Chapter 1 : History of Nova Scotia, Jan - Dec

In the mines and railway were sold to the Canada Coal and Railway Co., although the railway remained known as the Joggins Railway. The Canada Coal and Railway Co. sold to American interests in and the name of the new company became the Canada Coals & Railroad Company.

I have concentrated my research on those who are descended from Noah, and who reside primarily in Nothern Nova Scotia. Here are my notes on some of these families. I would be interested in any more information on these or any other lines not descendend from Noah. Please note also that this is a work in progress so that additions will be made as I find more information on the various lines presented here. Emmerson Webb About , Emmerson W. The Directory lists him as living at Joggins Mines. At the time of his marriage and on the census he was a Baptist, but by he had become a Methodist like the rest of his family. In the provincial directory, he is still living at Joggins Mines, but no occupation is listed. He is not enumerated in the census at either Joggins or Amherst. According to provincial directory, the family had moved to Amherst and was living at 22 Lower Victoria St. According to the Amherst town directory, he was a driver for Dominion Express, and had moved to at Church Street. He was living at the same address in the census, where his occupation was listed as a Teamster. Sarah died in , and she is also interred in the Highland View Cemetery. This is probably the Harry Webb who was listed as a soldier at the Internment Camp at Amherst per the town directory. He may also be the Harry Webb of Maccan who joined the 93rd. Regiment in September, No further biographical information is available. See below for details on another, younger Harry Webb. NS December 3, On Oct. She died in and is buried in the Highland View Cemetery, as is Thomas who died in Harriet Hattie Maria b. The directory states that she worked at the Acadia St. The directory stated that she was the principal of Acadia St. She died on July 18, , and she is buried in the Highland View Cemetery. Joggins Mines, In , , and in the Amherst town directories, she was working as a sternographer for Dominion Express. On October 11, she married Merrill W. His place of residence was then listed as Montreal. She survived her Father, but the obituary did not state her place of residence. William Webb Sometime between and , William H. Ontario, August 6, moved to Joggins, probably from the United States. April 29, in the USA m. April 18, in the USA No further information is available. William does not appear in the , or any subsequent directories. The family is not enumerated at Joggins in the census. Webb [Further research has revealed that Warren St. Clair Webb is, in fact, a direct descendent of Noah Webb. His data will nevertheless remain on this page. I am indebted to Bonnie Chandler for both her hospitality and research assistance. Clair Webb was born in Brocton, Massachuttes on August 28, By the census, he is boarding with his uncle John W. Webb at Pugwash Junction. His occupation is a school teacher, and it notes that he arrived in Canada in The and Provincial directories, and the census all list Warren S. Webb living at Joggins Mines. His was a painter by trade. Webb is also listed on the Joggins electoral rolls for and On the census, he was enumerated on Allison Road in Joggins, and his occupation was Station Keeper. Similarly, the Federal list of voters for the Town of Joggins describes him as an Express Agent. The Oxford Journal of February 5, reported that W. Webb had been re-elected as mayor of Joggins. From January until August he served as the Town Clerk. In March he once again ran for mayor and was successful by a small margin but the election results were contested because of a dispute over allegedly unpaid property taxes. There was also some question about financial irregularities i. Unfortunately, the record is incomplete, so the outcome of this matter is not known. The Springhill Record for April 15, noted that he was expected to run for council again. No further information is available. Warren died February 21, at Joggins of a paralytic stroke. He is buried at Wallace Bay. June 8, m. In , he was employed as a bank clerk. December 13, at Vancouver; bur. West, and working for "John Deere Plow". Clair and Christina had issues as follows: He had moved to Boston by

Chapter 2 : thejogginsrailway - jogginsmines

Joggins Railway Company [electronic resource]: Incorporated by Act of the Legislature of Nova Scotia, A.D. Bye-Laws and Act of Incorporation Joggins Railway Company Format.

The story of Joggins Many families had sons and daughters who left the area to find a better life in other parts of Canada and the USA, never to return. Much has been written on Joggins concerning the early coal mining industry but I have never been able to find one source that told the social and industrial history of the town. The following is not meant to be an official history of Joggins but only my attempt to compile the information I have accumulated over the years. The information put forth on these pages comes mostly from older newspaper articles and records from the Nova Scotia Department of Natural Resources Mines dealing with the history of this special part of Nova Scotia. In writing this article I tried not to delve too much into early mining statistics, however as I began to gather information I realised that much of the early history of the Joggins area that was available was mainly from government resources, such as the Department of Mines documents which dealt mostly with mining records and much of my research was from these files. The story of Joggins is so much more than the coal mining records of the area but without the coal there would not have been a Joggins. There are so many stories that should be told and I will try to touch a bit on most of them. The three churches of the community have a rich and colourful history all of their own, however this work will only deal with an overview of these. A wonderful history of Saint Thomas Aquinas Roman Catholic Church was composed on the occasion of their th anniversary in The schools also have an interesting past which could be told in more depth. I tried to write this history keeping events in a chronological order, but have found myself jumping ahead a bit to finish telling a story and then going back to begin another tale. I would like to thank the Cumberland County Museum for the use of their archives which was invaluable in my research. Sources of information used in the research of the history of Joggins were; the Joggins High School Journals from to located at the Cumberland County Museum, numerous articles from the weekly newspaper; The Citizen , the History of St. As I continued to add and delete items in this article I began to include some of my own recollections of growing up in Joggins. The town is situated atop the one hundred foot high, world renowned fossil cliffs, that have made the community a house hold name in geological circles. These cliffs were first made famous by Sir William Dawson and Sir Charles Lyell in when they discovered reptiles and amphibians entombed in fossilised tree trunks embedded in the cliffs. If one looks to the west, you will see the majestic Shepody Mountains of Albert County, New Brunswick approximately five miles distant across the water. To the east lie the Cobequid Hills of central Cumberland County, and thirty miles away the coal mining town of Springhill. The town of Amherst is located approximately twenty miles to the north. The village derives its name from the Indian word Chegoggin which means " place to fish". This name was applied to the entire coastal region along Chignecto Bay from the Cumberland Basin to Cape Chignecto and would become known as the Joggins Shore. The first Europeans to make use of the site where the village of Joggins is located today were French and English military personnel and early Acadian settlers. The earliest recorded reference to the coal of Joggins, which is visible in the cliffs and along the beach, was in in correspondence by a captain of the French Navy, exploring the Bay of Fundy. It is known that the Acadians were using Joggins coal to operate their forges and ovens as early as Also in , records state that coal was taken away by ship to be used by the French at their settlements along the bay. Taking coal from the shore in this means was dangerous work as there was no harbour and the ships would have to lay at anchor in the open bay and the coal transported to the ship by smaller boats. This may be one of the earliest records of mining in Nova Scotia, however French soldiers were also using coal on Cape Breton Island at the same time period. The Acadians chose not to settle at Joggins as they were mostly farmers and and preferred the more fertile river valleys and marsh land of the upper bay. The coal cliffs of Joggins were marked on maps of the Province of Nova Scotia drawn by British cartographers in Captain Robert Hale of the British Navy mentioned in his log book of of coal being taken by him from the cliffs of Joggins. In his log book, Hale mentions that coal had been loaded here for the past 30 years. This would put the earliest date of mining at Joggins to be about , a full 20 years before any mention of

mining in Cape Breton. Other than for this military use no commercial mining was done during the rest of this century. The first land grant at Joggins was made to Richard Lee in The First Mines The first mention of any commercial use of coal from Joggins was in when a man by the name of Samuel McCully opened a mine near the shore with hopes of supplying the growing settlement of Saint John, N. This venture failed, mainly due to competition from England for this market. Under the ownership of the GMA the only coal deposits developed in the province at this time were in Pictou and Cape Breton. The next mention of mining was that of Cornish miners working the King Seam from the shore in Little other mining was done until when the first major coal mine in the area was developed by the GMA. This mine was known simply as the Joggins No. Thus began the commercial mining industry at Joggins. A loading wharf would be constructed at the shore and a narrow gauge tramline built from there to the mine to transport the coal to the ships waiting to take their cargo to markets in Saint John and the New England States. Since all mining rights at Joggins was controlled by the General Mining Association and most of the land that comprises the present village was granted to the GMA, settlement and development of the area was hindered while other coal areas were being developed at Maccan and River Hebert where private mining developments were beginning. The Victoria Coal Mining Co. About there were other coal seams uncovered in the Joggins area. After this date private enterprise could develop the coal resources of the province. As the demand for coal increased and the mines became more prosperous the population of the area began to grow. The demand for housing necessitated the building of the first company houses in In the first mine on the Fundy Seam was developed at Hardscrabble Hill. This mine would be known as the Cumberland Mine. At this time Joggins was the principal coal mining centre in Cumberland County. A new slope was sunk and great improvements were made to the surface facilities at the Joggins No. This year also saw the first steam powered hoist installed at the Joggins mine. This would allow the coal to be raised to the surface with out the use of horses, although horse power would continue to be used underground. The company also made railway connections to the slope at this time. In almost 11, tons of coal was raised at Joggins and a total of ninety men and boys worked the pits. There were sixty men and ten boys working underground and fourteen men and six boys working on the surface. Boys as young as ten years of age were employed underground to care for the horses. On the surface the boys were employed in picking rock from the coal and to also look after the horses as well as other menial tasks. Government records show that the Joggins Coal Company had thirteen horses on their books in The mines were certainly busy in this year as the miners averaged days of work and each man averaged tons of coal mined, the mines produced 56 tons of coal per day raised to the surface. The next year would see further developments in the mines. Production increased to over 12, tons and the slope was extended another feet, to a depth of feet. It was at this time that the old system of bord or room and pillar mining was replaced with the practice of longwall mining. With bord and pillar mining a huge area of coal was separated into sections or bords and all the coal was removed in the section. Pillars of coal were then left in place to support the roof of the mine and the miners would move onto the next bord. With this method two men would pick the coal after it was blasted and a third man would load it into a coal car. In longwall mining four or more men would work together with a cutting machine along the wall of coal and load it into coal cars as it was cut. This was a much faster and safer means of mining. The year would also see improvements made to the shipping facilities at Joggins. The wharf was extended feet and a breakwater was built for feet at right angles to the main wharf to provide protection to the ships. The mining company would spend a total of seven-thousand, eight hundred dollars on improvements this year including two - hundred dollars on housing. The year saw the workings on the Fundy seam also transferred to the Joggins Coal Mining Company. The year would see the closure of the Cumberland Mine and most of the mining at Joggins from until was done on the Joggins seam while the Fundy seam was left idle during this time. This would become the largest mine to ever operate in the Joggins -Chignecto coal field, rivalling those of Springhill. Up to this time all mines were operated by steam or horse power and used open flame lights. This was also one of the first mines in Nova Scotia to operate under water the only others being on Cape Breton Island. The mine was up to a mile underground with most of the workings out under the Chignecto Bay. At its peak this pit employed close to workers and during the war years of to coal production was hampered due to a shortage of miners. A unique feature with this mine, at least in the Joggins area, was the use

of an endless chain which was used to lower empty cars or trips with miners into the mine and at the same time raise loaded cars or trips to the surface. In even with a shortage of miners this mine produced over , tons of coal. The Shore mine would operate until when it became too deep and expensive to run. At this same time the Maritime Coal Railway and Power Company, the operators of the mine were developing their Maple Leaf Mines in the Beech Hill area between Joggins and River Hebert The coming of the railway The year saw the incorporation of the Joggins Railway Company and work soon began on the surveying and clearing of the line to Maccan. A driving force behind the construction of the railway was Brunswick B. Barnhill , manager of the Joggins Mines. Barnhill later would abandon his mining interests and open a profitable lumbering empire in the Two Rivers area. Although these two men worked together in acquiring the line, they did so for separate personal reasons. Gilbert Seaman owned and operated the Minudie Coal Mining Company located at River Hebert and while he was away from the area, Barnhill approached government officials and convinced them that a rail line should be built from Joggins to Athol and by pass the mining districts of River Hebert completely, thus eliminating any competition for the Joggins Coal Mining Company. Upon returning to Minudie, Seaman learned of this move by Barnhill and contacted his close personal friend Sir Charles Tupper, who at the time happened to be Minister of Canals and Railways and had the line redrawn to come through the village of River Hebert. Seaman however did not get his way completely either as he wanted the line to cross the River Hebert in the Barronsfield area so it would better serve his own interests. He did however convince Tupper to approve a government subsidy for his own Minudie Railway which would connect his shipping wharves at Minudie to his mines and the Joggins Railway. The twelve mile Joggins Railway was constructed in a little over three years and on November 3, the line was officially opened by Sir Charles Tupper. On January 15, the line began carrying passengers and freight between Joggins and Maccan. In the Joggins Coal Mining Company and the Joggins Railway Company would form a partnership that would last for the next 70 years, although under different names. With the coming of the railway production at the mines was destined to increase as now the company had a second means of transportation afforded them. Also new markets were opened up for the mines as well, the principle one being fuel for the many steam locomotives of the Intercolonial and the Canadian Pacific Railways. The train also offered the citizens of Joggins a means to travel to other parts of the province and Canada. It also made it possible for new citizens to move into the area who were looking for employment at the mines.

Chapter 3 : Joggins - Wikipedia

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Kennetcook station in June The station is centraly located in the village. A CP work train is sitting in the siding but does not appear to have seen much use recently. South Maitland station on 19 May The station saw few if any passengers from the mixed train that travelled between Windsor and Truro in the s. This train was never taken over by VIA but continued to be operated by CP until its abandonment in the late s. Both the station and tracks are now gone. After a leisurely journey from Windsor including a stop to check for hot boxes the mixed train arrives in Truro at the DAR depot which was mainly a shed for CP Express. The line north of Kentville was closed on 31 December The former station has been re-modelled and is now a private home. The first shipment of coal was made in March of It became part of the Cumberland Coal Company, controlled by Montreal capitalists in The branch from Springhill to the Intercolonial main line at Springhill Junction was built in While coal was its major freight, the line also carried lumber from land granted to the company by the province, ice from Newville Lake , and blueberries. Its passenger service increased as Parrsboro became a popular summer resort. The line ceased operation within months of the mines shutting down after the "Bump" of , and closed permanently in Regular pasenger service continued until when the line could no longer compete with improved highways and increased automobile traffic. Freight service ceased in May Shortly afterwards locomotives 9 and 10, both s, were sold for scrap and number 5,a built about for the Pittsburgh and Lake Erie Railroad, was acquired by the CRHA and is still in existence at their museum at Delson - St. All photographs are from the collection of Dara Legere and are by unknown photographers unless otherwise stated. Many thanks to Dara for his description of the railway and for his help. Locomotive shed at Joggins with locomotive 8 about Rail yard at Joggins with locomotive shed and machine shop centre and freight sheds in Freight shed and tool shed with derrick in

Chapter 4 : Nova Scotia Archives - Men in the Mines

Filmed from a copy of the original publication held by the New Brunswick Museum, Saint John.

On this day, Digby was incorporated as a town. In September , these items were scanned directly from the original newspapers, generously loaned for this purpose by Mr. The newspapers were in excellent condition, except along the folds. The effect of this will likely be to give us more trustworthy news from Europe than is at present obtainable. The people have not yet begun to pay for the bridges and road-money borrowing policy of the Nova Scotia government. They will realize to the full extent what it means when they see the taxgatherer at their doors, where, as matters are going, he will be in a very short time. When the policy was begun the government did not avow any intention of going into debt to maintain the ordinary services of the country. It was for permanent bridges â€" over a certain length the structures to be of iron and stone. It was argued that it would be better to establish substantial iron bridges once for all and take the interest on that debt out of the road and bridge grant, than to construct cheap wooden bridges that would need to be replaced before long. Gradually the restrictions vanished. In the second year permission was obtained to devote the borrowed money to smaller bridges than at first intended, and before the next election came on the fund had been in part appropriated to wooden bridges, to "approaches" and even to repairs. The expenditure was so hurried that local bridge companies could not begin to keep up with it. There was not even the pertence that this money was for the construction of permanent works. It was for repairing the common roads of the province, exactly the same work as had always been done out of the ordinary revenue of the country. A part of the money was spent last year, a greater part is to be spent in this election year. It has been and is at the disposal of members MLAs supporting the government, and is therefore in great danger of going for political services as well as services on the roads. The end of this programme is easily forseen. The government will have capitalized the road grants of the province and having no more money than enough to pay the interest will throw the maintenance of the roads and bridges on the municipalities. There is no other possible course, unless the province imposes direct taxes, which it is not so likely to do as to make the municipalities do it. There is no odium â€" but there is some political profit â€" in spending public money. Therefore the government keeps that in its hands while the money can be got. There is odium â€" and political loss â€" in imposing direct taxes. Therefore this unpleasant business will be imposed on the county councils. The government organs and Mr. Fielding himself explains that the late immediate expenditure was made necessary by the wretched condition in which the roads and bridges were found when the present ministry took office. It requires no prophet to say that the condition will be much worse as soon as the government stops borrowing money and throws the whole burden on the county council, unless large direct taxes are imposed [] toll gates are established such as has been done in Ontario and Quebec. It is not easy to convince children that they cannot eat their cake and have it, but grown people can sometimes understand it even before the eating is over. When the race began, the cable company Commercial Cable suspended work on all the telegraph lines from London to New York and kept operators at the Irish and Nova Scotian Stations ready to transmit the letters representing the winning horse immediately, and without having the message written out in the usual way. When the race was finished, the operator at Epsom at once sent the letters representing the winner, and before he had finished the third letter, the operator in London had started the first one to Ireland. It seems almost incredible that such information could be transmitted such a great distance in fifteen seconds, but when we get behind the scenes and see exactly how it is accomplished, and see how the labour and time of signalling can be economised, we can easily realise the fact Electric telegraph technology of the s was not able to carry a message all the way from London to New York along one continuous circuit. The distance was too great. The best they could do was to get a message through the cable under the Atlantic Ocean from Ireland to Nova Scotia, and even this was a challenge. The normal way to transmit a telegram â€" anything from a couple of words to several hundred words longer messages such as government documents and newspaper reports of major events would be split into several parts with each part transmitted as a separate telegram â€" from London to New York was to key it in Morse code at London while a listening clerk at the eastern end of the

transatlantic cable in this case at Waterville, Ireland copied it by writing it on paper. At Waterville, when the message was complete the paper copy was handed to a typist at a special machine with a keyboard similar to a typewriter keyboard except that there were no lowercase letters because all telegrams used uppercase only. This machine recorded the entire message in the form of holes punched in a paper tape. When the paper tape was completed, it was taken to a transmitting machine, which read the tape and produced the series of electrical impulses Morse code that went directly into the Ireland end of the transatlantic telegraph cable. The advantage, of using the paper tape to produce the Morse signals for the transatlantic cable, was that the mechanical tape reader could be adjusted much more accurately than the most skilled operator could accomplish, to produce a high-quality signal with the best possible ratio between the duration of the electrical impulses and the duration of the intervals between them. This made the best possible use of the cable by transmitting Morse code as fast as the cable could handle it but not so fast that characters were lost or garbled in transmission. At any given time, several typists were kept busy preparing tapes to keep the cable working at its maximum capacity. This need, to keep the transmission distance for each stage within the limits of the available technology, introduced a series of delays that were cumulative because at each stage the telegram message had to be completed before the next stage could begin. Spacing between parts within a character to be equal in length to a dot. Spacing between characters to be equal in length to a dash. Spacing between words to be equal to seven dots. Clements, Manager; Charles F. Brown, Superintendent; and Jacob Bingay, R. Fraser of Halifax, Directors. For the first time in its history, via this communication link, Bermuda was no longer dependent on slow ships to carry messages. They were supplied with direct current generated by a dynamo driven by a reciprocating steam engine, located in the new generating station at the corner of Victoria and Stannus Streets. Electric arc lights had been in use for street lighting in Nova Scotia for several years before , but this was the first use of incandescent electric lights for streets. By the s incandescent lamps had become the standard for street lighting. The official train reached Sydney at 7:

Chapter 5 : A.P. "King" Seaman

crha ews Report P.O. BOX 22, STATION " B" MONTREAL 2. QUEBEC marked the \ last run over the 'Joggins Railway", owned by the Railway and Coal Company. It.

On July 7, a km length of the coast constituting the Joggins Fossil Cliffs was officially inscribed on the World Heritage List. Its coal seams which are exposed along the shore of the Cumberland Basin were exploited as early as by local Acadian settlers and by the British garrison at Annapolis Royal in Satellite view of the upper Bay of Fundy region, showing Joggins Cliffs and community of Joggins at centre right. Samuel McCully opened a mine in with much of his production being shipped by sea to Saint John , New Brunswick and other markets, but went out of business in having mined less than tons. Commencing at Joggins in , production increased after the construction of the Intercolonial Railway in the s, followed by the opening of the Joggins Railway, a mile rail line from mines at Joggins to the Intercolonial mainline at Maccan , through River Hebert. Old coal mine working are eroding out of the sea-cliffs at Joggins. Recently dendrochronology had been employed to date the timber pit props. A late nineteenth century age has been inferred, with most props dating from the s and s. French-speaking Acadians returned from New Brunswick , and were joined by Irish and Scottish immigrants. Joggins Mines expanded rapidly to include three churches, two cemeteries, a hotel, a roller ring, movie theater, fire department, general store, post office, railway station and school. Coal mining grew in such importance that the community was incorporated as a town in ,[6] a status that it maintained until , when the decline of local coal mines resulted in out migration and economic decline. Coal mined at Joggins during the first decades of the 20th century primarily fed two electrical generating stations near Maccan , however these plants were outdated by the s and the mines closed shortly after the Springhill Mining Disaster in Rail service was abandoned to the community in the early s. The Joggins area was well known in the 19th and early 20th century for the quarrying of limestone grinding wheels, lumber, fishing and dairy production. The Bay of Fundy also boosts a rich tradition of shipbuilding. In the s, wooden coastal schooners were built on the shore to carry coal and mill stones to the United States. Several of the older homes in the Joggins area display the sturdy, practical, yet handsome woodworking of craftsmen trained in shipbuilding. Many of the beaches along the Bay of Fundy are still littered with stone ballast from the hulls of old ships. Today in addition to tourism, the area is known for the commercial cultivation of wild blueberries and agricultural food processing. The roads and bridges to Joggins were improved in the s and s and area has become popular for tourism, summer homes and retirees. Joggins is a destination on the Nova Scotia Economic and Rural Development and Tourism Glooscap Trail , a spectacular twisting drive of soaring cliffs and deep valleys along the Bay of Fundy. The Bay of Fundy has the highest tides in the world. Visitors can walk on the ocean floor at low tide, or go rafting on the tidal bore. The high tides have shaped the landscape into one of singular beauty; pristine beaches, dramatic rock outcrops, sea cliffs, waterfalls, and rugged forests. The Joggins area is ecologically diverse and rich in wildlife. Eagles, osprey, and moose are common sights. In the fall the area is popular with birdwatchers; the rich marshes, originally diked by the Acadians in the s, attract hundreds of thousands of migrating birds. Joggins has been known for its fossils since the early 19th century. The fossils are found in the exposed Pennsylvanian coal seams in the cliffs that overlook the shore. The fossils consist mainly of ferns , prehistoric trees and early sea life. The daily high tide erodes the cliff, the stone fossils fall out of the coal and are left on the shore when the tide recedes. Fossils have also been found in the area deep shaft mines and in drilling core samples hundreds of feet down. Joggins is one of the easiest places in the world to find early Pennsylvanian coal fossils. The Joggins Fossil Centre is the museum built on the fossil cliff to display the fossils. Interpretive tours of the cliffs are offered. The Centre is open seasonally. Joggins Fossil Cliffs An upright tree preserved in the cliffs at Joggins, Nova Scotia Joggins is famous for its record of fossils from a rainforest ecosystem approximately million years ago, dating to the Pennsylvanian "Coal Age" during the early Carboniferous Period. Geologists were first attracted to this locality in the late s with Abraham Gesner , Richard Brown, Thomas Jackson and Francis Alger all making important observations. In his Elements of Geology , Lyell proclaimed the Joggins exposure of Coal Age rocks and fossils to be "the finest

example in the world". Much of the early work to document the fossil record at Joggins was by Nova Scotian geologist Sir William Dawson â€” , who had a close personal and working relationship with his friend and mentor Charles Lyell. Other notable nineteenth century geologists who worked at Joggins include Abraham Gesner , inventor of kerosene, and William Logan , who measured the cliffs bed by bed for the Geological Survey of Canada. Imprint of a fossilized root found near the cliffs at Joggins, Nova Scotia. In Lyell and Dawson made a celebrated discovery of tetrapod fossils entombed within an upright tree at Coal Mine Point. Subsequent investigations by Dawson led to the discovery of one of the most important fossils in the history of science, Hylonomus lyelli , which remains the earliest known sauropsid reptile in the history of life, but not oldest known amniote , the group that includes all vertebrates that can reproduce out of water. Another vital early tetrapod fossil has been found here, the earliest synapsid , Protoclepsydrops , which is actually earlier than Hylonomus. Slightly more recent fossil finds indicate that these rainforests collapsed quickly, triggering a mass extinction event, the Carboniferous Rainforest Collapse. The tree-like lycopodiophyte Sigillaria is famously preserved in situ at Joggins. Recent geologic and paleontologic work There has been a surge in interest in Joggins over the past two decades. Recent geologic work has been primarily coordinated by Martin Gibling, Professor of Sedimentology at Dalhousie University. Amateur fossil collectors have also made major contributions to our knowledge. For example, Don Reid, a long-time resident of Joggins, donated his entire collection of Joggins fossils to the Joggins Fossil Institute. Many of his specimens are on display in the Joggins Fossil Centre. JFI also has a Science Advisory Committee comprising scientists from Maritime universities and government departments. This is a volunteer committee whose mission is to: The Committee also assists in reporting on the status of monitoring programs and state of conservation of the Joggins Fossil Cliffs property. World Heritage Site In , a It was officially inscribed on the World Heritage List in on July 7,

Chapter 6 : myhistoryofjoggins - jogginsmines

The Maritime Railway began operations in November as the Joggins Railway Company. The line was constructed to connect the coal mining district of Joggins - River Hebert to the Intercolonial Railway.

Coal has been mined under the sea for many years in Cape Breton, and, in the future, the bulk of the Coal output of this island will have to come from submarine territory. In fact, the time is not far distant when the percentage of submarine coal will exceed that of the coal taken from the land areas, taking the Province as a whole. In the Lingan-Victoria basin, a limited area only of the coal seams is under the land, the bulk of the deposit being submarine. Five collieries are now working on submarine coal here, and others are projected. In the Glace Bay basin the land area is practically worked out, that is, as far as the three upper seams--the Hub, Harbour, and Phalen--are concerned. There are, at present, six mines with workings in submarine territory. In the Morien basin the bulk of the deposit is submarine; but it is not now being worked. In Inverness county, as elsewhere stated, the basins are mainly submarine, although there are some land areas that have not yet been developed. The most notable submarine area is the seaward extension of the Sydney coal-field. So far as can be surmised from the geological indications on land, there is no reason to anticipate any abrupt termination of the coal seams, or any limit to their accessibility, except those imposed by the difficulties attending the extraction of coal at a point remote from the source of ventilation and mechanical power, among which problems not the least will be the expeditious transportation of the workmen to and from their work. The balance of probability is for the uninterrupted continuance of submarine coal seams beyond the physical limits of extraction, but, nevertheless, the exact conditions can only be established by exploration. In calculations that have been made as to the available tonnage in these submarine areas, it has been usual to assume three miles from shore as the limit of extraction, but it seems reasonable to assume, from experience in other submarine coal-fields, notably the Cumberland coal-field on the west coast of England, that it will be found possible to mine coal up to a distance of between five and six miles from shore. How much farther seaward mining can be prosecuted, only time and actual experiment can demonstrate. An important factor will be the inclination of the coal seams, but so far as the Sydney submarine area is in question, the seams here dip so gently that the actual horizontal distance to be traversed will set limits to extraction before the depth of the cover, or burden of the superincumbent strata becomes too great. One limitation will be the cost of mining, and it may be the first limiting factor to make itself felt. Many interesting problems suggest themselves as likely to arise as the extraction of the submarine areas proceeds, but the mining of the more remote areas will scarcely come within the lifetime of the present generation, whose obvious duty it will be to so prosecute the work of extraction as not to imperil the accessibility of the remaining submarine coal. The Act gives great discretionary powers to the Commissioner of Mines, and provides that before work is commenced in any submarine area the plans must be approved by the Inspector of Mines. Every new lift or level in a submarine mine is defined as being a new winning, requiring the sanction of the Inspector of Mines. No submarine coal is allowed to be wrought under a less cover than feet of solid measures; but submarine passageways may be driven to win coal under not less than feet of solid measures. When there is less than feet of solid cover, submarine workings must be laid off in panels of not more than half one square mile in area; surrounded by barriers of coal not less than 90 feet thick, and pierced by not more than four passageways having a sectional area not greater than nine feet in width, and six feet in height. The present law has not attempted to deal with the extraction of pillars in submarine territory, or to regulate the method of extraction where the solid cover exceeds feet, except in making this conditional on the approval of the Inspector of Mines. The size of pillars to be left in submarine workings now proceeding or projected has in all cases been the subject of an agreement between the Inspector of Mines and the owners of the mines affected. There is reason to believe that future practice in submarine areas may permit the complete extraction of the coal without leaving any supporting pillars. It may also be found possible to use with advantage the method of "flushing" now largely adopted in European and in some United States collieries, by which the space left by the extraction of the coal is filled by sand or similar material "flushed" into the waste by admixture with water, and led into the workings by a

specially constructed piping system from the surface. The complete extraction of the coal permits of a more even settling down of the superincumbent measures, and lessens the danger of a break in the measures which might let in the sea-water. If it is found necessary to leave permanent pillars in submarine workings, this will entail the complete loss of the coal contained in the pillars, and it will also bring into operation the limitation of extraction by the increased cost of mining at an earlier date than if it is found possible to dispense with permanent pillars, as the existence of a large area of permanently abandoned workings supported by pillars increases all mining costs, particularly that of ventilation, and adds an element of danger that is not present where the abandoned waste is completely filled, either by complete subsidence of the roof, or by some method of stowing. There is a marked difference between the conditions attending submarine mining on the western and eastern sides of Cape Breton island. On the western side, in the Inverness coal-field, the strata are much fractured, and the coal seams dip steeply. In the Sydney coal-field the seams are but slightly inclined, and the strata overlying and intervening between the coal seams consist of strong sandstones and impermeable marls and shales. Faults are rare, and the sea bottom is usually rock, without great thicknesses of sand or sand pockets. A great part of this submarine coal-field is territory that has been gradually encroached upon by the sea, not by subsidence of the measures, but by erosion of modern date geologically speaking. As the land area of the productive measures is remarkably free from faults or evidences of recent earth movements there seems no reason to anticipate the existence of faults in the area that has been encroached upon by the sea. Two mines in Inverness county have been flooded by water from the sea. At the point in the slope of the Mabou mine where the sea entered there was only feet between the roof of the slope and the sea bottom. In the Port Hood mine the water entered at a point where pillars were being drawn in the lowest level, supposed to be covered by feet of solid measures. The inrush is estimated to have amounted to 3, gallons a minute in the initial stages, and the flow at the Mabou mine is thought to have been about gallons per minute. A Commission was appointed by the Nova Scotia Legislature to inquire into the causes leading to these inundations. Concerning the Mahou incident, the Commissioners consider it was an error of judgment to have entered the seam under the comparatively thin cover, having in view the nature of the overlying strata. Regarding Port Hood colliery, the Commissioners advise that in future "every reasonable means should be employed to ascertain the depth, nature and condition of the overlying strata before pillars are extracted in any submarine area. The connexion with the sea is undoubted, because the water is certainly sea-water, and there was noticed a small daily rise and fall of the water corresponding in time to the tides, showing that the point of entrance of the water was near the shore, where the fluctuations of the tide would manifest their influence. The pumping equipment of the mine had a maximum capacity of gallons per minute, and was, of course, entirely inadequate to deal with an inrush of water of any magnitude. There was no reserve lodgment for water, and under these circumstances it cannot be said the inundation was an uncontrollable one. Much larger streams of water are being daily controlled in other Cape Breton collieries than seems to have entered at Port Hood. The occurrence has served as a warning, and the necessity for emergency pumps and adequate lodgments in submarine areas was emphasized by this incident. As there are no landmarks at sea, it will be necessary, when two or more seams are being worked in the same submarine area, to superimpose the plan of the workings of one seam upon those of the others, in order to gauge their relationship to each other, for where a number of seams are so shown, the result is very confusing. One method that could be used would be to paint a skeleton plan of the workings in each seam on plate glass, each seam being painted in a different colour, the plate glass sheets being placed one above another in natural order. This method has been successfully used to show intricate workings in faulted ground in the German coal-fields. The surveying and plotting in the submarine areas will have to be very accurately done, and subjected to most rigid checking, as there will be no opportunity for such useful checks as are made possible in land areas by shafts and boreholes. As the method of extraction in submarine areas is subject to the approval of the Inspector of Mines, and as the Government is the lessor of the coal seams, the responsibility for the accuracy of the mine plans will necessarily be a joint one, and will not rest entirely on the coal operators. The preparation of coal for the market at the Nova Scotia collieries has not yet reached the elaborate scale noticeable at European coal mines, because, hitherto,the coal has been mined from clean thick seams; but as the inferior and thinner seams come to be worked, more attention to the matter of preparation,

and the rejection of impurities from the coal, will be required. Coal is sold either as "run of mine," that is, without removal of the slack, or as "screened coal," the slack being taken out. Slack coal for coke making has been washed for many years, and latterly, a little has been washed for the general market. The Dominion Steel Company has a washery on the Campbell "bumping table" principle, with a washing capacity of tons per hour, which prepares coal for the coke ovens. The "Baum" washer is of the "jig" type, the principal feature being, that the impulse to the washing-water in the jigs is given by compressed air. A feature of this washer is the recovery of all the fine coal, and economy in the use of washing water. Several installations for briquetting slack coal have from time to time been put down. The Colonial Coal Company, one of the small companies operating in the Sydney field, successfully manufactured "ovoid" briquettes from slack coal, that found a ready sale, but the plant was destroyed by fire, and has not been rebuilt. The analysis of the coals of Nova Scotia varies within comparatively narrow limits, and all the coals come within the bituminous class. As a rule, the purest coals are more fragile than those of lower grade. Some of the coals having a slightly higher percentage of volatile constitutents are well suited for gas-making purposes, while others with a higher percentage of fixed carbon, are preferred for steam-raising purposes, but there is a great similarity between the seams in the same district. Comparing the different coal-fields, the Pictou seams are characterized by a high ash and low sulphur content. In the Cumberland area, some coals of remarkable purity are found in the Springhill seams, but the seams in the Joggins district have a comparatively inferior analysis. The Inverness coals are comparatively high in sulphur and ash content, and resemble the coals from the Joggins district. The best general analysis is shown by the seams in the Sydney coal-field. While, however, these comparative differences exist between the coals of the various coal-fields, a study of the table of analyses given on page 38, will show the general similarity of all Nova Scotian coals. All the Sydney coals are suitable for coke making, and yield a good percentage of by-products. Some of the Pictou coals make an excellent coke, but not all the seams in this district yield a coking coal. Judging by the high percentage of nitrogen shown in the analysis of the Pictou coals, they should be valuable for use in any way that allows the recovery of the by-products. The by-products recovered are sulphate of ammonia, tar, and latterly, benzol. The waste gases are used in the open-hearth furnaces, in re-heating furnaces, and in the various processes of steel-making, and for steam-raising. The toluol is shipped to the Province of Quebec for nitration and the manufacture of the high explosive tri-nitro-toluol. Previous to the benzol had not been recovered. It is also possible that the recovery of the carbolic acid for the manufacture of picric acid may be undertaken at Sydney; and in view of the large amount of explosives that are used in Cape Breton in mining coal, and in mining iron ore and limestone for the steel works, both in Cape Breton and in Newfoundland, there would seem to be an opening for the local manufacture of explosives. Surprisingly little use has been made of coal gas for illuminating and heating purposes in Nova Scotia. In the whole of the Sydney coal-field, for example, there is no gasworks, although the advantages of gas for heating and cooking, are undoubted; especially where economy of fuel and freedom from smoke is desired. With the exception of the by-product coke ovens used in the manufacture of coke for steel-making purposes, and two municipal gas works, the whole of the bituminous coal used in Nova Scotia is burned without any attempt at recovery of the by-products. The use of coke as a fuel is also unusual, and coke, made from bituminous slack coal, could in many instances be advantageously substituted for imported anthracite coal. The manufacture of coke on a small scale nearer the larger centres of population would provide a clean fuel, and if combined with a modern plant for the recovery of the by-products, and the complete utilization of the gases, would not only provide a profitable market for slack coal, but would substitute a Canadian product for anthracite now imported from the United States. Very full details concerning the analysis of Nova Scotian coals, and of coking and washing tests, by-product recovery, boiler trials, etc. A summary of the averages of analyses of samples of coal taken from the several coal-fields of eastern Canada, extracted from the abovementioned publication, is given below. It may be noted that the figures given in this table by no means represent the best analyses of Nova Scotian coals. They may be taken as a very moderately stated average, and as conservative figures. The coal seams of Nova Scotia vary considerably in inclination and thickness, and naturally, the methods of mining vary accordingly. The majority of the collieries have been opened from the outcrop by slopes, in which both trip haulages and endless haulages are used. There are not

any really deep shafts in the Sydney field. The deepest shaft is that of No. The shafts are usually of the square or oblong timbered type, and it is usual to divide a shaft into compartments by wooden partitions. The Princess pit at Sydney Mines was sunk through strata that permitted heavy leakage of sea water, and it was necessary to use cast iron tubbing, but with this exception it cannot be said that any of the shafts in the Sydney field call for special mention. At most of the shaft collieries there is one shaft reserved for the raising and lowering of men and mine materials. With one or two exceptions access to the workings of shaft collieries is also possible through slopes on the same seam. The winning of the submarine areas will require shafts of greater diameter and more elaborate construction than those sunk up to the present time. In Inverness county, and on the mainland of Nova Scotia, all the collieries in operation are slope mines, with the exception of the Allan shafts of the Acadia Coal Company, which, as mentioned elsewhere, are the deepest sinkings in eastern Canada. The pillar and room method of extraction has been most generally adopted throughout the Province. In the earlier days of mining, no particular attention was paid to the size or strength of the pillars left to support the roof; and, as the seams were largely attacked along the outcrops, the mining operations of the present day have suffered from extensive crushes, and from the influx of surface water in large quantities, conditions which need not have occurred. The longwall method of working has been adopted at various times and in various places, but it has never met with much favour at the hands of the local miners, who have been accustomed to pillar-and-stall work in dry and thick seams. As, however, the thinner seams come to be worked, the introduction of longwall methods is inevitable. The Dominion Coal Company has for several years worked the Emery seam on a longwall face. This seam averages 4 ft. The coal is undercut by an ordinary disc-cutter driven by compressed air.

Chapter 7 : Nova Scotia's Railway Heritage Resources

The Nova Scotia Railway Heritage Society (NSRHS) encourages the preservation and interpretation of buildings, artifacts and information related to the development and history of railways in Nova Scotia.

The law required that the horses be brought to the surface once a year, but they became blind when their eyes met the strong light after being underground for such a long period. Around the turn of the century, a slope was put down near the shore under the sea-bed of the bay. It was a hazardous task as there was danger of the ocean water breaking through into the mine and not every miner would risk his life in this type of mine. However, there were hardened miners with years of experience who defied death every day and they sunk the slope, taking particular care to support the roof and sides with extra heavy timbers. Although some water seeped through the ocean floor bed, it was kept pumped out night and day. There were actually two slopes â€" one which the miners were lowered down in box cars and one by which the cars of coal were brought up. There was a continuous cable which let the men down into the mine in one slope while the coal was raised up the other slope. When the main slope was down to a depth of half a mile under the bay, levels were developed on either side which extended in both directions for a mile or more. Horses were used to haul the cars of coal out to the main slope. These horses were kept in stables down in the mine and were only brought up to the surface once a year to comply with the laws of the government. These horses would become blinded when brought to the surface in the bright light after being kept in the darkness of the deep mine for a year. Young boys, 12 and 13 years old, looked after the horses down in the mine. Such words as sinking, gob, pans, which are easily understood by a miner but unfamiliar to most other people, are standard in a coal mine. At first the miners used a tiny metal lamp filled with whale oil and a tiny wick provided meagre light for performing their duties of digging coal down in the bowels of the earth. These were later replaced by the carbide lamp; then came the safety lamp. Open lights were always dangerous and could cause explosions, but for safety purposes, a canary used to be taken into the mine to measure the amount of gas there. If the canary died, then it was not safe for the men to enter the mine until the gas cleared. There are still a number of the miners living today who can remember what it was like to work in the depths under the immense body of water. As one miner told me: Of course, there were always the danger of the ocean breaking through and that would have been the end for the more than miners working underground, but we were lucky. The mouth of the slope was sealed off the bank head torn down and moved further inland from the bay where a new seam of coal was discovered. Coal has always been king in the town of Joggins since the first French Acadian settlers arrived here in the early s. There have been periods of prosperity and periods of depression, explosions and accidents, but what most people expected â€" a flood â€" never occurred. A mile spur railway line had been built in from Joggins to Maccan, where it connected with the Intercolonial Railway. Both the Canadian Pacific and the Intercolonial. Two, three and four-masted schooners loaded coal at the Joggins wharf for various industries throughout Canada. The fire broke out at 7 a. Burke and a couple of hours later the whole upper half of the street was in smouldering ruins. Gusting winds carried the flames from building to building and threatened to destroy the entire town. The following morning the coal mining town took on a whole new appearance. Mills whose father Pat Terrio helped fight the fire. Firefighters and equipment had to be brought in from the neighboring communities of Amherst, Springhill and Parrsboro. There was no water supply or fire apparatus in Joggins so the fire had to be fought, for the most part, by a volunteer bucket brigade. Mills lived in River Hebert but was working in Minudie at the time of the fire. It completely lit up the sky. Joggins was a bustling little town in with a population of 1, Mills said the town was never the same following the fire. Hotels and other businesses destroyed in the fire were never replaced. Very few people remain in Joggins who remember the fire. Their daughter, Jeanette, really took an interest in the fire and has spent considerable time researching the historic event at the archives in Halifax. She obtained details of the fire from newspaper articles and subsequently passed the information along to her parents. Mills said her skin still gets bumps when she reads the articles. Mills added as she looked at photocopies of the newspaper articles.

Chapter 8 : Area attractions Â· Joggins Fossil Cliffs, Nova Scotia, Canada (UNESCO World Heritage Site)

Joggins is a Canadian rural community located in western Cumberland County, Nova blog.quintoapp.com July 7, a km length of the coast constituting the Joggins Fossil Cliffs was officially inscribed on the World Heritage List.

The line ran between the coal mines in Joggins and the I. C mainline at Maccan. The line began operation as the Joggins Railway, being incorporated in , and opened for operation on November 3, With the completion of the Intercolonial Railway of Canada through Nova Scotia in the major coal producing areas of Nova Scotia had an avenue opened for them to ship their product to markets in other parts of Canada. The Pictou coal fields were already served by rail and the Springhill mines were beginning to out produce the mines of Joggins, due in part to the completion of the Spring Hill and Parrsboro Railway. If the Joggins mines were to become more productive a railway would have to be constructed to connect with the I. It would take another decade before funding would be be put into place to begin construction of the railway. Construction of the line posed few engineering obstacles, the only ones being the two bridges and trestles that had to be constructed. These bridges were needed to cross the River Hebert, and Maccan River, both of which were flooded twice daily with up to 30 feet of water from the Bay of Fundy tides. The Maccan bridge consisted of two spans of feet each and the River Hebert crossing was a single foot span. Both bridges were Howe truss style. There were also two trestles constructed, the first being the foot Lawrence Mine trestle at Maccan and the other being the foot long Little River trestle at the Hillcrest between Joggins and River Hebert. Despite these obstacles the line opened on time with all structures completed including the stations, and freight sheds at Joggins and River Hebert, and the engine facilities at Joggins. Less than two years after it opened the Joggins Railway Co. The mines and railway would remain under joint ownership for the remainder of their existence, although under different corporate names. At this time the tracks at Joggins were extended approximately one mile to a new terminus and engine shed located on lower Main St. In the mines and railway were sold to the Canada Coal and Railway Co. The Canada Coal and Railway Co. The major difference being the term Railroad in place of Railway to reflect the US influence in the line. The line became known as the Maritime Railway. In the company built a new generating plant at Maccan and abandoned the Chignecto plant and five mile rail line to Chignecto in The railway at one time boasted of having about 25 miles of track which included the original 12 miles of the Joggins line along with the five miles into Chignecto and the five mile Minudie branch they acquired from the Minudie Coal and Railway Co. Locomotives of the Joggins Railway No.

Chapter 9 : Old Time Trains

The Joggins Coal & Railway Co. was formed in by the amalgamation of the Joggins Railway Co. with the Joggins Coal Mining Co. In the Joggins Coal & Railway Co. was sold to the Canada Coals & Railway Co.

This field is evidently a continuation of the Carboniferous Measures of New Brunswick, but containing the higher and productive beds which, in New Brunswick, are not present. It is bounded on the west by Chignecto bay, the northwestern arm of the Bay of Fundy. Areas in which the Coal Measures are exposed, and from which coal is being produced, are the Joggins area on the north, and the Springhill area on the south; separated by the Athol fault. It is thought the Joggins area represents the northern limb of a syncline, the Springhill area being the continuation of the Measures of the northern area, brought upwards by a deformation of the syncline. The Cumberland field is very involved, and much faulted, and because of the presence of formations younger than the Carboniferous, it affords more possibilities of concealed coal-fields than any other part of Nova Scotia. These may be unconformably laid on the lower and barren Measures of the Lower Carboniferous; but the researches of the late Hugh Fletcher, of the Geological Survey, lead to the inference of a concealed extension of the Coal Measures containing the horizon of the Joggins main seam, in which case the bounds of the Cumberland coal-field would be very largely extended, although the coal seams, if present, may lie at a great depth. Systematic diamond-drill boring should disclose the facts. The output of this Company in will be about , tons, and about men are employed. The output in was 86, tons and about men are normally employed. The Joggins main seam, averaging six feet in thickness, is the most important one in this district, although there are several other seams. There are a number of unimportant small collieries in this field, most of which are not now worked. Coal mining in the district has not proved altogether profitable, and in several cases large sums of money have been spent on colliery equipment without much justification. Like most districts in which thin-coal seams are numerous, a good many prospects have been opened up in the unwarranted hope that the seams would increase in thickness, and much money has been thereby wasted. The Springhill Mines are amongst the oldest in Nova Scotia. The areas now worked were acquired from the General Mining Association in by the Springhill Mining Company, and coal was first produced by this Company in Mining operations have been continuously prosecuted here since that time. Two slopes are now working, extracting coal from three seams. The workings are extensive, as would naturally be the case in mines of such long development. The seams are highly inclined, in some places approaching the vertical. The section disclosed by the workings is as follows: The boring was discontinued at a depth of 2, feet. Presidential speech by H. The Springhill seams are gaseous, and like the Pictou seams, are subject to spontaneous combustion in the wastes. No explosives are used in these collieries. The Springhill collieries are situated on an elevation feet above sea-level, and are farther inland than any of the other Nova Scotian coal mines. The output in was , tons. The number of employees is normally 1, men, including the workmen employed on the Cumberland railway. This railway runs from Springhill to Parrsboro, on Minas basin, where the Company has a loading pier, and facilities for loading coal into vessels. This Company also controls extensive timber areas, from which pit timber is obtained. In the highly inclined and troubled seams of the Springhill area, the choice of sites for new winnings is a more difficult and also more hazardous matter than is the case in the Glace Bay areas controlled by the Dominion Coal Company; but there is no doubt the Springhill areas will permit of new winnings, either by working the untouched seams to the existing slopes and bankheads, or by entirely new collieries. The heavy capital expenditure that would be entailed by the development of new collieries in this area could only be justified by a heavy demand for coal at a good selling price. The field is usually divided into three main districts; namely, the Westville, Albion, and Vale divisions. The Westville area lies at the western extremity, and is shown on the Geological Survey maps as being separated from the Albion area, in the centre of the field, by a fault, variously estimated at from 1, to 2, feet. The Vale area occupies the eastern end of the field, and is separated from the Albion area by a faulted and apparently barren territory. The whole of the productive area has an extremely complicated and variable structure, and although the seams found in the three main divisions possess certain resemblances, no definite correlation has, as yet, been found possible. Logan, in ,

described the structure of the Pictou coal-field as having "a very complicated character. The number and thickness of the coal seams; the great thickness of associated carbonaceous and oily shales; the gaseous and fiery nature of both the coal and the shale beds, combined with the variable and faulted nature of the strata, all occurring in a small superficial area, mark out the Pictou coal-field as one of the most interesting carboniferous deposits known. The four known coal seams of the Westville area dip in, approximately, the same direction and at about the same inclination as the seams in the Albion area. The surface measurement between the roughly parallel crops of the two series of coal seams averages about two miles, diminished to one mile where the crops come nearest together. The existence and size of the McCulloch fault seems to have been presumed from surface indications, and from a belief that the Main or Ford seam of the Albion area was identical with the Main or Acadia seam of the Westville area, worked at the Drummond and the Acadia Collieries. No proof of the identity of these two seams has been given beyond the similarity of the carbonaceous shales immediately overlying them. A great depth of barren shales overlies the Main seam in the Albion area, see section on page 26 , including one small coal seam found at from to feet above the seam, and no coal seams have been discovered in similar shales overlying the Drummond and Acadia workings; a fact that seems to strengthen the supposition that the Main Albion seam and the Acadia Westville seam are the same. It does not anywhere appear, however, that the measures overlying the Acadia seam have ever been thoroughly explored by borings, and until this has been done, the non-existence of coal seams overlying the Acadia seam, between the outcrop of this seam and the assumed line of the McCulloch fault, cannot be said to have been definitely established. The workings of the Acadia colliery were carried to a point that approached within feet of horizontal distance to workings in the Cage Pit seam in the Albion area. The difference in elevation did not permit of correlation between the Acadia Westville seam and the Main Albion seam, if a fault of 2, feet displacement were presumed to exist, while the horizontal distance certainly seems very small to include a fault of such magnitude, which, if it exists at all, must have a very flat hade. The assumed position of the McCulloch fault on Mr. The map, as revised by Mr. Poole in , showed the fault moved still farther eastward by one-eighth mile, and since that date the workings of the Drummond mine have proved the coal seams to be uninterrupted, except by minor down-throw faults, to a point that lies eastward of the assumed surface position of the fault in , by a further one-fourth mile. If the McCulloch fault exists as a reverse fault, the Westville Measures being thrown down and the Albion Measures thrown upwards, it would be quite possible that the Westville seams could continue eastward some distance beyond the surface trace of the fault, the hade of which is of course quite unknown. Access to the lower portion of the Drummond workings on the Acadia seam is now precluded by the underground fire that occurred in At some future date the remaining coal in the deep workings may be won by drifting upwards from the underlying seam, but this, in the natural course of events, may be twenty or thirty years hence, so that the proving of the McCulloch fault, by underground workings, is not an immediate possibility. It might be proven by boring in the direction of the Acadia seam from the workings in the McGregor seam on the Albion side. The existence, or non-existence, of the McCulloch fault, has, however, a most important bearing on the future of the Pictou coal-field. If the Albion and Westville areas were originally a continuous deposit, subsequently fractured by the McCulloch fault, then, whether the Main or Acadia seams be correlated or not, presumably the Albion series are repeated in the Westville block. Presuming that the McCulloch fault exists, a borehole suitably placed in the Westville area should disclose the presence of additional seams there. If the McCulloch fault does not exist, then presumably the Westville series continues conformably beneath the Albion series; an assumption that would place the Acadia seam at a depth of 10, feet at the Allan shafts in the Albion area. The importance that would attach to the presence of seams above the Acadia seam, is thus very great. Valuable information should be obtainable by boring on the Westville block. A borehole just inside the crop of the Acadia seam, and another over the lowest workings in the Drummond mine would give a complete section of the strata column overlying and underlying the Acadia seam, and would render material assistance in the correlation of the seams in the two main divisions. It will be noted that Mr. The recent boring has disclosed nine seams below the McGregor, or sixteen seams in all. Considering the early date of Mr. Mining operations, in depth, have corroborated the exact truth of this observation. As is the case in many coal-fields, the coal seam horizons

seem fairly persistent, although the thickness of the individual seams, and the intervening strata, vary very considerably within comparatively small distances. A study of the palaeontological evidence to be found in the roofs and pavements of the coal seams, and microscopic examination of coal sections from the several seams, would doubtless throw much light on the problem of correlating the seams in the three divisions of the Pictou coal-field. The district north of the known limits of the Pictou field, in the direction of New Glasgow, is overlain by the New Glasgow Conglomerate and Permian rocks; but explorations have so far tended to confirm the opinion of the Geological Survey, namely, that the Permian in this district overlies unconformably either Millstone Grit or Devonian Measures. The Vale area contains a series of coal seams bent into a synclinal basin, along a northeasterly axis, measuring about three miles across from crop to crop of the lowest seam. This series of seams is believed to be a higher series than those contained in the Albion area, the thickness of strata intervening being estimated at about 1, feet, containing beds of oil-shale, but no coal seams, so far as is known. The territory between the East river and the outcrop of the lowest seam in the Vale synclinal basin, measures roughly, two miles. A typical section of the Vale seams is as follows--but, as in the other areas of the Pictou field, the seams and the intervening strata show great variations. Coal mining operations on a large scale were commenced by the General Mining Association in , in the vicinity of the present town of Stellarton, and were continued by this Company until , when the property was sold to the Halifax Company, Limited. In coal was uncovered near Westville and mining operations were commenced by the Black Diamond Company. In the Acadia Colliery and the Drummond Colliery commenced. In the Acadia, Vale, and Halifax Companies were amalgamated to form the Acadia Coal Company, which thus came into possession of areas and collieries in all three divisions of the Pictou field. Since this time there have been but two operating coal companies in the Pictou field, namely, the Acadia Coal Company, and the International Coal Mining Company operating the Drummond Colliery at Westville. The Albion mine has two main slopes, drawing coal from workings in six seams, and reference to the section of the Albion measures see page 26 , will show the number of untouched seams that can, if desired, be made tributary to these slopes. The Allan shaft mine draws coal from workings on the Cage Pit and the Ford seams. The Allan shafts were sunk in what appears to be the deepest part of the coal basin. There are two shafts, the deepest in eastern Canada, one feet and the other 1, feet deep. The Cage Pit seam is, on an average, 15 feet thick at this point, and the Ford seam measures up to 40 feet in thickness, and in some places very considerably more. The Ford seam in this locality is most variable, both in thickness and inclination, the ground being very troubled. Because of the faulted character of the seam, it has proved costly to work, and has necessitated costly stone drifting. Recently, the management have carried out extensive prospecting by diamond drill borings of small diameter, and valuable information has been obtained in this way, at comparatively small expense. The Vale colliery, in the eastern division, and the Acadia colliery, in the western division--both owned by the Acadia Coal Company--are closed down, because of the exhaustion of the profitably workable coal, and the unremunerative nature of the mining operations. The future of these mines, and the working of the other seams contained in the areas in which they are situated, is dependent on the selling price of coal and the local demand. Belgian capital was several years ago invested in the Acadia Coal Company, and large capital expenditure has been incurred in proving and developing the property. The modern steel bankheads at the Allan shaft mine and at the Albion slopes are among the best in Nova Scotia. The output in was , tons, and has not since been exceeded. An underground fire in the Albion slopes in , and an explosion, followed by a fire, in the Allan shaft mines, at the end of , seriously interfered with production. The output in will be about , tons. The employees number between and 1, men. The Intercolonial Coal Mining Company operates the Drummond colliery, the only producing colliery at present in the Westville division. Mining is now being carried on in the Second seam, and, as mentioned elsewhere, a seam of fireclay underlying the Third seam is also worked. The output of this Company in will be about , tons. The workmen number between and persons. Although the existence of coal in New Brunswick has been known since the earliest settlements, it is only since that any organized attempt has been made to work the deposit on a large scale. The Province is sparsely settled, and the immense forest which provides its chief industry has yielded a plentiful supply of fuel. These conditions, combined with the difficulties of transport, have militated against the utilization of the coal deposits. The Canadian Government

railway; the Canadian Pacific railway, and the Grand Trunk Transcontinental railway now traverse New Brunswick; the last-named road going directly through the Grand Lake coal-field.