the open door of the furnace, turned upside down, and its contents emptied into the hearth. This is done at the rate of about fifty boxes, or about one hundred and twenty-five tons an hour.

One of the very few men visible about a steel plant is the operator of the charging machine. He is seated in a little cage which moves backward and forward with the charging bar, and manipulates the levers; to move the charging bar inward and outward; to move the entire charging machine forward and backward; to lock the foot of the bar in the socket of the charging box; to raise the bar up and down; to turn the charging box over.

We have now reached the last stage of the operation. When the bath is completed, the molten metal is discharged into one of the ladles hung above the casting pit which extends all the way behind the furnaces; and its contents is "teemed" or poured into the ingot moulds, carried by little cars running upon a track in the casting pit, their mouths at a convenient height for ladle-men on the teeming platform to empty the molten metal into them. By the time these cars have passed out of the furnace-room into the stripping-room the ingots are sufficiently hardened to permit stripping, that is, removing the mold, thus leaving the ingots standing along on the cars, ready to be drawn to the rolling mill.

It is impossible, within the limits of this article to describe at length the various methods of treating steel in process of manufacture. These methods depend upon the purpose for which the product is to be used. Cast steel is employed for many of the same purposes as cast iron, but especially where castings of great strength are required. It steels are used for beams and structural purposes; medium steel for rails and girders; hard steel for pistons, rods and other machine parts; and extra hard steels find their way to the tool-maker. Of course this is usurping the authority of the Church, and can not be tolerated. It is noteworthy that one of the first steps of the Government was to prohibit the publication of several Catholic papers, after the offices of these journals had been gutted by a well-trained mob. Those who are in touch with the situation await fresh developments with deep interest.

**CONSTITIATION**

**CURED BY THE USE OF MILBURN'S LAXA-LIVER PILLS**

Constitution is one of the most frequent, and at the same time, one of the most serious of the minor ailments to which mankind is subject, and should never be allowed to continue.

A free motion of the bowels daily should be the rule with every one who aspires to perfect health.

Mrs. Fred. Hall, 299 Hibernia Road, Montreal, Que., writes: "Having been troubled for years with constipation and trying everything I knew of, a friend advised me to use Milburn's Laxa-Liver Pills. I used four and a half vials and I am completely cured. I can gladly recommend them to all who suffer from constipation."

Milburn's Laxa-Liver Pills are 25 cents per vial, 5 vials for \$1.00, and all dealers or mailed direct on receipt of price by The T. Milburn Co., Limited, Toronto, Ont.

**Aussria-Hungary.**

The discordant elements in the Reichstrah have finally brought about the dissolution of that body. The outcome was inevitable. It has long been recognized that in the prevailing stubbornness of party strife no legislation was practicable. The Emperor, after repeated efforts to harmonize the factions, at last issued the mandate proroguing Parliament and dissolving the Lower House. The members of the Bienenrath Cabinet will remain for the present their portfolios, and will have directing control of the elections, which the imperial mandate declares shall be held on June 10th.

The crisis bringing about the present state of affairs arose from the dilatory tactics of the Czechs in the budget committee. They used obstructive methods to prevent a vote on the loan asked by the Government in order to tide the Ministry and force them to concede demands made by the Czech section. The Premier, von Benesch, would not be coerced, preferring to resign than to surrender. Evidently the Emperor sides with his wiser. The loan will now be made possible by an order from the Emperor, according to the famous paragraph 14 covering necessary legislation.—America.

I consider MINARD'S LINIMENT the BEST Liniment in use. I got my foot badly jammed lately, I bathed it with MINARD'S LINIMENT, and it was as well as ever next day.

Yours very truly,  
T. G. McMULLEN.

Solicitor (cross-examining)—Now, didn't you tell the prisoner that you doubted his veracity?  
Witness—No; I merely told 'im 'twas a bloomin' liar.

Minard's Liniment cures Dandruff.

Urchin—Paw, what's an accommodation train?  
Suburban Parent—I don't know, Bobby; I never saw one.

"Who gets the custody of the automobile?"  
"I told my wife she might have it. I can't keep up a machine and pay alimony, too."

Our store has gained a reputation for reliable Groceries. Our trade during 1910 has been very satisfactory. We shall put forth every effort during the present year to give our customers the best possible service.—R. F. Madigan.

**A BAD COLD**  
Developed Into  
**BRONCHITIS.**

Neglected Bronchitis is very often the direct cause of Consumption, and on the first symptom appearing Dr. Wood's Norway Pine Syrup should be used and the Bronchitis cured.

The symptoms are, tightness across the chest, sharp pains and a difficulty in breathing, a secretion of thick phlegm, at first white, and later of a greenish or yellowish color, coming from the bronchial tubes when coughing, especially in the morning.

Mrs. Dec. J. McCormack, Cleveland, N.S., writes: "My little boy two years old caught a bad cold which developed into Bronchitis. He was so choked up he could hardly breathe. Reading about your wonderful medicine, Dr. Wood's Norway Pine Syrup, I decided to try a bottle and with such good results I got another which completely cured him, without having a doctor. I cannot say too much in its praise; I would not be without it in the house as I consider it a sure cure for Colds and Bronchitis."

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**There Are No Drugs**  
IN OUR  
**TOBACCO!**

We guarantee this statement. Does not bite or burn, but gives a good cool, satisfying smoke.

**BRIGHT CUT**  
—AND—  
**Perique Mixture**

In tins and packages, at Grocers and Druggists.

**HICKEY & NICHOLSON Tobacco Co., Ltd.**  
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**SHOE SALE!**

Here is a chance you will never get again.

**150 Pairs of Men's**  
**American Lace Boots**

Goodyear Welted, Velvour Calf, made on two different lasts, medium heavy oak sole — "a beauty" comfort. Compare them with any Five Dollar Boot in the city.

**Ten Days Only — \$3.50 a Pair.**

We have also **RUSSIAN CALF** and **PATENT** at the same price. All new stock.

They've got the lead, they've got the style, They've got all others beat a mile.

**Hockey Boots! Hockey Boots!**

We lead for Low Prices on Hockey Boots. A good Boy's Hockey Boot at \$1.65. Men's \$3.00 a pair. Others at \$1.75, \$1.85 and \$2.25 a pair.

**A. E. McEACHEN**  
THE SHOEMAN  
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**Fall and Winter Weather**

Fall and Winter weather calls for prompt attention to the repairing, cleaning and making of clothing.

We are still at the old stand,  
**PRINCE STREET, CHARLOTTETOWN**  
Giving all orders strict attention.

Our work is reliable, and our prices please our customers.

**H. McMILLAN**

**KING EDWARD HOTEL,**  
Mrs. Larter, Proprietress

Will now be conducted on  
**KENT STREET**  
Near Corner of Queen.

Look out for the old sign, King Edward Hotel, known everywhere for first class accommodation at reasonable prices.

June 12, 1907.

**W. J. P. McMILLAN, M. D.**  
PHYSICIAN & SURGEON.

OFFICE AND RESIDENCE:  
148 PRINCE STREET,  
CHARLOTTETOWN.

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**NEW GOODS**  
**ARRIVING DAILY**  
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In Broadcloth, Panama, Venetian, Serges, etc., in all the leading shades, and black.

Latest styles in Silk, Net, and Muslin Shirt Waists. Hosiery and Gloves, Corsets and Ribbons, all marked at a living profit only.

"Live and Let Live."  
**Chandler & Reddin.**

**Mortgage Sale.**

To be sold by Public auction, at the Court House, Charlottetown, on Thursday, the 4th day of May next, at the hour of twelve o'clock noon: All that tract and piece of land situate on Township Number Sixty-five bounded as follows: Commencing on the shore of Northumberland Straits in the eastern boundary of fifty acres conveyed to Thomas Griffin, and running thence along said boundary north four degrees west to the rear boundary of land now or formerly in possession of Ewen McMillan; thence easterly along the same four chains and twenty-five links; thence south four degrees east to the shore aforesaid; and thence westerly along the same to the place of commencement, containing thirty acres a little more or less.

The above sale is made pursuant to a Power of Sale contained in a certain Indenture of Mortgage dated the 25th day of March, A. D. 1880, and made between John Langan, of the one part, and Donald Farquharson, now deceased, of the other part.

For further particulars apply at the office of Stewart & Campbell, Solicitors, Charlottetown.

Dated this 1st day of April, A. D. 1911.  
**FANNIE ELIZA FARQUHARSON,**  
F. S. MOORE,  
**CHARLES A. FARQUHARSON,**  
Executors of the last will of Donald Farquharson, deceased.  
April 5th, 1911—41

**FIRE INSURANCE.**

Royal Insurance Company of Liverpool, G. B.  
Sun Fire offices of London.  
Fidelity Phenix Fire Insurance Co. of New York.

**Combined Assets**  
**\$100,000,000**

Lowest rates and prompt settlement of Losses.

**JOHN MACBACHERN**  
AGENT.  
Telephone No. 362.  
Mar. 22nd, 1906

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All kinds for your winter supply.  
See us before you place your order.

**HARD COAL—Different Sizes**  
**Soft Coal—All Kinds**

**G. Lyons & Co.**  
Charlottetown, P. E. I.  
Nov. 30, 1910.

**Montague**  
**Dental Parlors**

We guarantee all our plate to give perfect satisfaction or money refunded.

Teeth pulled and extracted absolutely painless.

**A. J. FRASER, D. D.**  
Aug. 15 1906—3m

**Morson & Duffy**  
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Brown's Block, Charlottetown, P. E. I.  
MONEY TO LOAN.  
Solicitors for Royal Bank of Canada

**JOB WORK!**

Executed with Neatness and Despatch at the HERALD Office,  
**Charlottetown P. E. Island**

**Tickets**  
**Dodgers**  
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**Alley & Co.**

**Price \$250.**  
**Amherst**  
**Boots**

Are the Farmer's friends.

Made from Solid Leather throughout, counters, insoles and heels. They stand up and stand the strain of hard wear through all kinds of mud, slush and wet.

New's Amherst Boots \$1.60 to \$2.75  
Women's " " " 1.25 to 1.75  
Boys' " " " 1.50 to 2.00  
Girls' " " " 1.10 to 1.35  
Childs " " " 1.00

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How can the baby grow strong if the nursing mother is pale and delicate?

**Scott's Emulsion**  
makes the mother strong and well; increases and enriches the baby's food.