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Now, carbon monoxide is a very unstable gas--one part carbon and one part oxygen. Very unstable. It's always looking for the other part of oxygen to convert itself in? to carbon dioxide--which is a stable gas-- but not much use to anybody. So you use coke. By burning coke the way we do in a blast furnace, not fully, partly bum it you might say--you will get carbon monox? ide off it. So you put a layer of coke in the blast furnace. On top of that you pour a layer of your iron ore. And that's what the blast furnace is filled with, all the way up, layer after layer after layer. And by igniting that coke and burning it, you get carbon monoxide--because you don't sup? ply enough oxygen to make it carbon diox? ide. And that carbon monoxide moves up the furnace and comes in contact with the lay? er of iron ore immediately above it, and it grabs out the oxygen from the ore to make itself carbon dioxide, and leaves the iron, the Fe, in its pure form. At the same time, the burning of the coke has pro? duced heat, and the heat melts the iron that is deprived of its oxygen--and the driblets of molten iron fall to the bottom of the furnace and they congregate there. And every four hours you tap the furnace out from the bottom, the iron runs out. And that's ready to go to the open hearth. Now, as that gas comes off the coke and tries to penetrate through the ore, to grab the oxygen, if your ore is in big chunks the gas has a hard time going through it. And at the same time, there are different kinds of ore: some are very dense, others are somewhat open, porous you might say. If you've got a very dense ore, which Wabana ore was, extremely dense--I don't think there was any pre in the world quite as dense--the gas will have a hard time going through, getting in? side that to grab the oxygen. When I first came here, the ore came from Wabana in chunks--some of it 12 by 12 chunks--and that's how you charged it in the blast furnace. You used all sizes, up to the 12 inches. Whatever went through the crusher at the mine, that's the way you got it. Some "fines," we called it, some little chunks, and so on up. So to imr prove efficiency, at about the same time that we built that blast furnace, we built a crushing and screening plant here in Syd? ney. The ore was brought in by boat, packed in the ore piles here--but not used that way. It was brought over to a very ef? ficient little plant we built: a big crush? er. The ore went through and was all crushed up"to small sizes. Now, if you've got ore of different sizes in that layer in the blast furnace, some of it will be easily attracted by the carbon monoxide-- the smaller pieces--and the bigger pieces, the carbon monoxide would have a hard time to get inside of them. So you have varying degrees of efficiency within that layer of Tron ore that's being smelted. And one way we got around that--as we crushed this ore, we screened it, into three different sizes. We separated them by screening. And each size would all charge separately into the A view of the Blast Furnace area around 1920. blast furnace so that everything in each layer got smelted at about the same rate. And still the "fines" could present some difficulty in that they're liable to plug up the air trying to get up through. So we built a sinter plant--fine ore was made in? to lump ore. And all this materially im? proved our blast furnace practice. Now, you've got the layer of coke to sup? ply the fuel and the gas to do

the job; you've got the layer of iron ore from which the iron is going to come--but unfor? tunately that iron ore contains elements you don't want: phosphorus, sulphur, sili- con--in the case of Wabana ore, a terrible amount of silicon, 13%. The normal iron ore used those days was from the Mesabi range--what Pittsburgh was built on, for instance--it was somewhere in the order of 5-67o of silica. You can't do a thing about the phosphorus. You can drive off some of the sulphur with the heat--go off as sul- 18 th Century Dining at the Fortress of Louisbourg L'Epee Royalle has been carefully recreated to portray the lifestyle of an 18th century Louisbourg inn, while L' Hotel de la Marine portrays lifestyle in an 18th centruy cabaret. The food prepared from authentic 18th century French recipes and served in the style and atmosphere of that period makes a visit an unforgetable experience. For more formal dining experience, eat at L'Ep'e Royalle and for nourishing fare at affordable prices try L' Hotel de la Marine. Qp''. j''' jq SEPTEMBER Fortress of Louisbourg, Cape Breton (51)