

## DOWN THE RAINY LAKE RIVER.

VAST TIMBER RESOURCES OF THE DISTRICT.

COMMENCING at Port Arthur, writes Mr. A. M. Weber, and running west along the old Dawson route through and down Rainy Lake river, Rainy river and Lake of the Woods, as the several selections of this big water course is named respectively, following the boundary line between the state of Minnesota and the Dominion of Canada, the country is almost one vast wilderness and contains much to interest lumbermen and miners alike, and to better convey an idea of the country to those who have never been over it, the writer will attempt to describe a trip recently made on a tour of inspection of its timber resources. Our party consisted of four persons. A gentleman seeking recreation by the name of George Salisbury, two Indian canoe voyagers and myself. We started out in two Peterborough canoes, which, by the way are finely adapted for such a trip, and paddled and poled up the Pigeon river which forms the national line to the Pigeon falls, and could proceed no further. We had passed for the most of the way through a buied precipitous rocky country, said to be rich in silver ore to a considerable degree. Here and there could be seen varying distances and points of vantage, groves of pine that had not yet succumbed to the destroying element. At the falls we camped for several days, and I proceeded to explore the country further up.

I concluded to go no further in that direction, but the investigation disclosed a heavily timbered country, with pine of a very good quality, but locked in the valley and on the higher table lands with no outlet except over the Pigeon falls, which, by the way, is 200 feet perpendicular, with a very ragged, rough and rocky stream both ways up and down for miles. It would seem as though this pine would have to stay there for some inventive genius to provide for it the necessary transportation. But the forest fires are now likely to take it up in smoke before it goes out in any other way.

As miners are prospecting all over that country, and fires get away from them quite often, mining men have no use for pine timber. After their log buildings are up they wouldn't give a cent for the balance of the timber even if it stood fifty thousand feet per acre. But the conclusion a practical lumberman would come to after seeing the stock piles of silver ore in that country and the pine situated in that particular place would be that he would not give much for either just at present; at least that is the way it would look to a man up a tree.

After feasting on trout to our heart's content, we returned down the Pigeon and proceeded to Grand Marie and took the route across country from there which leads from one lake to another, and over many portages a distance of about thirty-five or forty-miles to Gunflint lake, which with the exception of North and South lake is the head waters of Rainy Lake river. We passed through a well timbered pine country of a small growth, ten logs per thousand and four log trees, about half Norway, and considerable fine spruce and cedar, which grows on dry land among the pine. The Port Arthur, Duluth and Winnipeg railroad has been built to the National line at Gunflint lake from Port Arthur, and is surveyed and some work done on the gap between there and Ely on the Duluth & Iron Range railroad, with which it is said they intend to connect, and then build from Tower to Hannaford on Rainy river and on to Winnipeg. Our course from here was westerly, passing through a veritable chain of lakes. Occasional detours into the interior showed a well timbered country with common pine, even the islands of which all of the lakes are well studded are heavily pined.

Hunters' island contains about one hundred and forty thousand acres, and is on the Canadian side. It is well covered with pine, and is said to be very rich in silver ore.

We entered Cram lake and run up the Vermilion river about fifty miles to the lake by that name and portaged from the west end into Elbow river and run down that into Pelican and back into Vermilion river near its mouth. Vermilion river proper has not very much pine on it, and what there is is small ten log timber, one-half Norway. It stands in groves here and there

and is all settled upon by the squatters. Elbow river runs through a country well-timbered as also does the Pelican, and in many places timber grows clear down to the banks, and is a better quality, running more to white pine, and larger. None of these streams have ever been driven and are in their natural state, but with a little fixing all can be made navigable for logs. The country generally is quite rough and stony so far as we have gone. We re-entered Rainy Lake river and travelled northwesterly into the arm leading us into Capitogoma lake, which extends east and west for about forty miles and is studded with islands thicker than we have ever seen before, and hardly distinguishable from the mainland. Detours were made to the south up the Mogose, Ash and Grassy rivers, that empty into this lake, as well as up the Net lake trail, and the whole country was found to be heavily timbered with white and Norway pine of quite a good quality, about eight logs per thousand on the average, and the country quite level and free from stone. Large groves of white pine of the best quality was found to exist near the head waters of these streams that will run about five logs per thousand and five log trees are occasionally mixed with a big red Norway of prodigious size. The squatters have also invaded this country in great numbers and built cabins all over the country on each quarter section that contained a million or more feet. The streams mentioned are very finely adapted to the driving of logs, only one falls on each near the lake, all of which can be fixed for some \$500 to \$1,500 each. The current is a little faster than would be called gentle, but yet not so rapid as to run water away from logs if they happened to jam. There are also good sized lakes at the head of each that can be utilized as reservoirs.

Passing on to the west end of Capitogoma lake we portaged over to Black bay by an arm or extension of Rainy lake proper. The land as far west as this suddenly changed to a quite level, rich soil, covered with the finest spruce, cedar, ash, elm and poplar, more of a second growth nature. Special mention should be made of the poplar, as it is large, averaging in some places ten to fourteen inches in diameter. It is a very sound timber, clear of limbs for a great length and is used extensively by the Lake of the Woods Milling company at Rat Portage in making flour barrels. It makes a very light, clean and smooth barrel, and as this country for millions of acres in extent is heavily timbered with it, the barrel stock for the future is a certainty.

After investigating the Rainy lake shores on the American side, we proceeded to the inlet of Rainy lake river, which we had left when we entered Capitogoma lake. Here we found Kittle falls which, by the way, is an eight foot drop in a distance of perhaps twenty rods, thus barring navigation from Rainy lake to the big river above in that direction. Not much pine can be seen from the shores of Rainy lake, as the loggers have been busy there for the last dozen or more years, and have pretty nearly cleaned up all the handy haul. Making our way down to the mouth of the lake we find a big river with a twenty-four foot drop in twenty rods, three miles below the mouth, and around which falls is clustered a little village and the Old Hudson Bay Fur Company's trading post. The whole settlement is called Fort Frances, which has two creditable hotels and several churches, all situated on the Canadian side. A canal has been blasted around the falls through solid granite, but never completed, consequently this point is at the head of steamboat navigation for the present, although several raft boats have been built above the falls and are used in towing logs through Rainy lake to this river. We passed on down the stream, which is about 100 rods wide and quite deep and smooth, passing a great many fine farms on the Canadian side, and a few new settlers on the American side. Fifteen miles farther brought us to the mouth of another large stream called the little fork, which is about forty rods wide at its mouth, gradually narrowing up as we ascended it to the small streams that have their source some three hundred miles by the river among the new Mesaba iron mines.

This country is quite level and contains much nice white pine, cedar, spruce and poplar, as well as considerable hardwood, and is quite free from stone. Evidence shows that the water rises and falls something like

twenty-five feet. The banks are high and clean with no sloughs for logs to go astray in. The soil is very rich throughout the whole country here and west of here. After satisfying myself that the head waters of this stream contained a large quantity of pine of good size and quality we returned down stream to a point where big bends in both rivers brought us nearest the Big Fork, a sister stream which empties into Rainy river five miles below the one we were on. We found a portage which led us across towns 65, range 24 w. and 25, and carried us across into Big Fork, passing through several fine groves of timber. We then went up to its head waters, finding the same conditions with the exception of more timber and of a still better quality. The two big rivers are about 400 miles long and drain a territory of about four million acres with the assistance of their tributaries.

We returned down to the mouth of the Big Fork to Rainy river again, where nature has formed the most natural boomage I ever saw, with capacity for as many hundred million feet of logs as will ever be banked to be manufactured, and which we learned was in possession of E. S. Shepard, an explorer of this part of the country of considerable note. We reached Rat Portage on the Canadian Pacific railway, after a voyage of 160 miles on the boat and went home from there on the cars. One will ask the question as to how much pine timber exists in that country. This is a hard question to answer. There are, to be sure, large areas of muskeg swamp and barren wastes of country, but on the whole I should think there was at least seventy-five to a hundred billion feet on the American and Canadian sides of this vast water shed.

## SOMETHING ABOUT CAMS.

WHENEVER we wish to get a peculiar motion in any machinery it can usually be best accomplished by the use of cams, in some shape or other, and almost any motion desired can be obtained if we go about it right. In cams cut in rings, or "ring cams," it is necessary to use a conical roll, and the cone is determined by a line drawn from the centre of the ring to the diameter of the roll, a very good angle being twenty-four degrees, or twelve degrees each side of the centre line. These conical rolls are very apt to give trouble, and often cut the sides of a cam, but certain cases demand their use and by giving the rolls ample bearing surface and having them fit the cams very accurately, but if possible they can well be avoided. The simplest form of cam, and the one which will give the best satisfaction in most cases, is the cam which has the roll working on the outside, or what is commonly called a "rim cam," as this is the easiest to make and the best for wearing qualities. In a cam of this kind you can keep the roll in contact with the cam by a spring of the required tension, and there is no back lash to contend with.

But with the cam where the roll plays between two surfaces there must be allowance enough made for the roll to pass through and touch but one side, and this gives a little back lash in spite of all we can do, and this is very often an objectionable feature, too.

A face cam, or one with the cam slot cut in the face of the disk, is bad in several ways; it is hard to cut, and the roll must have freedom enough to roll freely and this introduces the same back lash as before mentioned, so where possible it is best to use the "rim cam."

## ATTENTION TO LOOSE PULLEYS.

IT would seem unnecessary to speak of the great need of attention to loose pulleys and other "overhead work" in shops, as everyone must know of the importance of those things, yet they are shamefully neglected, as an incident of the other day testified to me. A countershaft was squeaking and grinding over a lathe that is never oiled (as none of the tools are until they refuse to go), and finally the shaft actually twisted in two, and had not the loose pulleys caught with the cone in such a way as to wedge and prevent their fall, a serious accident might have occurred, as men were working below at the time, but fortunately such was the case, and unfortunately the same thing will be repeated with the new countershaft when it is made, as a lesson is never taken until some one is badly hurt.