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C. W. Prout

Iowa State College

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Reconnaissance on the Arrowhead

C. W. Prout, '23

Each winter the State of Minnesota conducts a complete reconnaissance of State owned timber and timber lands. Much of this land has never been mapped and only the section lines have been run. The winter period is chosen for several reasons. The energies of the field force are directed toward the prevention of fires during the summer season. Much of the territory to be cruised is practically inaccessible in the summer and only after the rivers and swamps freeze is it feasible to try any work. It has been found that the work can be done as quickly and as efficiently in the winter as in the summer.

The winter of 1925 and 1926 was spent in the part of the State known as the Arrowhead. It is that eastern most point of Minnesota that lies along the Canadian border and some what resembles an Arrowhead. We were located on Swamp River about seven miles west of the western boundary of the Pigeon river Indian reservation or T64 R4E 4 P. M.

We outfitted at Grand Marais, a little town on the north shore of Lake Superior. The State Forest Service and the
National Forest Service have ranger stations here as well as supply depots. The United States Forest Service outfits here for their winter reconnaissance work. Here we were assigned equipment such as estimate sheets, map sheets, books, snowshoes, blankets and office supplies. A truck took us as far as Havland, a small fishing village on Lake Superior, and from there we hiked all day to our headquarters. A team hauled in all our supplies. Arriving at headquarters in the evening we pitched in and soon had a big meal cooking on the stove. While waiting for that meal we fixed up bunks and made ourselves comfortable for the night.

The next two days were spent in putting up a good supply of wood. In the evenings we had school, getting prepared for the work ahead. Another day was spent in getting used to the snowshoes, standardizing our pace on the shoes, check cruising so as to get our eyes in trim for the work. When one learns to pace on snowshoes one can pace very evenly and with surprising accuracy.

Our party consisted of a cook, mapper, chief of party, an Indian packer and his team of dogs, a locater, camp tender, and the field crew of eight. At the beginning of the work the area was divided into four parts and each of the four crews assigned a part to cruise. Two men worked together. One man ran compass and paced. He also drew a type and contour map on the attached sheet and recorded all data called for on the sheet. That kept him busy. The other man cruised the timber and had a sheet like that reproduced on the next page to fill in. This was a very detailed piece of work.

The system used is one used in most of the regular cruising parties in this section; that of going twice thru a forty. The man used as a locater was familiar with the country and he located corners and ran base lines. The field crew then went to the desired corner, say the southwest corner of section 36, then went east on the section line one tally or five chains, then north a half tally and took a sample plot, then north a whole tally and there another sample plot was taken. At the end of three and a half tallies, if only one forty was to be run, the compass man then turned at right angles to the line and went east two tallies, where another plot was taken. He then went south, taking plots at the same intervals as he took when going north. The compass man, besides making a map and recording the data called for on the map sheet, counted the reproduction on each plot and tabulated it according to height and species. A stretch of four forties was a good day’s work, or two miles of line a day.
ESTIMATOR

Actual yield timber.

<table>
<thead>
<tr>
<th>Logs per M.</th>
<th>Logs per tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway Pine 6 M</td>
<td>6</td>
</tr>
<tr>
<td>White Pine 3 M</td>
<td>6</td>
</tr>
<tr>
<td>Jack Pine</td>
<td></td>
</tr>
<tr>
<td>Balsam 310</td>
<td>cds. 20</td>
</tr>
<tr>
<td>Spruce 40</td>
<td>&quot; 65</td>
</tr>
<tr>
<td>Popple 65</td>
<td>&quot; 45</td>
</tr>
<tr>
<td>Cedar poles</td>
<td>posts</td>
</tr>
<tr>
<td>Tamarack</td>
<td>cds.</td>
</tr>
<tr>
<td>Birch 10</td>
<td>&quot; 20</td>
</tr>
</tbody>
</table>

Volume Defective Trees

10 per cent defect

Windfall— Light* Medium Dense —Location
Condition Timber— Thrifty Mature* Decadent Year occurred
Damage by fire— None Damage by insect— 25 per cent Budworm —Name disease
Other Damage— None

Logging Factors

Ground— Hard Soft Rocky* Topography— Rolling
Location Merchantable Timber— All over tract
How timber go out— Pigeon river
What timber logged— How— Clear cut
Slash— Lop and scatter
Special use—Grazing Farming Summer homes Etc.
Height of Merch. Tree— 68 Av. Diam. 10 in.
Age ave. Merch. Tree— 210
Note* for check.

Typ:— Balsam Spruce
Condition of Stand—Fair Reproduction (Kind)—Balsam
Density—5 Undergrowth—Moose Maple
Density—2 Land Productive—95 per cent next crop?
Is Reproduction sufficient for next?—No Condition of Stand—Fair
Age—20 Soil—Clay, Rocky
Av. Ht.—3 ft. Non-Productive—5 per cent.
We awoke about five a. m., had breakfast and then started out to work. We worked until it was too dark to see the compass. Lunch was carried to work, together with a tea pail and at noon a fire was built and the noon meal eaten as quickly as possible. The thermometer often registered forty below zero. In the evening we figured estimates, drew up our maps, matched contours and type lines and then went to bed. The mapper reduced the scale of the maps, redrew the maps and colored them. He recorded all data obtained in the field on the same sheet with the map of a complete section.

In mapping the compass was used to determine contours. The country mapped was of the balsam-spruce type with scattering stands of pine and poplar. In some sections there was a heavy growth of white cedar and tamarack. The balsam and spruce was all damaged to some extent by the spruce bud worm. On some areas the entire forty would be attacked. Much of the balsam was killed. The density of the stand was recorded by a number. Ten was considered an ideal stand. Anything above ten was over stocked and the grading below ten indicated the relation of the stand to the ideal stand or the percentage of stocking on the area.

Yield tables and diameter tables were used in estimating the yield of the stands. These tables had been made in the same area we were working so were quite accurate.

Reconnaissance was carried on six days a week. Sundays were used in washing clothes, mending clothes and doing the thousand and one things one can find to do in camp. Mail came in twice a month. The only company we met were trappers on their way in with furs. In the evenings the gray wolves serenaded us but they were out done by the dogs of the camp.

The thaw came very early in the spring and came without warning and in order to get back to civilization without having to swim we were obliged to get up real early and hitch up the dogs and pull for the bright lights, a nondescript bunch of timber rats, looking very much like the Smith Brothers of cough drop fame.