THE PRODUCTION OF IRON AND STEEL IN CANADA DURING THE CALENDAR YEAR 1913 pdf

1: List of countries by steel production - Wikipedia

The production of iron and steel in Canada during the calendar year [electronic resource] /.

Adjusted annually for changing compositions within each alliance. Table notes France to Axis: This trend continued throughout the war and stopped increasing after the war ended. However the high rates of government only was beneficial for a short period of time, a trend that can be seen in most wars. The employment spike was in relation to the tremendous amount of production the United States was making. Examples of high numbers of employment could have been seen in at Gulf Shipbuilding which obtained employees at the beginning of and increased to 11, employees in Alabama Dry dock also was an exemplary business in employment that raised number from 1, workers to 30, in the most productive years of the war. Demographics of employment consisted of eight million women including African Americans and Latinas, adding to the 24 million that searched for defensive jobs outside of the war. While GDP can easily increase Federal expenditures, it also can influence political elections and government decision making. No matter how much percentages of GDP increase or decrease we need higher amounts of GDP in order to pay for more investments, one of those investments being more wars. To pay for these wars, taxes are held at a very high rate. For example, by the end of World War II tax rates went from 1. Along with tax percentages reaching high amounts, spending on non-defense programs were cut in half during the period of World War II. Tax cuts allow one to see GDP in effect for the average American. Although research can support positive relationship between production and jobs with GDP, research can also show the negative relationship with tax increases and GDP. However, during the war, Franklin Roosevelt set ambitious production goals to fulfill. The early s were set to have 60, aircraft increasing to , in In addition, targets for the production of , tanks and 55, aircraft were set during the same time period. The Ford Motor Company in Michigan built one motor car comprising 15, parts on the assembly lines every 63 seconds. American production numbers caused the US employed workforce to increase massively. The government paid for this production using techniques of selling war bonds to financial institutions, rationing household items and creating more tax revenues. Some contribution to the US wartime manufacturing boom can be ascribed to the prior creation of the Alcoa plant in the s. The Alcoa plant prepared thousands of tons of aluminum used for the production of , aeroplanes during the war. The United States quickly adjusted to the levels of production required to equip its military with the millions of war products used during World War II.

2: The History of North American Cooperation on Aluminum and Steel

The production of iron and steel in Canada during the calendar year [microform] Item Preview.

Last Edited March 4, Iron is the primary raw material used to produce steel â€” itself an alloy of concentrated iron with a minute amount of carbon. Operator using an oxygen lance to clean out the ladle at the continuous casting facility, Stelco Hilton Works, Hamilton courtesy Stelco Hilton Works. Iron is the primary raw material used to produce steel â€" itself an alloy of concentrated iron with a minute amount of carbon. Globally, steel production drives 98 per cent of the demand for iron, while electronics and non-metallurgical uses drive the remaining 2 per cent. It occurs in certain minerals, the most important being magnetite, hematite, goethite, pyrrhotite, siderite, ilmenite and pyrite. The term "iron ore" is used when rock is sufficiently rich in iron minerals to be mined economically. Pyrite and pyrrhotite, although plentiful, are rarely used as iron ores because of the high amounts of sulphur they contain. Canadian iron ores consist mostly of hematite or magnetite, and some siderite and ilmenite. Besides oxides of iron, iron ores contain gangue â€" minerals such as quartz or fluorite not wanted in iron making. Ores containing proportions of iron of 54 per cent or more are considered high-grade, while those containing lower proportions of iron must be upgraded in order to become technically marketable as iron ore. Iron-bearing rock may be upgraded by removing gangue through concentration. This requires fine grinding of the ore, followed by separation of the iron-rich from the gangue particles e. The upgraded iron-rich material "concentrate" must be agglomerated into larger lumps prior to smelting, either by tumbling it into pellets "pelletizing" or by heating the concentrate until its particles stick together "sintering". Combined, these provinces account for virtually all of the iron ore mined in Canada. First discovered in , the Trough has been the site of iron extraction since and in recent years has garnered increasing attention from the extractive sector as demand for the resource has grown. Without steel, the world as we know it would not exist: Given the huge quantities of steel produced, it is fortunate that the material is easy to recycle. Today, every remaining steel mill in the country is owned by foreign investors and Canada is a net importer of the manufactured product. Iron and Steel Production Iron production requires iron ore, coal and stone limestone , dolomite. Steel production requires iron, steel scrap and flux "lime" â€" calcined limestone. The iron ore is smelted to produce an impure metal called "hot metal" when liquid, or "pig iron" when solid. The hot metal is refined to remove impurities and to develop the desired composition. The liquid steel is continuously cast into blooms, slabs or billets, and these semi-finished products are processed into the desired shapes by rolling or forging. Industry Components The iron and steel industry is divided into four groups: Iron and Steel Integrated Producers Iron and steel integrated producers ore-based are typically large firms that operate ore and coal mines frequently as joint ventures , as well as iron and steelmaking plants. Integrated Steel Producers Integrated steel producers depend on scrap as their source of iron. They can make the same range of semi-finished slabs, blooms and billets and finished steel products as the larger iron and steel integrated producers hot- and cold-roll strip, plate, rod, bars, shapes. Integrated steel plants are located wherever it is economically feasible to bring together large quantities of the raw materials required. The biggest steel plants in Canada have been built along the Great Lakes St. Other integrated steel plants, however, have been built in areas where abundant scrap and a ready market for finished steel exists. Steel Processors Steel processors purchase semi-finished and hot- and cold-rolled steel products from the integrated companies and custom process them for resale to fabricators wanting steel quantities too small for the integrated companies to handle economically. Scrap recycling companies are included in this group. The molten metal is ladled or poured into sand or metal moulds. The cast parts produced can be complex in shape, and often designed to meet one-of-a-kind end uses. Fabricators take the various primary steel mill products and turn them â€" cut-to-size, shape, machine, thread, punch, join, protective coat, etc. Foundries and fabricators include such companies as Baycoat Ltd. Iron Making When iron is being made ore, coke and stone are introduced through the top of the blast furnace at regular intervals. Coke is the partially graphitized solid residue left after the volatile components of bituminous coal are removed by heating in coke ovens. As they slowly descend down the furnace shaft, these materials "burden" are heated by rising hot gases. The carbon monoxide in these gases reacts with the iron oxides in the ore to form metallic iron and carbon dioxide. The iron formed melts and, as it percolates through the coke column, dissolves carbon. By the time it reaches the hearth, it is saturated with carbon, and it also contains silicon, phosphorus, manganese and sulphur. The stone and ore form a low-melting, free-running liquid slag, which absorbs most of the sulphur entering the furnace coke is the main sulphur source. Liquid slag, composed of gangue minerals and oxide components of stone, floats on the liquid iron and is separated from the molten metal during furnace tapping. Direct Reduction Several solid-state reduction processes have been developed in which iron ore is converted to metallic iron without melting. Many of these solid-state processes use natural gas as the fuel and as the reducing agent carbon monoxide and hydrogen. During the steelmaking process, the gangue in DRI is removed; the gangue minerals contained in DRI combine with the added lime to form a fluid slag. DRI is superior to scrap in purity and uniformity of composition but these benefits come at a higher cost. Steelmaking Steel is an alloy of pure iron and carbon in which the carbon content varies from about 0. Alloy steels contain additional elements such as manganese, nickel , chromium , vanadium, molybdenum that give them greater strength and specific properties. Stainless steel, for instance, is an alloy of chromium and nickel. In addition to carbon, hot metal and pig iron may contain unwanted elements such as silicon, phosphorus and sulphur. During the steelmaking process, these elements, which make steel brittle, must be removed. In the process of steelmaking, the hot metal, along with some scrap, is fed into a refractory-lined vessel "converter". Oxygen gas is then injected into the bath of hot metal. Also, lime is added to produce a slag that dissolves sulphur and other unwanted impurities, but does not corrode the converter lining. The injected oxygen gas oxidizes the carbon dissolved in the hot metal to form carbon monoxide and generate heat. When the carbon content of the molten bath drops to the desired level, alloying elements are added, and the liquid steel is tapped into a preheated ladle. Scrap-based steel producers use electric arc furnaces. The scrap is charged into the furnace and three graphite electrodes descend through the furnace roof. As the electrodes approach the scrap, arcs form high-voltage power. Due to its higher electrical resistance and to the intense heat radiated by these arcs, the scrap quickly heats to melting temperatures. Ladle Refining The liquid steel destined for demanding applications is further refined in ladle treatment units. The remaining impurities, such as sulphur, hydrogen, nitrogen, and non-metallic inclusions, are removed. The methods used include argon stirring, powder desulphurization, and vacuum degassing. Continuous Casting Some years ago, the majority of steel was cast into ingots. Ingots are large, rectangular blocks of steel, most of which are subsequently shaped into semi-finished products â€” blooms, slabs, billets or special shapes â€” by primary rolling or forging. Today, continuous casting CC is the principal way to solidify and shape liquid steel into semi-finished products. CC eliminates the primary operations. In the CC machine, liquid steel is poured into the top of a water-cooled, oscillating copper mould, and the slab, bloom or billet is discharged continuously from the bottom. In recent years, thin slab casting has gained favour as it eliminates several production steps. Hot and Cold Rolling For the most part, slabs, blooms and billets are reduced in rolling mills to hot- and cold-rolled products such as plate, strip, rail, structural shapes, bar and wire rod. Heat Treatment Heat treatments include annealing, normalizing, quenching, and tempering. These treatments change the properties of steel by altering its crystalline microstructure. Protective Coatings When subjected to certain environments, steel corrodes. To slow the oxidation of steel rusting steel products are coated. The most common coatings include zinc , tin, aluminium , vitreous-enamel and organic coatings e. It consisted of two charcoal-fired blast furnaces, a forge with two sets of water-powered hammers and special hearths for the production of iron bar. In the late 19th century both the Marmora and the Saint-Maurice ironworks were closed; they could no longer compete with more modern ironworks in Ontario and Nova Scotia, which employed coke-fired blast furnaces. Steel products were first manufactured in Canada in the s. By the early s steelmaking centres had been established in Hamilton and Sault Ste. Marie , Ontario, and in Sydney , Nova Scotia. Iron and steel production grew slowly until the Second World War and then rapidly as the postwar economic boom created a tremendous demand for steel. The Bessemer Process, invented in England in , was the first large-scale steelmaking process. This method was followed by the invention, a few years later, of the open-hearth process, which from about to the early s accounted for most of the steel production in the world. By the Bessemer Process was no longer in use in North America. Dofasco Inc introduced the BOP to North America in and since then the dominant open-hearth process steadily declined, and none are in use today. Canadians have made notable contributions to the advancement of the iron and steel industry. In the early s Canadian Liquid Air designed an injector that made it possible to introduce pure oxygen through the bottom of BOP vessels. This method was developed to industrial scale in Germany in The first successful continuous casting machine for steel in North America was developed by Atlas Steels, Welland , Ontario, in In , Stelco Inc introduced low slag volume blast furnace practice that decreased coke consumption by about 40 per cent, saving the world over million tonnes of coal a year. Stelco developed the Stelmor rod cooling process, and the Coilbox, a major energy-saving device used in hot-strip rolling mills. Also, it developed the short annealing cycle, another energy-saving development, universally adopted by the steel industry. And Stelco developed the Ardox spiral nail. Lasco developed a slit-rolling technique to make two bars from a single billet. Ipsco was the first company to install a spiral-weld pipe mill.

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3: Steel | | Data | Chart | Calendar | Forecast | News

*THE PRODUCTION OF IRON AND STEEL IN CANADA During the Calendar Year [John McLeish] on www.enganchecubano.com *FREE* shipping on qualifying offers.*

The ready availability of these two resources, in quantity and quality, was key to positioning Nova Scotia for early industrial development; and, after , for supporting continued economic growth within the new Dominion of Canada. Also in , the Annapolis Iron Mining Company built a blast furnace at Moose River Clementsport between Annapolis Royal and Digby, in order to smelt the magnetic ore recovered from three small local seams the Miller, Potter and Milbury , as well as to accommodate production from the Nictaux deposits. By the s additional iron reserves had been discovered at Torbrook, near Nictaux, leading to a sporadic succession of mining and smelting initiatives. Altogether, some , tons were produced in the area between and In , iron deposits were found along the banks of the East River in Pictou County, near present-day Bridgeville. This was a promising discovery, given the proximity to the collieries being developed at nearby Albion Mines Stellarton. Significant development of the iron reserves in Pictou County did not occur until the s, however, when the local availability of both coal and iron prompted several industrial ventures. In , the Pictou Charcoal Iron Company built a blast furnace at Bridgeville and began manufacturing pig iron for railway car wheels. Meanwhile, the New Glasgow Iron, Coal and Railway Company was formed in to take better advantage of the reserves. At Ferrona they installed a coal-washing plant and blast furnace that were state-of-the-art production facilities in Canada at the time, and began producing pig iron in The iron reserves at Bridgeville, however, proved to be unsatisfactory for sustained iron and steel production; during the s NS Steel began to import iron ore instead, from the Wabana Mines at Bell Island, Conception Bay, Newfoundland The Ferrona blast furnace closed in when operations were transferred to the Sydney Steel Works. The most significant iron-mining initiative ever undertaken in Nova Scotia was the development of the Acadian Iron Mines at Londonderry in Colchester County. This enterprise began in , when the Acadian Iron Mining Association was formed to exploit reserves of limonite hydrated iron oxide first discovered locally in ; mining began in and continued until In , a complementary iron works was built at Londonderry by the Acadian Charcoal Iron Company; the forge operated intermittently until , when a small steel mill was constructed. In Acadian Charcoal was bought out by the Steel Company of Canada, which held exclusive patent rights to the new Siemens-Martin manufacturing process then revolutionizing steel production in Great Britain. All was not well in the woods, however. Increasingly, provincial iron reserves were being overshadowed by the huge deposits discovered at Wabana and in northern Ontario. As well, Nova Scotia was geographically isolated from the new centres of industry developing in eastern North America, competition was stiff, and transportation of goods and raw materials was problematic. Before operations could resume under new ownership, a disastrous fire in destroyed the foundry, rolling mills and pipe shop, marking a point of no return. Both the mines and the blast furnace were re-opened with much brave optimism in and construction of a new steel plant began in The company ceased operations in , however, and in a second, even more disastrous fire swept the community. After this there was no recovery.

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That year, world pig iron production amounted to seven million tons. In , with the introduction of the Bessemer steelmaking process in the United States, the Association, then headquartered in Philadelphia, changed its name to the American Iron and Steel Association (AISA).

Technology[edit] Steel is an alloy composed of between 0. From prehistory through the creation of the blast furnace , iron was produced from iron ore as wrought iron, The introduction of the blast furnace reversed the problem. If the process of steelmaking begins with pig iron instead of wrought iron, the challenge is to remove a sufficient amount of carbon to get it to the 0. Before about steel was an expensive product, made in small quantities and used mostly for swords, tools and cutlery; all large metal structures were made of wrought or cast iron. Steelmaking was centered in Sheffield, Britain, which supplied the European and the American markets. The introduction of cheap steel was due to the Bessemer and the open hearth processes, two technological advances made in England. In the Bessemer process , molten pig iron is converted to steel by blowing air through it after it was removed from the furnace. The air blast burned the carbon and silicon out of the pig iron, releasing heat and causing the temperature of the molten metal to rise. Henry Bessemer demonstrated the process in and had a successful operation going by By Bessemer steel was widely used for ship plate. By the s, the speed, weight, and quantity of railway traffic was limited by the strength of the wrought iron rails in use. The solution was to turn to steel rails, which the Bessemer process made competitive in price. Experience quickly proved steel had much greater strength and durability and could handle the increasingly heavy and faster engines and cars. The usual open-hearth process used pig iron, ore, and scrap, and became known as the Siemens-Martin process. Its process allowed closer control over the composition of the steel; also, a substantial quantity of scrap could be included in the charge. The crucible process remained important for making high-quality alloy steel into the 20th century. Britain had lost its American market, and was losing its role elsewhere; indeed American products were now underselling British steel in Britain. Britain went from 1. The US started from a lower base, but grew faster; from 0. Germany went from 0. France, Belgium, Austria-Hungary, and Russia, combined, went from 2. During the war the demand for artillery shells and other supplies caused a spurt in output and a diversion to military uses. It was wedded for too long to obsolescent technology and was a very late adopter of the open hearth furnace method. Entrepreneurship was lacking in the s; the government could not persuade the industry to upgrade its plants. For generations the industry had followed a patchwork growth pattern which proved inefficient in the face of world competition. In the first steel development plan was put into practice with the aim of increasing capacity; the "Iron and Steel Act of " meant nationalization of the industry. However, the reforms were dismantled by the Conservative governments in the s. In , under Labour Party control again, the industry was again nationalized. But by then twenty years of political manipulation had left companies such as British Steel with serious problems: By the s the Labour government had its main goal to keep employment high in the declining industry. Since British Steel was a main employer in depressed regions, it had kept many mills and facilities that were operating at a loss. Australia[edit] In Australia, the Minister for Public Works, Arthur Hill Griffith , had consistently advocated for the greater industrialization of Newcastle , then, under William Holman , personally negotiated the establishment of a steelworks with G. Delprat of the Broken Hill Proprietary Co. Griffith was also the architect of the Walsh Island establishment. By the Ruhr had 50 iron works with 2, full-time employees. The first modern furnace was built in The creation of the German Empire in gave further impetus to rapid growth, as Germany started to catch up with Britain. From to World War I, the industry of the Ruhr area consisted of numerous enterprises, each working on a separate level of production. Mixed enterprises could unite all levels of production through vertical integration, thus lowering production costs. Technological progress brought new advantages as well. These developments set the stage for the creation of combined business concerns. Krupp reformed his accounting system to better manage his growing empire, adding a specialized bureau of calculation as well as a bureau for the control of times and wages. In the s Germany produced about 15 million tons, but output plunged to 6 million in Under the Nazis, steel output peaked at 22 million tons in , then dipped to 18 million in under Allied bombing. Steel corporation in the U. The goal was to move beyond the limitations of the old cartel system by incorporating advances simultaneously inside a single corporation. The new company emphasized rationalization of management structures and modernization of the technology; it employed a multi-divisional structure and used return on investment as its measure of success. The chief difference was that consumer capitalism as an industrial strategy did not seem plausible to German steel industrialists. Germany was a world leader because of its prevailing "corporatist mentality", its strong bureaucratic tradition, and the encouragement of the government. These associations regulated competition and allowed small firms to function in the shadow of much larger companies. It produced 3 million of steel in , 12 million in , 34 million in and 46 million in East Germany produced about a 10th as much. Its industry comprised too many small, inefficient firms. Despite a high national income level, the French steel industry remained laggard. The greatest output came in , at Prosperity returned by mids, but profits came largely from strong domestic demand rather than competitive capacity. Late modernization delayed the development of powerful unions and collective bargaining. Despite periods of innovation â€”14 , growth â€”18 , and consolidation â€”22 , early expectations were only partly realized. Steel output in the s and s averaged about 2. Per capita consumption was much lower than the average of Western Europe. Instead, they reinforced the dualism of the sector and initiated a vicious circle that prevented market expansion. Strong labour unions kept employment levels high. Troubles multiplied after , however, as foreign competition became stiffer. In the largest producer Nuova Italsider lost billion lira in its inefficient operations. From to American steel production grew from , tons to 60 million tons annually, making the U. The annual growth rates in steel â€" were 7. The use of steel in automobiles and household appliances came in the 20th century. Some key elements in the growth of steel production included the easy availability of iron ore, and coal. Iron ore of fair quality was abundant in the eastern states, but the Lake Superior region contained huge deposits of exceedingly rich ore; the Marquette Iron Range was discovered in ; operations began in Other ranges were opened by , including the Menominee, Gogebic, Vermilion, Cuyuna, and, greatest of all, in the Mesabi range in Minnesota. This iron ore was shipped through the Lakes to ports such as Chicago, Detroit, Cleveland, Erie and Buffalo for shipment by rail to the steel mills. Few native Americans wanted to work in the mills, but immigrants from Britain and Germany and later from Eastern Europe arrived in great numbers. By then the central figure was Andrew Carnegie , [36] who made Pittsburgh the center of the industry. In the s, the transition from wrought iron puddling to mass-produced Bessemer steel greatly increased worker productivity. Highly skilled workers remained essential, but the average level of skill declined. Nevertheless, steelworkers earned much more than ironworkers despite their fewer skills. The experience demonstrated that the new technology did not decrease worker bargaining leverage by creating an interchangeable, unskilled workforce. Production was booming, and unions were attempting to organize unincarcerated miners. Convicts provided an ideal captive work force: The competition, expansion, and growth of mining and steel companies also created a high demand for labor, but union labor posed a threat to expanding companies. As unions bargained for higher wages and better conditions, often organizing strikes in order to achieve their goals, the growing companies would be forced to agree to union demands or face abrupt halts in production. The rate companies paid for convict leases, which paid the laborer nothing, was regulated by government and state officials who entered the labor contracts with companies. Steel " [39] Main article: This could not have happened without the prior invention of Bessemer Steel. Eads Bridge across the Mississippi River, opened in using Carnegie steel In the late s, The Carnegie Steel was the largest manufacturer of pig iron , steel rails, and coke in the world, with a capacity to produce approximately 2, tons of pig iron per day. Around that time, he asked his cousin, George Lauder to join him in America from Scotland. Lauder was a leading mechanical engineer who had studied under Lord Kelvin. Lauder devised several new systems for the Carnegie Steel Company including the process for washing and coking dross from coal mines, which resulted in a significant

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increase in scale, profits, and enterprise value. By , the profits of Carnegie Bros. Carnegie, through Keystone, supplied the steel for and owned shares in the landmark Eads Bridge project across the Mississippi River in St. Louis, Missouri completed This project was an important proof-of-concept for steel technology which marked the opening of a new steel market. The Homestead Strike was a violent labor dispute in that ended in a battle between strikers and private security guards. The final result was a major defeat for the union and a setback for efforts to unionize steelworkers. Steel and it was non-union until the late s. US Steel By the US was the largest producer and also the lowest cost producer, and demand for steel seemed inexhaustible. Output had tripled since , but customers, not producers, mostly benefitted. Productivity-enhancing technology encouraged faster and faster rates of investment in new plants.

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5: Cuyuna Iron Range | MNopedia

The Production of Cement, Lime, Clay Products, Stone, and Other Structural Materials in Canada During the Calendar Year by John Mcleish avg rating â€” 0 ratings â€” 2 editions.

Email Shares As the global rhetoric around trade heats up, aluminum and steel are two metals that have been unexpectedly thrust into the international spotlight. Both metals are getting considerable attention as journalists and pundits analyze how tariffs may impact international markets and trade relations. But in that coverage so far, one thing that may have been missed is the interesting history and context of these metals, especially within the framework of trade in North America. Aluminum and steel are metals that are not only essential for industry to thrive, but they are also needed to build infrastructure and to ensure national security. Because of the importance of these metals, countries in North America have been cooperating for many decades to guarantee the best possible supply chains for both aluminum and steel. Aluminum and Steel Here are some of the major events that involve the two metals, from the perspective of North American trade and cooperation. At this point the U. Zero or near-zero tariffs were introduced for steel. For the first three years, the U. Steel was crucial for ships, railways, shells, submarines and airplanes. During this stretch, America produced three times as much steel as Germany and Austria. These facilities become the base for Northern Aluminum, which changes its name to the Aluminum Company of Canada Alcan. By , the area includes an entire new company town Arvida , a 27, ton smelter, and a hydro power plant. Steel and aluminum demand continues to soar. Near the same time, the Canadian-American defense industrial alliance, known as the Defense Production Sharing Program, is also established. The principles of this declaration recognize North America as a single, integrated defense industrial base. A Hawker Hurricane squadron is permanently stationed, to protect the area. Our trade with each other is far greater than that of any other two nations on earth. At this point, Canada relies on the U. Lawrence Seaway opens, providing ocean-going vessels access to Canadian and U. This facilitates the shipping of iron ore, steel, and aluminum. This paves the way for iron ore, steel, and aluminum trade. Modern Aluminum and Steel Trade U. Get your mind blown on a daily basis: Given email address is already subscribed, thank you! Please provide a valid email address. Please try again later.

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6: Military production during World War II - Wikipedia

Iron extraction and steel production have historically constituted major industries in Canada, especially in the industrial zones of Ontario and QuÃ©bec. Iron Ore After oxygen, silicon and aluminium, iron is the fourth most plentiful element in Earth's crust.

In the same year, Liberty Newman erected iron works at the upper falls in Ticonderoga, N. During this same period, we find records indicating the erection of a rolling mill on the Boquet River near Essex, N. These plates were shipped to a nail factory in Vermont. It was repeatedly rebuilt and operated until about The ore used here was obtained from the New Russia mine, situated a half mile from the works. A part of the ore was also obtained from the Fisher Hill Ore Bed. He probably obtained his ore from an old opening known as the Prall Vein. Its location and description are identical with 81 mine, Chateaugay Ore Bed. The ore used in the beginning was found nearby, but was soon abandoned in favor of ore from the Arnold bed in Clinton County. Subsequent to the year extensive iron works were established in Wilmington on the west branch of the Ausable River. Ore, transported from the Palmer Hill mine, was used in the forges. We also find some small forges located at Lower Jay, N. The ore used here was also obtained from the Palmer Hill mine. The principal product of the company was the manufacture of nail-plate which was subsequently cut into strips for the manufacture of horse shoe nails. Dickenson of Troy, erected the first furnace at Port Henry. The ore used was obtained from a vein near the furnace. The iron made was shipped to Troy, N. Ore from this mine was sold mainly to the Peru Iron Company; however, being lower in metallic iron than the Arnold ore, it required concentration. In a separator was built on the Ausable River at Clintonville, N. The ore was obtained from the Arnold Ore Bed, located about fourteen miles away. In the subsequent years it was rebuilt, new machinery installed and it became one of the largest and most efficient forges in the Adirondacks. The ore used was obtained from the Tremblay mine, near Redford, N. Two blast furnaces were finished and put in operation at Clintonville, N. They were charged with wood and charcoal, and blown by cold blast. Ironware as well as pig iron was made here, the castings being poured direct from the furnace. In January, , a cable factory, manufacturing large ship anchors and iron cables, was erected. A good grade of iron was evidently manufactured at this plant, for records indicate an order received from the government for a large quantity of this iron, which was to be fabricated into chain cables. The first forge at Morrisonville, N. However, the freshet of destroyed it, ending the iron business at Morrisonville. Burt and Vanderwalker erected a four-fire forge at Ausable Forks, N. They procured their ore from the Palmer Hill mine, located two miles north of the village. Rogers began making iron at Black Brook, N. In its stead they erected a forge consisting of two fires and a hammer in one end, run by Mr. Sailly, and two fires and a hammer in the other end, run by Mr. In connection with this four-fire forge, they had a large rolling mill for making wagon axles, etc. During this same period, iron manufacture flourished throughout this valley at Wilmington, New Sweden and Clintonville. Near the Arnold ore bed was the two-fire Batty forge, and above that the Etna blast furnace, operated under the name of the Peru Smelting Company. During this period, Goulding and Peabody erected a foundry, employing about sixty men, casting the principal machinery for all the forges, saw mills, grist mills, in the valleys of Ausable and Saranac, at Keeseville, N. They used the Port Henry, N. In subsequent years the iron-workers in this valley manufactured such things as wire and horseshoe nails. One Daniel Dodge invented, received a patent for, and manufactured the first machine for turning out, mechanically, forged horseshoe nails. The Merriams, father and son, erected and operated the Stower forge at Lewis, N. The forge contained three fires, and used ore procured from Moriah. During the period between and the owners of the property erected a separator and a four-fire forge. This mine is located at Clayburg, N. Peter Tremblay discovered and opened the Tremblay mine. This mine, which produced a good grade of ore, was located one mile south of Redford, on the south side of the Saranac River, and is now owned by the Chateaugay Ore and Iron Company. Sailly bought up the interests of the Averill ore beds at Dannemora, N. They opened the mine, built a separator, and did a lively business for a number of years. The first iron ore separator using water jigs in the town of Moriah, near Mineville, N. The ore was obtained from the bed owned by the firm, located about a mile from the works. On the north side of the Saranac River, at Plattsburg, N. A forge was built at Russia, N. The ownership of this forge subsequently changed hands many times. In , it was obtained by Andrew Williams and C. This forge obtained its ore from the Burt mine, a distance of about ten miles. The Westport forge, located about four miles from Westport on the Boquet river, contained three fires and one hammer. It worked Moriah ore, transported by land from Westport. It was owned by W. The ore was obtained from the Cheever bed, located nearby. It was located in the North West bay, about one mile from Westport village. Its product was pig iron and was made from ore from the Cheever bed. The old furnace still stands. The ores used were obtained from both the Cheever and Barton beds. It was 46 feet high with a 15 foot bosh. It was worked some by him, and subsequently by Andrew Williams and by the State: They manufactured slabs for boiler plates, blooms, and refined billets. They began operations with ten machines and sold during the first year one hundred tons of nails. He used ore from the mine bearing his name. The Ticonderoga Iron Company, under the direction of W. Calkins, erected a six-fire forge at the Lower Falls, about two miles from the steamboat landing at Ticonderoga, N. The ore used was shipped from Port Henry, N. It was located about eight miles northwest of Port Henry. It was owned by S. A large proportion of the iron produced here was used in the Bessemer works at Troy, N. Witherbee was one of the first furnace managers in the United States to use the chemical laboratory in connection with the regular operation of the furnace. He started this practice when operating the Fletcherville charcoal blast furnace, about this year, near Mineville, N. The ore used at first was transported from the Port Henry and Arnold Hill mines, but later brought from the vicinity of Lower Chateaugay Lake. Rogers, for the working of the Chateaugay ore beds, and began the development of the properties. This was one of the first furnaces in the United States to adopt a closed top. Anthracite was tried because of a shortage of charcoal The furnace was raised to a height of 60 feet and the tunnel head increased to eight feet diameter. The forge was improved and enlarged, making it one of the most up-to-date in the Valley. Ore was obtained for the forges from the famous Chateaugay ore beds. A dam was built at the outlet of Lower Chateaugay Lake, furnishing water power for operating the Catalan forges at Belmont, N. They included 11 71 forge fires, and produced nearly 44, tons in this calendar year. In , the number of forges had been reduced to 14, with fires. Their production in was only 12, net tons of blooms.

THE PRODUCTION OF IRON AND STEEL IN CANADA DURING THE CALENDAR YEAR 1913 pdf

7: Nova Scotia Archives - Men in the Mines

List of countries by steel production. This is a list of countries by steel production in , , , and from to , based on data provided by the World Steel Association.

The Touring was now the style. B-1 to B, built between October 1, and January 1, There is a gap of 12, numbers somewhere between , and , September to August approx. Touring, Runabout, Town Car. See component section for details. The Runabout was similar in style to the Touring. Turtle deck was new this year, and had rather sharp corners. Lamps and horn were black-painted steel with brass trim. Bodies were supplied by several manufacturers and were painted and upholstered by the suppliers until late Metal panels over wood frame. Door handles extended through the top surface. Body top sills had a separate metal trim plate. Initially all cars were painted a very dark blue, with either blue or black fenders. Black became the standard color early in the year. Delivery cars phased out and could be ordered in several colors. Delivery Car production ended before calendar Initially full leather in the open cars, in a diamond sewn pattern. Imitation leather began to appear on the seat backs and side areas, with real leather at the very front of the arm rest. Similar to style. No embossed bead on the apron, or across the wide part of the front fender. Reinforcing bead added across the wide part later in the year. Similar in style to the front. Support irons were now attached to the body framing, extending out the side of the body, through a hole in the apron of the fender, and were clamped to a single plate under the fender. Now longer, with bulge at the rear to clear the brake and radius rods, similar to the later cars. Fenders and aprons were painted either blue or black, this based on surviving original cars, but the dark blue is the only color indicated in Ford literature. Pressed steel with embossed diamond pattern. The Ford script now ran across the board. Aluminum, with no louvers. Hinges were separate from the panels, and riveted in place. Handles were now forged steel, replacing the aluminum type used earlier. Wood, with flat brass edge trim. Board now mated with the body side panels. Rear body support a separate forging bolted to the rear of the frame. An extra body bracket was installed, just ahead of the rear seat, to support the rear section of the touring body. Brass quadrant, brass-plated spark and throttle levers, with flattened metal ends replaced the rubber knobs. Gear case was brass, riveted assembly. The wheel spider was iron and painted black. Same as the cars. Cast center section, introduced in later , with the axle tubes flared and riveted to it. This axle then continued into early Pinion bearing spool was a casting and was held by studs and nuts, the studs being enclosed not visible in the housing. Separate front housing for universal joint assembly discontinued later in the year. Brake rod support brackets extended out and wrapped down and around the rods. Original tires had no tread. Hub flanges are 6 inches in diameter. Front wheels used ball bearings. Tapered-leaf, front and rear. The use of the brass oilers was continued. Supplied by Ford with the standard Ford script. The filler neck was now a spun brass design, riveted and soldered in place. Closed valve type as in Serial number above the water inlet. Pipe plug water jacket seals were replaced with pressed in welch plugs during the year, with mixed production of both types. New camshaft and slightly lower compression introduced in late The cylinder head on early models had threaded holes for priming cups on the left side. The mounting arms were held with three rivets instead of seven. The mushroom-shaped cap, of brass, with six flutes and the Ford script appeared on all models. Aluminum formed handle, painted black. Driven by a leather belt from a pulley at the front of the engine. The fan hub was brass bronze , with the blades riveted in place. Exhaust was cast iron; pipe fits inside the threaded end and was packed with asbestos and held with a brass nut. The exhaust manifold and pipe were modified so that the pipe flared at the manifold and was held in place with the brass nut but with no packing. Intake was aluminum and is more curved than the usual design. Several designs, all of which rose vertically at the rear of the carburetor and mated with the exhaust manifold at the rear area. Cast iron ends, mounted with pressed metal brackets. Longer, curved rear exhaust pipe extension integral with the rear cover plate. Wrapped with asbestos, secured with three steel straps. The asbestos was specified to be dyed black. Cylindrical, under the front seat. Mounting brackets now clamped to the tank. The outlet was between the center and the right side, between the frame rails. Tapered inspection door, held with six screws. The door was now a plain metal plate with no script. Kingston, K-W, Heinze, or Ford. The Ford box used the standard-size coils. All were painted black with brass trim, replacing the all-brass types used until late Bulb type, single twist. Black and brass style. Rands, Vanguard, Diamond, or Standard. Lower section leaned back, while top section was vertical. Top section folded forward. Top color was black on all open cars. Front attached to the windshield hinge with a strap, similar to Stewart Model 26 in black and brass on early cars, then Stewart Model Similar in style to later types except that its corners were rather sharp. Handles were brass but painted black.

8: CHRONOLOGY OF IRON AND STEEL

Steel Production in the United States averaged Thousand Tonnes from until , reaching an all time high of Thousand Tonnes in May of and a record low of Thousand Tonnes in April of

In one the spring clip was riveted to the leaf, with the bolt running under the spring. On another, the leaf was curled upwards and the clip bolt passed through the curl above the spring. Still another used a separate clip assembly. Springs slowly changed to non-taper design beginning in late or on some production. This was a 6-leaf, non-tapered type until late when a seventh leaf was added. Main leaf not drilled for oilers until approximately. Main leaf drilled for oilers. Same as plus 9-leaf spring added for the Sedans. Same as REAR: Same as but 6-leaf spring added for the Runabouts. New 8-leaf spring used on all cars. The 6-leaf was discontinued. Indicates that the spring leaves were lubricated with a mixture of graphite and an air-drying paint. This mixture was painted on the leaves as they were assembled. The older style had an oiler while the new half did not the perch now had an oiler. The oilers were now located on the spring perches and on the main leaf of the spring. The front spring was apparently changed first; then the rear. One pound will lubricate 75 springs. Brass gear housing was a riveted assembly with the column fitting. Levers brass-plated with black hard-rubber knobs. The pitman arm was oval in cross-section, and shorter than the later types used with the two-piece spindles. The first cars apparently used a shorter and straighter piman arm than that used on the post cars. Retained was the brass quadrant and riveted gear case. The column seems to have been used in very early production, with some overlap when both the old and new types appeared at the same time. The new gear case was now one-piece rather than riveted design. Quadrant was pressed steel, painted black, apparently introduced during production. The gear case was polished bronze, not plated. The cover was much flatter than previous cone-shaped type. Levers were steel with the flattened ends now smaller and somewhat round, and brass-plated although some black-painted rods seem original. Factory Blueprints indicate that the new one-piece gear case was approved on September 5, On September 18, the steering gear quadrant was redesigned. The new quadrant was made from cold-rolled steel and was to be brass plated. Early types of the steel quadrant were made with the serrated edge folded up, somewhat in the manner of the earlier design. September drawings show the later type without the fold. There may have been two versions of the earlier design quadrant; one made of brass and the other of steel. Both are shown on the blueprint. Horn switch mounted on the top surface, just below the steering wheel. The horn bulb, when used, clamped to the column. Quadrant was painted black. Factory blueprint, dated February 26, , indicates that the horn wire was changed from a tube to a steel stamping, welded to the column NOTE: The brass plating of the rods was only at the top and levers, not the entire length of the rods. Still later, June 14, , the case was to be nickel plated. During the planet gears were specified to be pitch with a degree pressure angle. Levers nickel-plated at the top, with shorter flattened ends. The quadrant was changed from brass plated to black enameled. The gear case cover changed from bronze to steel, nickel plated. The wire tube was made larger to accept light wires. In late the horn button was now a two-function type with fluted sides. Turning it operated the lights. The button now mounted in a housing on the left side of the column, where it remained for the remainder of Model T production. Shortly later the cover finish was changed back to nickel, and in the case itself was again nickled. This finish continued, according to factory blueprints, until sometime in The spark and throttle rods were also changed to zinc plated at the handles, and black painted below, and remained this way until July 26, the blueprint. Similar in appearance to but a longer pin was used for one of the planetary gears. Dash board with switch was now standard. Column support bracket to instrument panel added in Gear ratio changed to 5: Similar in style to earlier but now had flange to mate with new body types. In several of these letters the home plant advised the branches not to paint the lower part of the steering column that was beneath the hood. The idea being that if the parts were painted, customers would not be able to see the quality steel that was used in the construction of these columns. The top cover was somewhat cone-shaped rather than flat as on the later design. In the brass era ended and the steering case was then nickel plated to suit the new styling. In the nickel plate was replaced with polished zinc plate, and this finish continued until sometime in when nickel plating was again used. The part number remained the same but the new factory number was T Listed below are the factory drawing change dates and modifications. The descriptions are exact quotes unless otherwise indicated.

9: Iron and Steel Industry | The Canadian Encyclopedia

Technology. Steel is an alloy composed of between % and % carbon, and the balance of iron. From prehistory through the creation of the blast furnace, iron was produced from iron ore as wrought iron, % - % Fe, and the process of making steel involved adding carbon to the iron, usually via serendipity in the forge or via the cementation process.

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