

**LAND CRUISING
AND
PROSPECTING**

BY
A. F. WALLACE



“Going in” — Prospecting.

Land Cruising and Prospecting

A Book of Valuable Information for Hunters,
Trappers, Land Cruisers, Prospectors
and Men of the Trail — Tells
How to Locate One's Self
on the Map, Etc.

BY

A. F. WALLACE

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Yours Truly
A F Wallace

INTRODUCTION

TO the men who follow the compass, the trap and the trail this work is inscribed. It is not intended for the "Professors" who can tell you all about things after they are done (by somebody else). Gen. Grant once had an old bridge builder who was superintendent of his bridge building. Grant had to cross his army over a river, sending for his Superintendent of Bridges, who was a very practical old Irishman, he told him what he wanted and that the plans would be made ready by the engineer corps in a few days and for Pat to have his men ready. Sending for Pat a few days after, he told him that the plans were ready. Pat's reply was that the bridge was done, whether the plans were or not.

This little book is intended for the "Pats"—the men who "Do Things."

I would like to say to the readers of this little work that in late years I have met a great many men who wish for the knowledge contained in this book and, inasmuch as it is a subject not taught in schools,

and I have tried to find books on this subject; I have searched libraries and publishers' lists, also looked in stores and have not been able to find anything on land cruising and nothing of any practical use to the prospector in the field, all confusing terms and words have been avoided.

This book is intended for a class of men I have met who wish to obtain homesteads but lack the land cruiser knowledge of finding them and usually employ a high-priced surveyor who perhaps knows little more about it than the man himself, or he falls into the hands of a land shark. Land is not so easy to find now as it used to be. There are not whole counties of good land for one to go into and grab what he wants, but there are lots of nice pieces of unoccupied land where one can pick out a nice little farm and home, if he only knows how, and there is no reason whatever why a man with this work and a good compass and map cannot do so if he has the average horse sense. We consider this work cheap to any man for \$5.00 and no apologies to make.

A. F. WALLACE,

Land Cruising and Prospecting

CHAPTER I.

MAPS.

The first thing for a hunter or trapper to know if he is going to do anything in this line is how to read a map, find the location of different places, counties, towns, cities, rivers, railroads, the points of the compass, etc., the top of a map being always north. The next thing is to have a good map both state and township, not the cheap advertising maps but maps procured from some party or firm with the base lines, principal meridians and scale of miles on them; township maps six miles square or fractions thereof representing the flats and surveys and general topography.

Maps of Arkansas, Florida, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North and South Dakota, Ohio, Oklahoma, Wisconsin and the Western States can now be furnished by the writer of this book. They are photolithographic

copies and cost from 50c to \$1.00. If no photolithographic is available a tracing will be made of the township wanted in any of these states for \$1.50 and up, according to the size. The maps are on a scale of two inches to the mile and are very accurate.

A wall map of the United States is three sheets, size 49x47 inches and scale 40 miles to the inch can be furnished for \$1.25, also one 18x28 inches with contours, scale 111 miles to the inch for 80c.

These are the proper maps for a cruiser as they are very accurate and show the hills, mountains and valleys, rivers and are very plain. In sending for a township map you must give township and range number which will be found on the state maps.

We will assume we have a state map of Wisconsin. The first thing to do is to find the base line and principal meridians. All reliable maps have these. Principal meridians are starting points for all surveys and run north and south. The range of the townships are numbered on this line east and west. There are five principal meridians in the United States besides Wilmet's meridians for Washington and Oregon.

BASE LINES. These run east and west and from the base lines townships are numbered north and south. There are several and their location is shown on all state maps, that are any

good. For example, we will take state map of Wisconsin, which we have under consideration, and look for the principal meridian. We will find that it passes through, commencing at the extreme end of the most westerly point of the Northern Peninsula of Michigan, and runs due south, leaving the state at a point due north of Galena, Ill. The base line starts at about Stillwater, Minn., and runs due east to a point near Marinette, Wis. The number of the principal meridian is four or the fourth principal meridian. They are all numbered in the different states and in making inquiries about land, always give the principal meridian and its number and the range of the township line. This must be had in order to find any particular township on the map. We must also understand section corners, quarter section corners, meander corners, witness corners and bearing trees.

SECTION CORNERS. These are monuments or mounds placed by the government surveyors and consist of mounds in the prairie placed at the corners of each section and thrown up from four pits, one pit on each section of land. In the mound is placed a stone with as many notches cut on the east and south side of it as the corner is miles from the township line. In timber it consists of a stake about four feet long and eight inches in diameter driven into the ground at the intersection of the section lines. It is

faced on four sides and each face fronting toward a section and bearing plainly cut on the face the number of the section, the township and range. The figures are sometimes traced in with red paint or red chalk. The stakes are notched the same as the stones in the mounds on the prairie.

QUARTER SECTION LINES. These lines are marked by monuments midway between section lines. In prairie land it is mounds thrown up from two pits by the United States surveyors, one pit on each side of the section line, with a stone in the mound, with these figures and this letter cut on it—1-4-S, which means one-fourth section corner. In a timbered country it is a tree or a stake driven in the ground and hewn on two sides facing the sections and the figures and letter 1-4-S is cut on it.

BEARING TREES AND MOUNDS. Surveyors often use these where parties are liable to destroy the originals—either from selfish motives or accident. The destroying of these mounds or trees is punishable by law with fine or imprisonment or both. They are stone mounds on the prairie and trees or posts in the timber. For section corners they are four in number and the trees are usually located on the sections they represent and a spot is hewn off flat, facing the section corner and on the flat surface is cut the number of the section, township and range and

near the ground is cut the letters BT, meaning Bearing Tree. For the quarter sections there are two, usually located on the sections they represent and are marked 1-4-S and the mark faces the section, post or tree that is on the corner.

MEANDER CORNERS. These are the same as section corners with the exception that the posts or stones are marked M. C. Also Witness Corners are the same as for section corners, the difference being that the posts or stones are marked W. C.

Sometimes in the course of time bark grows over the markings on trees and when marks are found this way one must be careful in removing the bark and not destroy the marks, and when digging into a mound after you are done put things back as you found them.

MEANDERING. When surveying streams and small inland lakes, surveyors are often forced to "meander." Meander corners are also used where government surveyors run up against a swamp, lake or large river they cannot cross, then a meander corner is made showing which way the surveyor went to get around the obstacle. As above stated they are the same as for section corners only M-C being used instead of S-C and on the stone in the mound or on the trees is marked M-C.

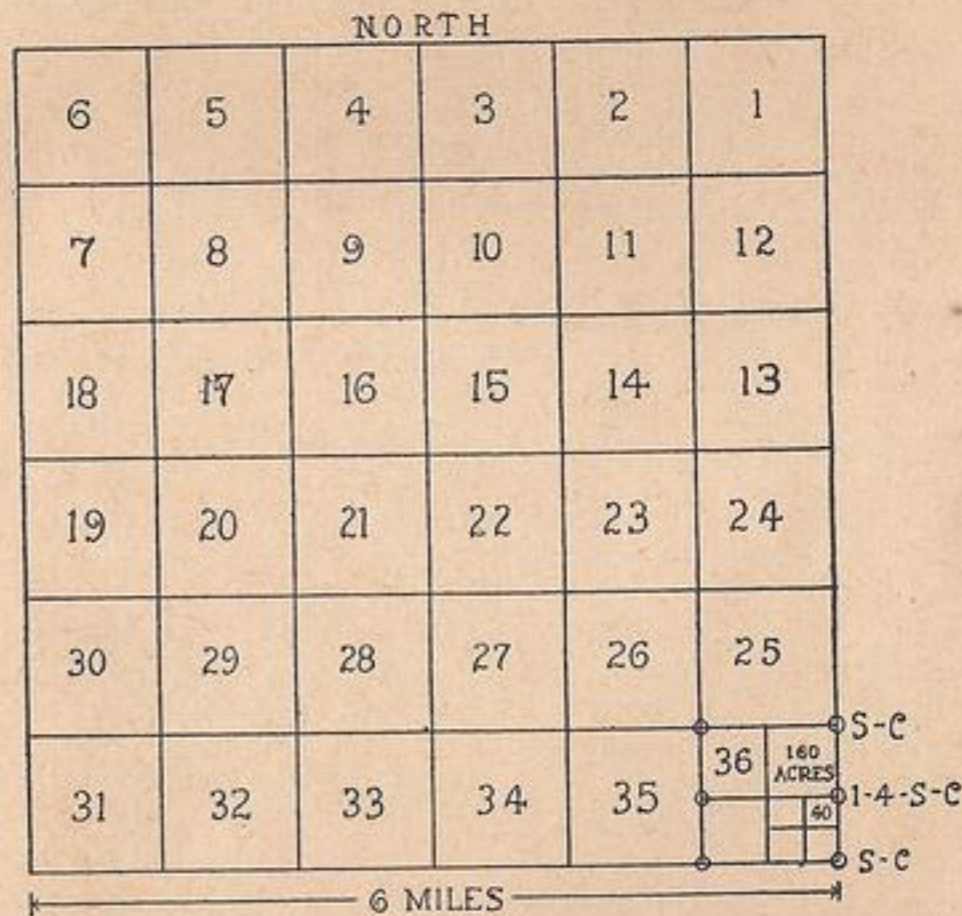
WITNESS CORNERS. These are used when the true corner would come in a lake, river or impassable swamp. A section corner is made closing on one or more section lines at that point and are the same as the one that should have been on the true corner. They are the same as section corners but are marked W-C instead of S-C and as above stated take the place of the true corner when it comes in a swamp, muskeg or other place that is impassable.

TOWNSHIPS. For the novice I would recommend that he consult the township diagram here illustrated and numbered.

A township contains six square miles of land, that is, it is six miles across each end of it and contains thirty-six sections of six hundred and forty (640) acres each. These sections are also one mile square or a mile across each end and are numbered from one to thirty-six. They are again divided into four pieces containing one hundred and sixty acres each. These are again divided into four pieces containing forty acres each. They are called sections, quarter section and forties respectively. Marginal lots lie on the north and west sides of townships and no survey lines are run into the interior of sections by the United States surveyors except meander lines where they are necessary.

Bear in mind that 2000 single paces are one mile but to save counting "cruisers" always use

double paces. These are called "cruising paces" and the "cruising paces" will be used in this book for all illustrations. Therefore 1000 paces are one section or one mile, 500 are one-half



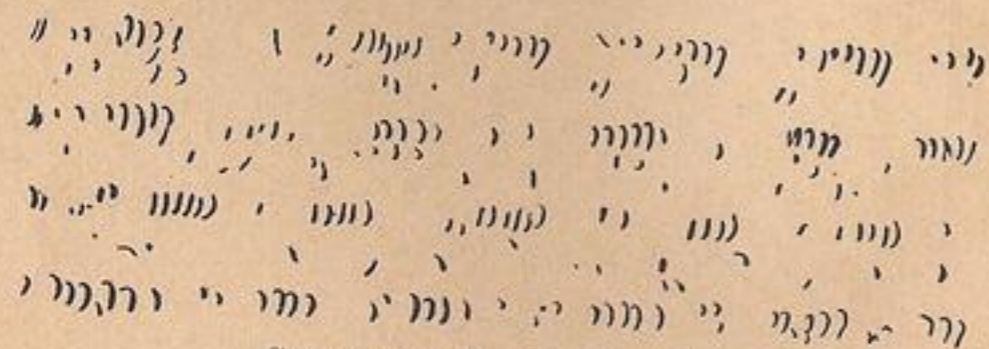
Township Diagram.

section and 250 are a quarter section. Paced on a section line 60 paces are about one-fourth of a forty, 80 about one-third and 160 about two-thirds, all paced on the section lines, and there are sixteen forties in one section of land.

All land cruisers carry a note-book ruled in

three-inch squares or one section and these three inch squares are subdivided into sixteen squares or sixteen forties and the ability to keep your pencil in the note-book into a position to yourself on the section depends the accuracy of your work. Section and quarter section corners should be established in your book and your line of travel should be in dotted lines. Also establish your witness corners and your meander corners, if you have to make any and ten or fifteen paces are not considered bad mistakes.

Before leaving this subject of maps it would be well for the young cruiser to understand some of the signs and symbols used on maps. Grass or meadow land are shown by tufts of grass scattered over land thus:



Grass and Meadow Lands.



Cultivated Land.



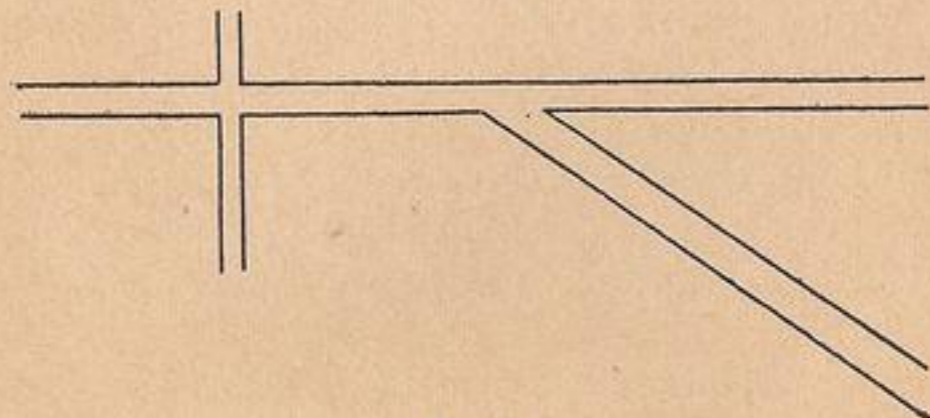
Oak and Hardwood Land.



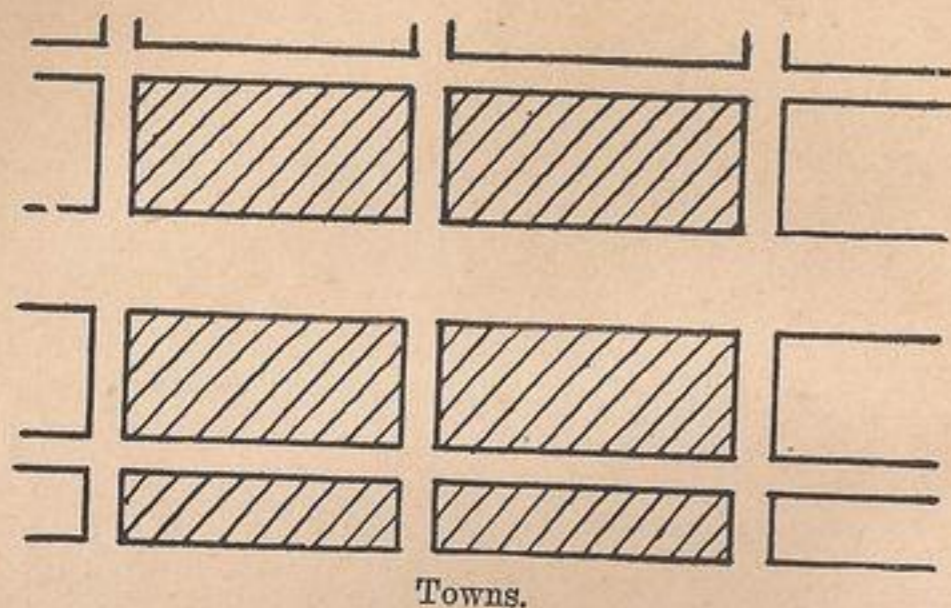
Pine and Spruce Land.



Swamps.



Roads.



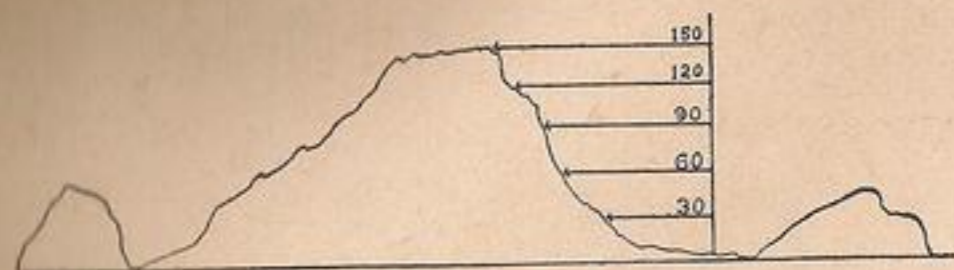
These symbols are not shown on all maps. Even some good accurate maps do not show them, but if you wish to construct a map they are handy.

CONTOURS. These are much used on maps and are very handy for the cruiser or prospector as they show the height and the steepness of hills and mountains, also the valleys. Contours are thirty feet apart in height or straight up and where they are far apart represent sloping land and where close together high and steep. When they bend in they represent a valley.

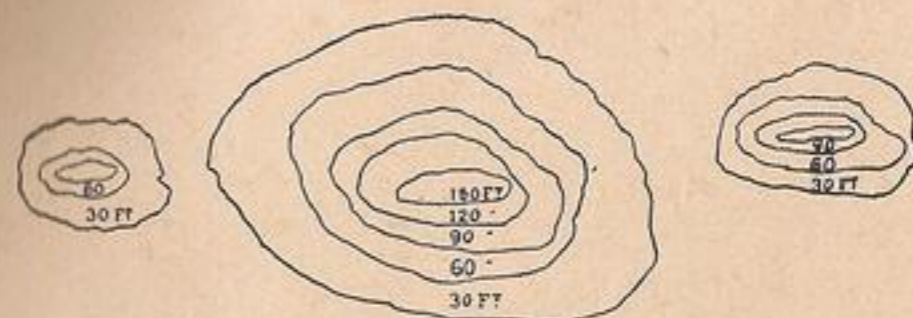
The upper sketch represents three hills, one larger than the other. The lower sketch are contours. It also shows their height and steepness. They are very handy to tell how rough or smooth land is.

These symbols are all very handy for a cruiser or prospector as they show him what

kind of a country he is going to butt into, whether it is swampy, hilly, hardwood or pine, and their location. Whether the country is well watered, shows the lakes and rivers that he may have to cross, also the roads and towns, also the height of the hills and mountains. All these



Contours — Three Hills.

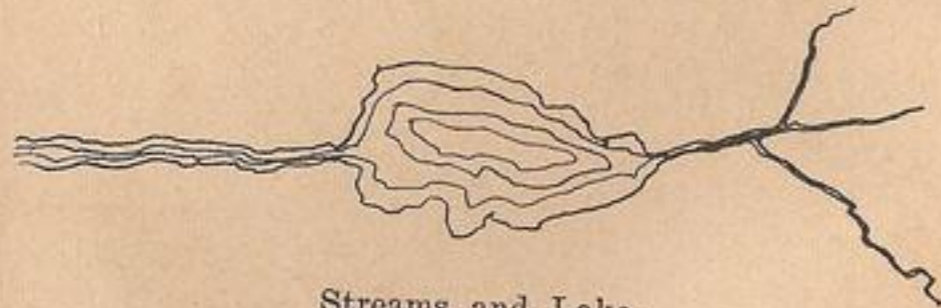


Contours.

things are very valuable to the cruiser and miner as well as to the hunter and trapper.

In looking over a piece of land to judge the soil fairly accurate, oak, maple and poplar timber denote rich clay, no sand, and well drained; popple, birch and brush denote increase of sand and decrease of loam. Jack pine denotes sandy

soil and subsoil. Norway pine denotes sand and clay; elm and ash denote rich bottom lands and poor drainage, taken by the large pine land is no good, the real estate man to the contrary notwithstanding. I have never seen any that you could raise a fight on with a barrel of Indian whiskey. It is well to examine upturned roots of trees and mounds made by gophers for subsoil. In prairie land you will find crab holes and



Streams and Lake.

a mound beside them. Examine these mounds for top and subsoil.

As a general thing the tops of ridges are thin and poor and in some parts of the country they are bare and rocky, while the valleys may be good farming land. If you are looking for a claim or homestead on government land, be sure of the rainfall, especially so in the western states. This can be found in the reports of the weather signal service, also the highest and lowest temperature. Address Department of Agriculture, Washington, D. C.

CHAPTER II.

THE COMPASS.

The compass is the "whole thing" in looking up land or locating a mineral claim. Without this little instrument we could do absolutely nothing. It is simple but very sensitive. It is no more than a sharp steel post on which is pivoted a flat steel needle which is magnetized. This needle swings over a dial made of brass or enamel and it will always point north and south no matter how much you scrap with it and say it is wrong.

One end of the needle is colored blue and this blue end always points north and for very strong reasons it is a good plan to take the sharp point of your pocket-knife and scratch on the bottom of your compass "Blue points North." I will have more to say on this subject later under head of "getting lost."

It is not necessary to pay a big price for a compass, a fairly good one can be bought for \$8.50 to \$16.00. The small pocket compasses are useless to survey land with, although they are all right for what they are intended, to work your way out of the woods in case you are lost, but for running long accurate lines they are not

intended. The writer of this book has brought out a compass which is a modification of the U. S. A. Cavalry Scouts Compass, is very light and compact and strong. Long accurate lines can be run with it and the inventor hopes to be able to sell it for about \$3.00.

The average compass bought from a store dealing in them should have a jewel mounted needle not less than $1\frac{3}{4}$ inches long and an enameled or brass dial with eight graduations, N-E-S and W, also NE-SW and NW and SE. The compass must be equipped with good simple sights; it should always be level, when taking a sight care being taken not to let either end of the needle touch the glass.

It should be carried in a good harness leather case with a strap to hang over the shoulder and incidentally always hang any compass up, don't lay it on the ground either in the field or in camp. When taking a sight don't have any guns, axes or other iron or steel close to it. It is a good plan to have your harness leather sheath made large enough to carry your note book in, in order to keep it dry.

In addition to your large compass it is well to carry a small, cheap pocket compass so if anything happens to your large compass you can find your way out with the small one. Don't let your compass get wet. If it shows damp under the glass, dry it out as it is useless if wet or

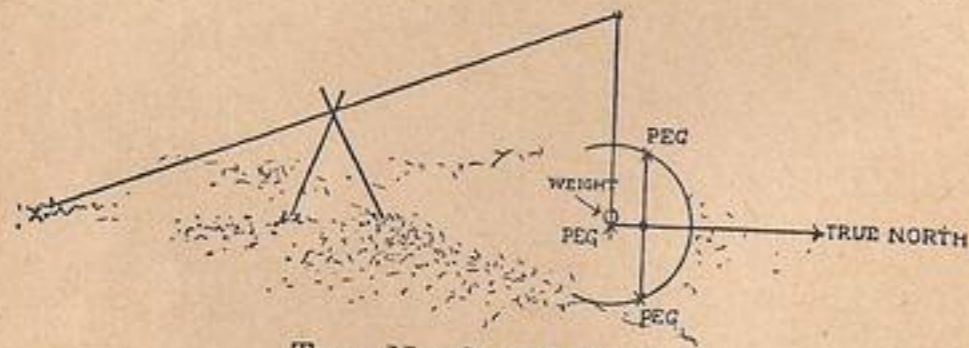
damp. Dry it with a gentle heat for if it gets too hot it destroys the magnetism in the needle.

Now the needle of the compass seldom or never points to the true north and south. On the Pacific Coast the needle will swing to the east of true north and on the Atlantic Coast it will swing west of the true north. This is called the magnetic variation. The true north is called the true meridian and this true meridian must be found before you start work on any job of surveying, and in the same locality that you are going to run your lines.

This true meridian is found by the sun, also by the north or polar star. If you have a good watch, which every cruiser or prospector should have, and it is set right, this is easily done. Thus on a level, clean bit of ground, find the north by your compass and lean a pole toward the north resting it in a crotch made of two sticks as shown in the cut. Suspend a weight from the end of the pole so it nearly touches the ground. Then at 11 a. m. attach a string to a peg driven directly under the weight and with a sharpened stick attached to the other end of the string, describe an arc of a circle with a radius equal to the distance from the peg to the shadow of the tip of the pole.

Now drive a peg on the arc of the circle where the shadow of the tip of the pole rested. About 1 p. m. watch the shadow of the tip of the

pole as it approaches the eastern side of the arc and drive another peg at the point where it crosses the arc. Then by means of a tape line, stick or string, find the middle point of the straight line joining the last two pegs mentioned. A straight line joining this middle point and the peg under the weight will be the true north and south. On a true meridian if a distant object, such as a pole be placed so as to prolong this line one has only to go to it and sight his compass

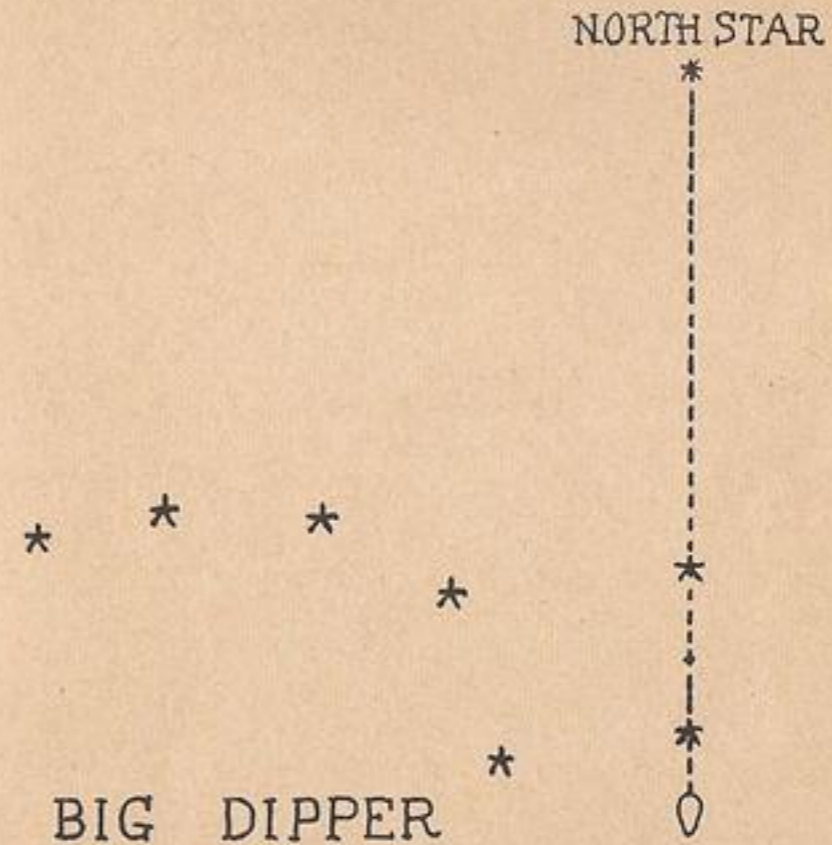


True North and South.

back on the tip of his incline pole in order to get the variation of the compass needle from the true meridian or true north. The needle may be a few degrees east or west of your line of sight but whatever it is a note must be made of it and use this variation when running a line in this district.

The above cut shows how to take the true north and south by the sun. The true north and south can also be found by the north or polar star at night. It is a fairly bright star and is nearly in line with the two stars that form the

side of the dipper farthest from the handle and looking from the bottom of the dipper. When these two stars are in line either above or below the north star, hang two lines with weights attached in line with the north star and the two stars above mentioned. The lines



should be twelve or fifteen feet apart and a light of some kind will have to be used. This line can be prolonged by daylight and your compass sighted and the variation noted.

The above cut shows north star, also the big dipper and the relation of the lines to the stars in the dipper.

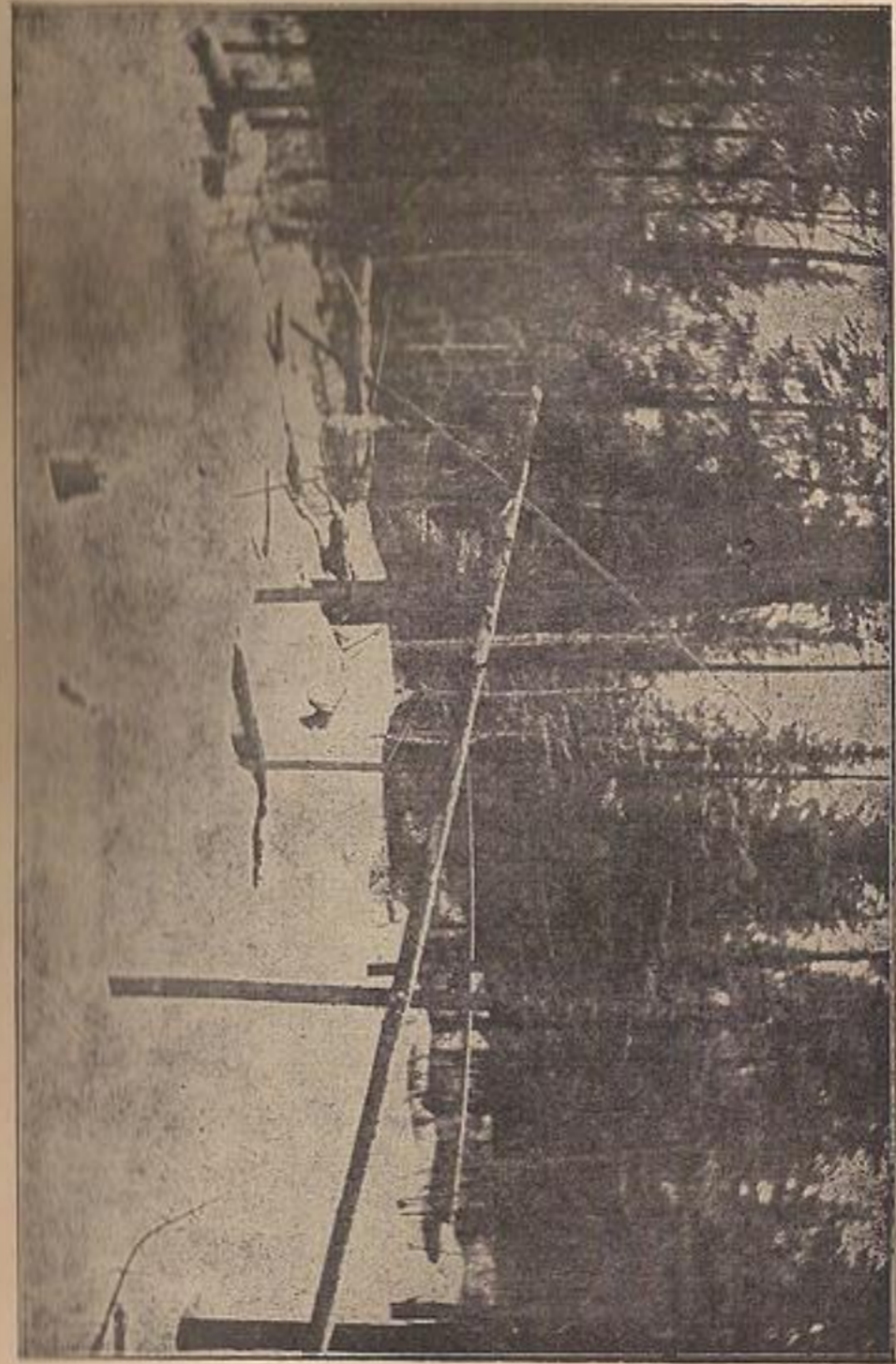
CHAPTER III.

EXAMINING AND LOCATING.

We will assume for an illustration that you are hunting or cruising or running a line of traps and you run across a piece of land or a piece of pine that "looks good" to you but you don't know where it is, or rather its location or your location on the map. You are standing looking at it and that's all the good it will do you if you can't find it, and also yourself, on the map.

Perhaps you have sent to the H-T-T and got a list of unoccupied government land in every county in the western states, and I want to say here that the list is accurate. Perhaps you have selected a county in some state where the climate is congenial to you or you think the trapping good, also the hunting, prospecting or timber, and you have sent to the land office for that district and got a plat of the township and perhaps several.

I will say in passing that you won't know what plats to send for even if you can't locate the land on the map, for, in sending you must give the range and township number, so there you are, and mind you these plats only show the



occupied land and not the vacant land you want. You can look at these plats until you are cross-eyed for all the good they do you. Or, perhaps you have met some settler and made inquiries. How do you know that they have told you the truth?

I once asked an American citizen of Swedish descent in regard to some government land that I had a suspicion was near where he was located and his answer was, "I tank thair no government land hayre." When to my certain knowledge there were thousands of acres, not all good land of course, but with some nice spots of from forty to a hundred acres that were firstclass farming land and several good cranberry marshes.

Now right here is where the timber cruiser or land looker steps in and if you are on to your job you can look these people in the eye and tell them to go to that place where they are not troubled with snow or ice, also tell the pine land sharks the same. We will assume you are equipped with a good compass and maps of the section you are exploring. The first thing you want to know is to find where you are, so the first thing you will do is to find a section corner and if you find one right away that is in good order, well and good. You will look on the post and find, for an illustration, these letters and figures cut in the face, R 47-T 7-W, which means to the old cruiser Range 47, Township 7, West.

We will now take out map (remember for an illustration we are using a state map of Wisconsin) find the principal meridian and the No. 47 on it. Now we will find the base line and trace it west from the point where it crosses the principal meridian until we come to the figure 7 on the seventh row of township. Now we will trace this line with our finger north or toward the top of the map until we come to the intersection of Range 47 and at this point is the exact location of that section corner and the exact spot in this world you are standing on. On our section corner post we will also find the letter and number S 15, which means section 15. We have now got our township and section number and we will take our plat of this township, find section 15 and look things over.

We find a railroad runs through the middle of the township and there is a station named Spider near the center, also about nine miles west and four or five miles north is the town of Iron river, also we note that this land is in Bayfield Co., also in the little pamphlet the H-T-T sent of unoccupied land, that this county has 5,880 acres of unoccupied government land and the U. S. land office is at Wausau, Wis. Now all we have to do is to write to the land office and ask them for a printed application blank, giving him the number of the section or quar-

ter township and range, and saying, we wish to file on this piece of land, and the land agent will do the rest.

Now, we will take another example that is not so easy. I looked for a section corner three days once to locate a quarter section of pine timber. All around this piece of pine it had been burned over by a severe forest fire, and all the section corner marks were gone and the quarter section marks as well. The land around my piece of pine land was covered with a rank growth of brush. In knocking around I came to the conclusion that due south was the best way out into old timber, where I could run onto a section corner or quarter section corner. I cleared a place in the brush, set and leveled my compass, took a look thru the sights and lined with an old burned tree trunk. Taking our pack sack and compass we paced about 100 paces to our stub tree, setting our compass again and taking a line thru my sights I connected with another old stub, and it was 150 paces to this one, making 250 paces or one forty. I here made a quarter section post (not a corner, as I was running a random line) and noted this in my notebook on a dotted line.

I kept on this way until I had gone 1,000 cruising paces and knew I was one mile due south of my starting point. I here put a mark on a stub and lopped down a lot of brush around

it as I had done previously and cut an X on the stub to distinguish it from my other random corners. I ran this line this way for six miles and came up against a tamarack swamp. I saw that I had to meander either east or west to get around this swamp, so I made a random meander corner by cutting M-C on a fine stub and lopping down some more brush.

By the lay of the land I concluded I would get into old timber by meandering due east. Setting my compass and taking a line I ran three miles or 3,000 paces, blazing my line every forty or every 250 paces and noting it in my book on my dotted line and ran into another tamarack swamp. After thinking the matter over, the next morning, we back trailed due west to our old meander corner of the day before and ran a random line seven miles west in the same manner as our other lines and got into old timber at last.

After looking around a while we found an old post with these letters cut on it, 1-4-S, which showed me it was a quarter section corner. On looking around again we found two trees with the bark partly grown over a flat surface cut on the tree. We carefully cut off the bark and found the letters B-T, which meant "bearing tree," and we knew it was on a quarter section corner and by running a line one half mile or

500 cruising paces north or south we would strike a section corner.

We did so, running north, and found no section corner and made one, noting it in our book as usual. (I will say here in passing that it is an unwritten law among the better class of cruisers to establish or repair a section or quarter section corner). We now ran a line 1000 paces, or a mile, due north again and found a good corner, bearing trees and all. On the post and bearing trees were cut the letters and figures R-32-T-2-W which we knew meant Range 32, Township line No. 2, west.

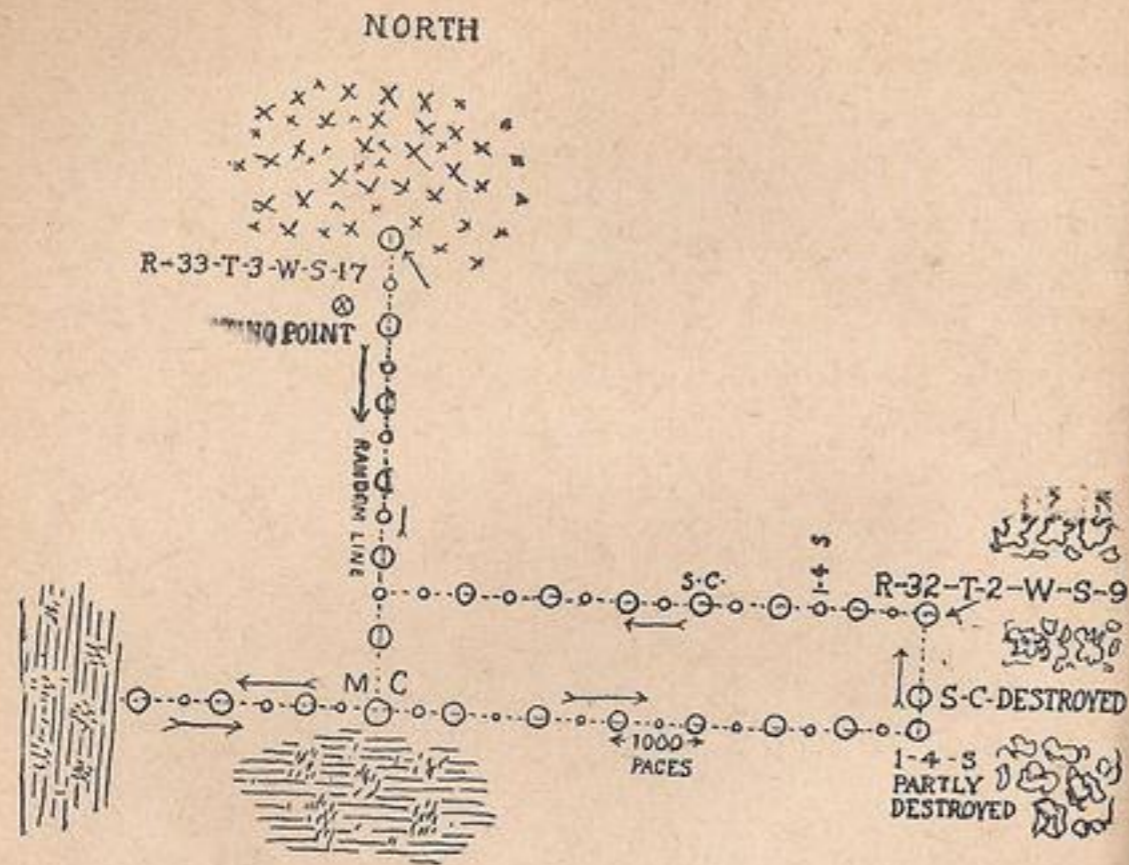
We now took our state map, found our principal meridian, found the Range No. 32 on it. We now found our base line and traced it west until we found the figure 2, then north up the map until we came to the range line 32 and found we were in Taylor Co. We also found S-9 cut on the post, which told us it was Section No. 9. We now referred to our township plats and found we were on the northwest corner of it and about five and a half miles northeast of a place called Perkinstown and that the Yellow River ran thru the northwest corner of the township, also that there was a railroad about eleven miles east of us.

We also found that we had to resurvey some of this country in order to locate our piece of pine timber we were after, inasmuch as it was

burned over land and all section corners were destroyed. This we could easily do, as we had only to refer to our sketch in our notebook for the lines we had run to bring us into our present position. We found we had run six miles due south to our meander corner where we ran into the first swamp, then three miles due east and got up against our second swamp. Then back to our meander corner, then seven miles due west and found the old quarter section post partly destroyed. Then one mile north to our present position.

From our sketch we found we were seven miles west and one and a half miles north on our random line we had run at first. Now by traveling seven miles west would bring us back to our random line. So setting our compass on the exact section corner, we started running our line due west, pacing 250 paces and selecting one of our three-inch squares or a section, in our notebook we checked a forty, and so on until we had struck our random line, then north to our pine (all the time keeping our pencil in the notebook in a position to ourselves on the sections). We found on comparing our notebook with our township plats that our pine was in range 33, township 3, west, section 17 and the southwest corner forty and this finished our job.

Before starting on this trip we found the true meridian by the sun and noted the variation



ONE INCH = FOUR MILES

ARROWS SHOW LINE OF TRAVEL

SWAMP

PINE LAND

HARDWOOD LAND

1000 PACES = 1 MILE

○ - SECTION CORNERS

◦ - QUARTER SECTION CORNERS

----- LINE OF TRAVEL

⊙ - STARTING POINTS

Locating a Section Corner.

on our compass. The above is a small sketch of our trip and will show the young cruiser the trouble he will have in finding his first section corner sometimes. The state map of Wisconsin we have used will apply to any state and I will state here that if you can find one section corner in this United States you can find any other piece of land that has been surveyed by Uncle Sam, no matter if the section corner is in Florida and your land is in Alaska you can find the land and locate it if you have the time and a good compass.

CHAPTER IV.

EARLY SURVEYS.

The cruiser will, in looking up land, find corners and posts that do not have to do with his work in finding land, that is directly, and we will here explain them—how they came there and what they are there for.

CORRECTION LINES. To correct the convergency of the meridians as they approach the north pole, correction lines are run every 24 miles north and south of the base lines. They also serve to correct errors that may have been made on the principal meridian.

GUIDE MERIDIANS. Guide meridians are lines connecting the base lines and correction lines at intervals of 48 miles. They start on the base line and close on the first correction line. The convergency of the meridian being here corrected, they start anew on this line and close on the second correction line and so on all parts marking the closing lines. These corners are made same as section corners but marked C-C, meaning closing corners, and the marking of the starting points north are called and marked S-C or standard corner. These two corners are sometimes called double corners.

FRAME WORK. Principal Meridians, Base Lines, Correction Lines and Guide Meridians form the frame work of our land surveys in tracts 24 x 48 miles in size and then this frame-work is laid out into township sections and quarter sections and the corners and the proper posts established, the townships running east and west and the range running north and south. I mention this in passing so the young cruiser will understand the closing corners and frame-work of our U. S. land system, which he will have little to do with in looking up land, but still will meet with the corners and double posts and get puzzled by them. We will have more to say later on double corners or posts.

MARGINAL LOTS. Townships, on account of the convergency of the meridians as above stated, are seldom six miles square and the excess or deficiency are always thrown into the last 20 chains on the north and west side of the township and this makes the fractional 40 acre tracts and are called "lots" and are numbered consecutively in each section separately. The numbers, areas, length in chains and links of boundaries of these lots are always given on the township plats and diagrams, whichever you buy from the U. S. land office—plats are the best, altho they cost a little more.

The hunter, trapper or cruiser who has settled on a piece of land in a new country is fre-

quently called on to establish lost corners or to locate other settlers on their claims as well as real estate dealers who buy land. These people could not find their own land any more than the man in the planet Mars, even if they do own it, and the cruiser can turn many an honest penny at this business at from \$5.00 to \$15.00 per day. If you are called upon to establish lost corners Uncle Sam is very particular and has his rules to go by and you must go by them or your work wont stand law. As the work has to be done by surveyors' measure and only links and chains are used at that, it is well for the cruiser to understand it, also how it compares with linear measure, as yards, inches and feet. One link is $7\frac{92}{100}$ inches; one chain is 100 links or 66 feet or 22 yards; 80 chains or 1,760 yards are a mile; 1,000 double or cruiser paces are one mile (approximately) and it is estimated that the average pace is 30 inches.

We have already shown how to find one's self on the map, also your land, but if you are to do any new or original work for any settler or the town authorities, you will have to proceed differently.

In the first place procure the field notes of the original survey or the United States survey and make sure of this. Under an old law some of these have been transferred to the state authorities to whom application will have to be made

for such copies of the original plats and field notes as you may need.

For Alabama, apply to Secretary of State, Montgomery.

For Arkansas apply to Commissioner State Lands, Little Rock.

For Illinois, apply to Auditor of State, Springfield.

For Indiana, apply to Auditor of State, Indianapolis.

For Iowa, apply to Secretary of State, Des Moines.

For Kansas, apply to Auditor of State and Register of State Lands, Topeka.

For Michigan, apply to Commissioner of State Land Office, Lansing.

For Mississippi, apply to Commissioner of State Lands, Jackson.

For Missouri, apply to Secretary of State, Jefferson City.

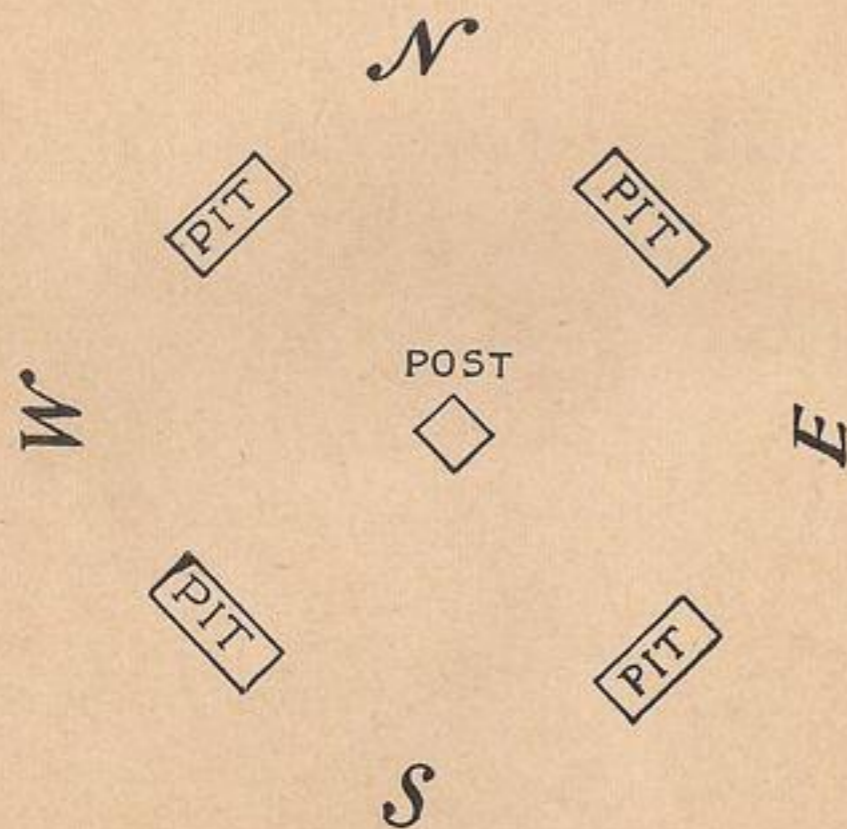
For Nebraska, apply to Commissioner of Public Lands and Buildings, Lincoln.

For Ohio, apply to Auditor of State, Columbus.

For Wisconsin, apply to Commissioner Public Land, Madison.

In other Public Land States the original field notes and plats are still retained in the office of the Surveyors General, Washington, D.

C., to whom you must apply for such plats and notes as you need. Get them, put them in your pocket and keep your mouth shut for these originals hold over everything, even if they are wrong. It has been so decided by the U. S. Su-

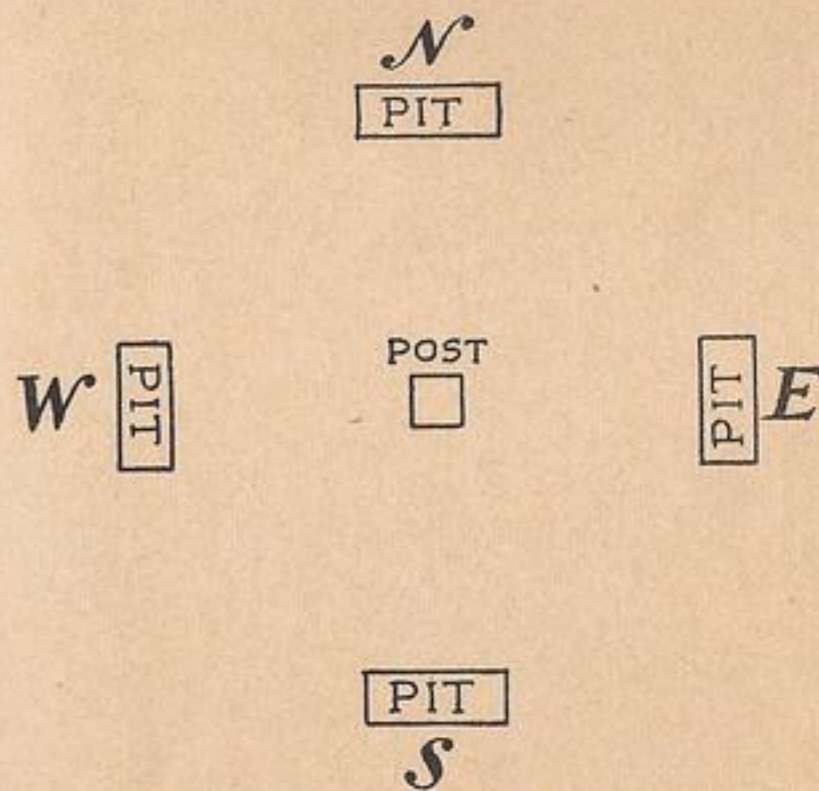


Section Corner Mound.

preme Court. Now here is what your township corners, section corners and quarter section corners must look like if properly made and they must certainly be made so or not at all, for Uncle Sam is a very strict boss although a very just one.

Now here is what Uncle Sam says:*

"Township sections or mile corners and quarter section or one-half mile corners will be made by planting a post at the place of the corner, to be formed of the most durable wood at hand. The posts must be set in the earth two



Township Corner Mound.

feet deep and be rammed with earth and stone, if any are at hand. The portion of the post that is above ground must be squared off smooth enough to receive the marks which are to be made by marking irons indicating what the post stands for. The sides of the township posts

*Law passed in 1864 and still operative.

should square four inches and must not be under two feet above ground. The sides of the section corner posts should square three inches. The quarter section posts and meander corner posts should be three inches wide and be flattened on



Section Corner
Post.



Quarter Section Corner
Post.



Township Corner
Post. "

Corner Posts.

two sides and all to be two feet above ground at least.

TOWNSHIP CORNER POST. A post, common to four corners should be set on the corner as shown in Fig. 1 i. e., diagonally. On each surface of the post is to be marked the number of the particular township and its range which it faces. These are not only to be distinctly but

also neatly cut in the wood at least one-eighth inch deep and red chalk applied to all marks.

SECTION CORNER POSTS. Posts of this kind are to be the same as township corner posts where they represent four section corners and are to be marked, the number of the section on the flat surface faces, also on one side are to be marked the number of its township and range and the figures and letters to be marked in with red chalk.

Figure 2 represents a mound common to two townships or two sections only and lettered and numbered for the township—it faces on the section. In every township there are twenty-five four section corner mounds as per Fig. 1, the rest being as per Fig. 2. A quarter section post is to have no other mark but $1/4$ S or quarter section.

NOTCHING CORNER POSTS. Township corner posts common to four townships are to be notched with six notches on each of the four edges of the square as per Fig. 3. (Hence you can always tell when you are on a township line, both by the size of the post and its notches.) All mile or section corner posts on township lines must have as many notches cut into the two opposite angle edges as they are distant in miles from the township corners. Each of the posts at the corners of interior sections of a township

must indicate by its notches on four edges* directed or looking to its cardinal points, the corresponding number of miles it stands from the outlines or edges of the township lines (Fig. 2) the four faces of the post will indicate by figures and letters the number of the section they face. Should a tree be found at the place of any corner it will be notched and numbered as above and the kind of a tree and its diameter given in the field notes of the surveyor.

BEARING TREES. The position of all corner posts or trees of whatever description that may be established is to be evidence in the following manner, from such post or tree the course must be taken and the distance measured to two or more trees in opposite directions as nearly as may be, and these are called "Bearing Trees." They are to be distinguished by a large smooth blaze and a notch at its lower end facing the corner. In the blaze is to be marked the number of the range, township and section, but at a quarter section corner only $1/4$ S need be marked. The letters B-T (Bearing Tree) are to be marked on a smaller blaze directly under the large one and near the ground as practical.

At all township corners and at all section corners on range or township lines, four bearing trees are to be marked in this manner. Each in one of the adjoining sections, at interior sec-

*Two edges since 1864 and four edges before '64.

tion corners, four trees, one to stand within the four sections, as above, are to be marked in the same manner if such can be found. A tree supplying a corner post is to be marked in the same manner as for posts, but if the tree be a beech tree or other smooth bark tree the marks may be made on the bark and the tree notched. For quarter sections and meander corners two bearing trees are to be marked, one within each of the adjoining sections.

CHAPTER V.

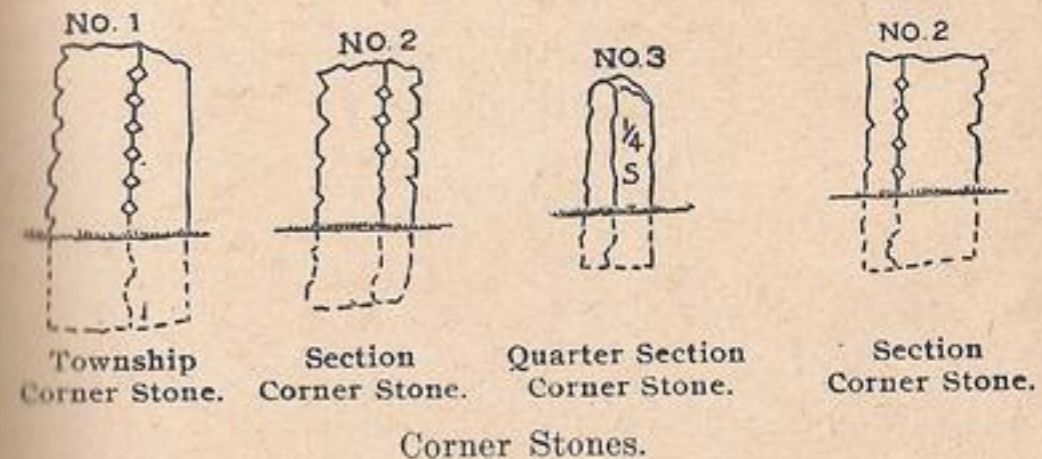
CORNER MARKS.

CORNER STONES. Wherever it is deemed best to use stones for boundaries instead of posts, surveyors or cruisers may at any corner insert edgewise in the ground to the depth of 7 or 8 inches a stone, the number of cubic inches in which shall not be less than the number contained in a stone 14 inches long and 12 inches wide, 3 inches thick, equal to about 504 cubic inches, the edges of which must set north and south, on north and south lines and east and west, on east and west lines. The dimensions of each stone, also the kind of stone to be given in the field notes.

MARKING CORNER STONES. Stones at township corners common to four townships must have six notches cut with a pick or chisel on each edge or side toward the cardinal points and where used as section corners on the range or township lines or as section corners. In the interior of a township they will also be notched to correspond with the direction given for notching posts similarly situated. Posts or stones at township corners on the base and standard lines and which are common to two townships on the

north side thereof, will have six notches on each of the west, north and east edges and where such stones or posts are set for corners to two townships south of the base line, six notches will be cut on each of the west, south and east edges.

Stones used for quarter section corners will have simply $\frac{1}{4}$ cut on them, on the west side on north and south lines and on the north side for east and west lines.



MOUNDS. Where bearing trees are not found mounds of earth or stone are to be raised around the posts on which the corners are to be marked in the manner aforesaid. Wherever a mound of earth is adopted the same will present a conical shape. Prior to piling up the earth to construct a mound, there is to be dug a spadeful or two of earth from the corner and in the cavity so formed is to be deposited a marked stone or a portion of charcoal, the quantity to be noted in the field book. In lieu of stone or charcoal, a

charred stake is to be driven twelve inches down into such center point.

Either of these will be a witness for the future and which ever is done, the fact must be noted in the field notes. When the mounds are made of earth the spot from which the earth is taken is called the pit, the center of which ought to be at a uniform distance and in a uniform direction from the center of the mound. There is to be a pit on each side of every mound.

At meander corners the pit is to be directly on the line 8 links (about 5 1/2 feet) further from the water than the mound. Whenever it is necessary to deviate from this rule in regard to pits it must be so stated in the field notes. Long life is what is desired in a mound and in making it of light soil, make allowance for settling and make the base larger and in doing this keep the township mounds larger than the section mounds and the section mounds larger than the quarter section mounds. Press or tramp down the earth and cover with sod, grass up, when sod can be had and never mix sod with the dirt for the sod will rot and make the mound porous and spoil it.

POSTS IN MOUNDS must show above ground ten or twelve inches and be marked same as they would be for a corner without a mound.

WITNESS MOUNDS TO TOWNSHIP OR SECTION CORNERS. If a township or section corner in a

situation where bearing or witness trees are not found in a reasonable distance and the corner should fall unfavorably to the erection of a mound, you will select in the immediate vicinity a suitable piece of ground for a "Witness" mound or corner and erect thereon a mound of earth in the same manner and conditioned in every respect with charcoal, stone or charred stick deposited as before directed and measure and state in your field notes the distance and course, from the position of the true corner of the bearing or witness mound so placed and erected.

DOUBLE CORNERS. Double corners are to be nowhere except on the base and standard lines whereon are to appear both the corners which mark the intersecting of the lines which close thereon and those from which the surveys start on the north. On these lines and at the time of running the same, the township, section and quarter section corners are to be planted and each of these is a corner common to two (whether township or section corners) on the north side of the line and must be so marked.

The corners that are established on the standard parallel at the time of running it are to be known as "Standard Corners" (see page 40 under "Guide Meridians") and in addition to all the ordinary marks as herein prescribed they will be marked with the letters S-C. Closing

corners will be marked with the letters C-C in addition to the other marks. You will remember that the corners (whether township or section) which are common to two townships or two sections are not to be planted diagonally like those which are common to four, but with their flat sides facing the cardinal points and on which the marks and notches are made as usual. This, it will be perceived will serve to distinguish the standard parallels from all other lines.

The following instructions to Surveyors have been issued since June 1st, 1864, by the Interior Department and still hold good.

POSTS IN MOUNDS. All posts in mounds will hereafter be planted or driven into the ground twelve inches at the precise corner point and the charcoal marked stone or charred stake required will be deposited twelve inches below the surface and against the north side of the post when the surveyor is running north and against the west side when the surveyor is running west, etc.

TOWNSHIP MOUNDS. Mounds of this kind will be 5 feet in diameter at their base and 2 1/2 feet in perpendicular height. Posts in township mounds are therefore required to be 4 1/2 feet long so as to allow 12 inches to project above the mound. Mounds at section, quarter section and meander corners will be 4 1/2 feet in diameter at their base and 2 1/2 feet in perpendicular

height, the post being 4 feet in length, leaving twelve inches to project above the mound.

PITS. These should be of uniform dimensions. The pits for a township mound will be 18 inches wide, two feet in length and at least 12 inches deep, located six feet from the posts. At all section corners the pits are 18 inches square and not less than 12 inches deep. At township corners common to four townships the pits will be dug on the lines and lengthwise to them. On base and standard lines where the corners are common to only two townships or sections three pits only will be dug—two in line on either side of the post and one on the line north or south of the corner, as the case may be. By this means the standard and closing corners will be readily distinguished from each other.

NOTCHING SECTION CORNER POSTS. Posts or stones at the corners of sections in the interior of townships will have as many notches on the south and east edges as there are miles from the south and east boundaries of the townships, instead of being notched on all four edges. (Bear in mind this is for the interior of townships).

MARKING CORNERS IN REGIONS REMOTE FROM TIMBER AND DESTITUTE OF STONE. By orders of the Interior Department of July 24th, 1873, surveys of such land are marked thus: In addition to the manner of establishing corners of Public

Surveys by mounds of earth with deposits or material at the point of the corner, surveyors are required to drive in the center of one of the pits on each section of the township corner, sawed or when stakes not less than two inches square and two feet in length. These stakes to be marked in the manner heretofore prescribed for marking corner posts and to be driven one foot in the ground at corners common to four townships. The stakes are to be driven in the pits east of the mound and at corners common to four sections. The stakes are to be driven in the pit southeast of the mound and at corners common to two townships or sections they are to be driven in the pit east of the corner. This requirement does not apply to quarter section corners.

BEARING TREES. Where a tree can be found not less than 2 1/2 inches in diameter for a bearing tree within 300 links of the corner, it should be preferred to the pit.

CHAPTER VI.

MISCELLANEOUS INFORMATION.

MEANDERING NAVIGABLE STREAMS. Standing with the face looking down stream, the bank on the left hand is termed the left bank and on the right hand the right bank. The terms are used to distinguish the banks of a stream. Both banks of a navigable river are meandered by taking the course and distance of their windings. At these points where either the township or section lines intersect the banks of a navigable stream posts, or where necessary, mounds of earth or stones are established, called "Meander Corners." Rivers are deemed navigable waters where they can be used as highways of commerce between states.

The right of a grantee of land bordering on a navigable river stops with the bank of a stream though he may construct landings or wharves. New states have the same rights and jurisdiction over navigable streams as the original states. The state has rights and sovereignty over ground that was part of the bed of a meandered, navigable stream at the time of her admission and the public land laws do not apply to it subsequently.

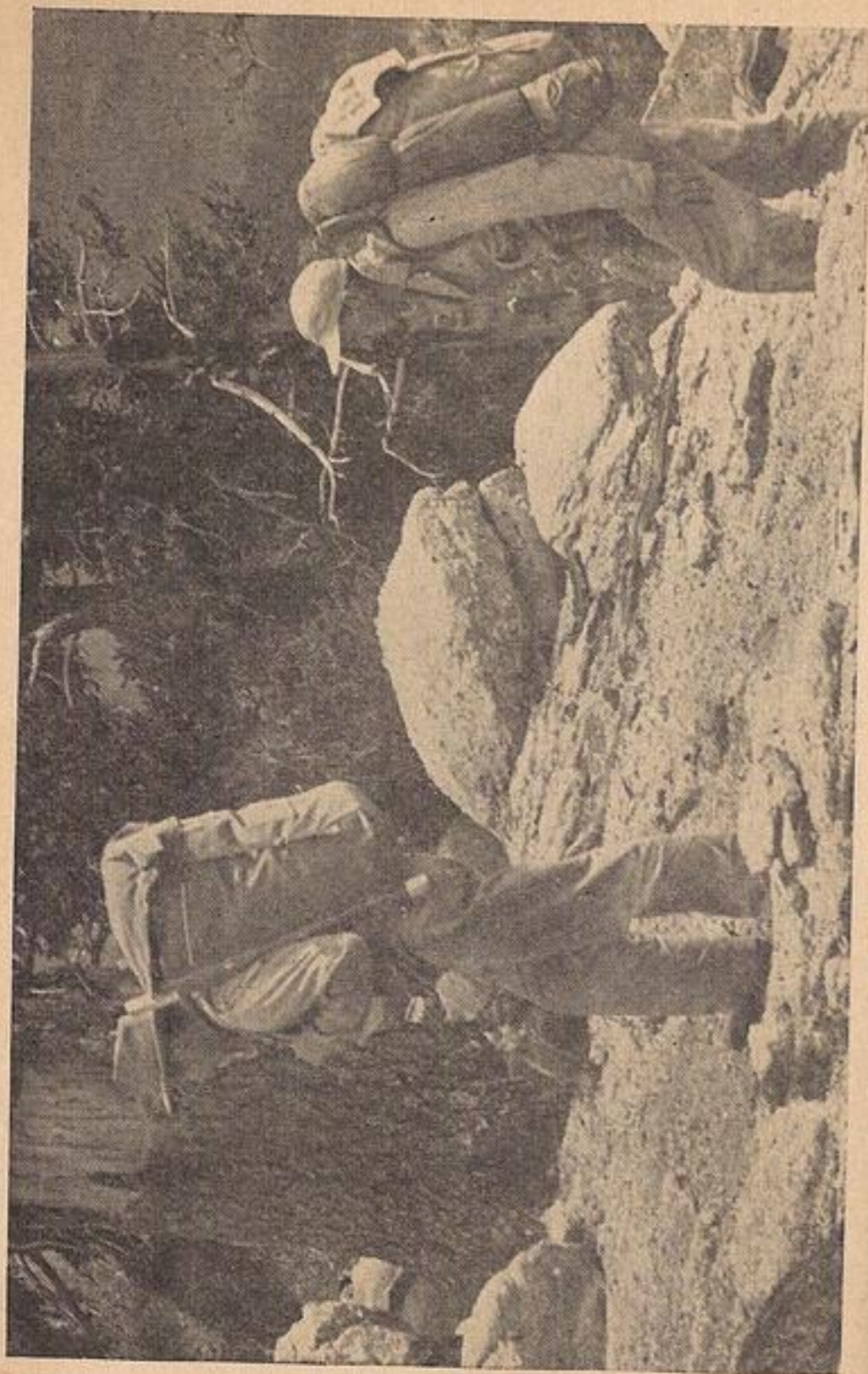
It will be seen by this that a trapper can hold his rights on any navigable stream between the banks and in other cases of non-navigable streams the state controls from bank to bank and not the abutting land owner. In states where there are game laws, fur, fin and feather belong to the state, no matter how much the farmer "lows you have no right thar." If your traps are in the water no one can molest them but a state officer after due process of law. You can even drive stakes across a stream, setting traps at openings and tell the abutting land owner to go to —, if you can get to them by boat, and if he molests them, get a warrant out for him as you have as much right between the banks as he or any one else has.

HOW TO SUBDIVIDE SECTIONS. The course to be pursued in the subdivision of sections is to run straight lines from the established quarter section corners, (U. S. Surveys) to the opposite corresponding corners and the point of intersection of lines so run will be the common corner to the several quarter sections, or, in other words the legal center of the section. In the subdivision of fractional sections where no opposite corresponding corners have been or can be fixed the subdivision lines should be ascertained by running from the established corners due north, south, east and west lines, as the case may be, to the water course, Indian boundary line or any

other external boundary of such fractional section.

The law presupposes the section lines surveyed and marked in the field by the U. S. surveyors to be due north and south, east and west lines but in actual experience this is not the case. In order to carry out the spirit of the law it will be necessary in running sub-divisional lines through fractional sections to adopt the mean course where the section lines are not due lines or to run the subdivision line parallel to the section line where there is no opposite section line upon the lines closing on the north and west boundaries of a township.

The quarter section corners are established by the U. S. surveyor at precisely 40 chains to the north or west of the last interior section corner and the excess or the deficiency of the measurement is thrown on the outer tier of lots as per act of Congress May 10th, 1800. In this subdivision of quarter sections the quarter section corners are to be placed at points equidistant between the section and quarter section corners and between the quarter corners and the common center of the section, except on the last half mile of the lines closing on the north or west boundaries of the township where they should be placed 20 chains (original measurement) to the north or west of the quarter section corner.



Scene in a Promising New Section.

The subdivision lines of fractional quarter sections should be run from points on the section lines intermediate between the section and quarter section corners due north, south, east or west to the lake watercourse or reservation which renders such tracts fractional when there are double sets of section corners on township and range lines.* The quarter corners for the sections south and east of the lines are not established in the field by the U. S. surveyors, but in the subdividing of such sections said quarter corners should be so placed as to suit the calculations of the areas of the quarter sections adjoining the township boundaries as expressed on the official plat, adopting a proportional measurement where the present measurement of the north or west boundaries of the section differs from the original measurement.

If the cruiser is called upon to restore lost or obliterated corners it is well for him to know that Uncle Sam has his rules for that as well as for new work and here is the way he will have to proceed to restore a township corner common to four townships—usually two cases will be found. First. Where the position of the original township corner has been made to depend upon measurements on two lines at right angles to each other. Second. Where the original corner has been located by measurements on one

*See page 52.

line only. In the first case a line will first be run correcting the nearest identified original corners on the meridian township lines north and south of the missing corner and a temporary corner will be placed at the proper distance. This will determine the corner in a north and south direction only.

Next find the nearest original corners on the latitudinal (N & S) township lines and correct them and place another temporary corner as you did on your meridian line and independent of it. Then, through your first temporary corner run a line north or south as the case demands and where the lines cross or intersect will be the position of the township corner which you may now permanently establish.

To restore a lost corner established on one line, for instance, a guide meridian, this will be done by proportionate measurement. By proportionate measurement is measurement having the same ratio to that recorded in the original field notes (which always have with you), as the length of a chain used in the new measurement has to be the length of a chain used in the old or original survey, assuming that both old and new measurements have been correctly made.

In doing this work or new work the cruiser should have a good compass with sights at least six inches apart. A common pocket compass is useless for this kind of work—not but what they

are all right for what they are intended for, i. e., to find your way out of the woods, but they are not intended to run long accurate lines with, neither can you do so with them.

It is well for the cruiser to know the law and penalties for destroying corner monuments, etc.

Chapter 398.29 U. S. Statutes, page 343, approved June 10th, 1896, That hereafter it shall be unlawful for any person to destroy, deface, change or remove to another place any section corner, quarter section corner, or meander post or any government line of survey, or to cut down any witness tree or any tree blazed to make the line of a government survey, or to deface, change or remove any monument or bench mark of any government survey and any person who shall offend against any of the provisions of this paragraph will be deemed guilty of a misdemeanor and upon conviction in any court shall be fined not to exceed \$250.00 and be imprisoned not more than one hundred days. All fines occurring to be paid into the U. S. treasury and the informer in each conviction shall be paid \$15.00.

Some things that the hunter and trapper should remember in looking up land:

Don't buy railroad land and speculator's land, when there is lots of government land, if you only wish to "cruise it out."

That north of 45 degrees north latitude it is no good for corn.

That wheat, oats, barley, flax do better north of 45 degrees.

That it is too cold for stock north of 45 degrees, but if you are in a good grass country cattle and horses will pay, but must be fed over winter.

That there is more money in a good cranberry marsh and fur than most people think.

That the railroad will eat up your profits if you aren't careful and the commission men take what is left. Keep away from commission men if you can.

In states bordering on Canada trapping can begin about November 1. Skunk and marten are the first to get prime.

That west of the Missouri river you must irrigate as the rainfall is too light—no matter what the land sharps tell you, but it is wet

enough on the Pacific side of the Cascade range of mountains.

That it is not good policy to take any man's word about land—see it for yourself.

When "cruising" carry light but strong traps—the No. 1 Newhouse will hold most small animals.

There is yet much government land in the Northwest, West, South and Southwest. Examine carefully before locating, taking the various advantages and disadvantages into consideration.

The growing of medicinal roots—ginseng, golden seal, etc.—can be followed while "holding down" a homestead.

Don't shoot until you know what it is—others may be prospecting—for many men have been killed thus.

Game laws are constantly changing so that it is advisable to have the latest copies.

Crops may fail but there has always been a cash market for furs as well as medicinal roots, when cruising keep your eye open for these. The A. R. Harding Publishing Co., Columbus, Ohio, publish books on trapping, also one on Ginseng and other Medicinal Roots. It will pay you to send for circular describing them.

Prospecting in the Central West means looking up pearl signs as well as fur, as many of the rivers in Iowa, Nebraska, Arkansas, Illinois, Indiana, etc., contain pearls.

CHAPTER VII.

POINTS FOR HOMESTEADERS.

Persons desiring to make homestead entries should fully inform themselves as to the character and quality of the land they wish to locate and cannot enter it until they have visited and examined it. You will have to make oath to this. Information in regard to a piece of land being subject to entry can be obtained at the local land office. All blank forms and other papers can be obtained at the local land office of the district in which the land is situated. All unappropriated land can be entered if it is not mineral or saline or occupied for the purpose of trade.

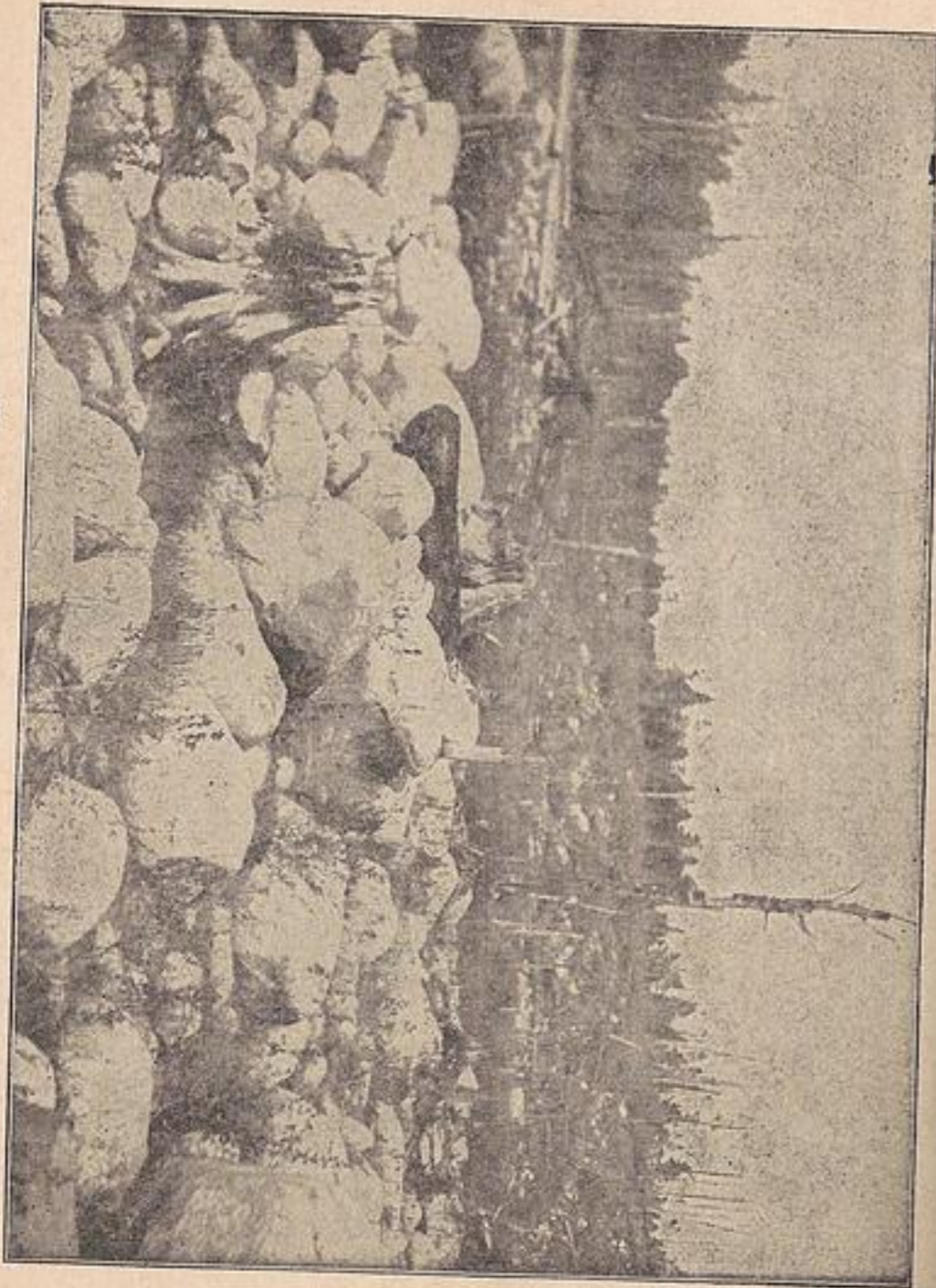
Settlement may be made by all persons qualified and you must go personally on the land and improve it and live there five years and by doing this you obtain exclusive rights against all persons but the government. When settlement is made on unsurveyed land you must plainly mark the boundaries of the land you claim. Settlement must be made in person and not by an agent and you must live on it all the time.

A married woman cannot homestead land unless she is actually deserted by her husband, or

he is down and out by disease and can't earn a living for his family; or her husband is confined in the penitentiary; or she is the heir of a settler who dies. A married woman can't make an entry under any other conditions. If a homesteader deserts his wife and abandons the land she has the exclusive right to contest. If a homesteader deserts his minor children after the death of his wife and also deserts his claim, the children have the same rights as the wife. If a husband and wife are holding a homestead apiece they must quit one or the other, they can't hold both.

The unmarried widows of soldiers and sailors who served 90 days in any war of the United States or the Philippine insurrection can locate a claim. A soldier serving in the army or navy can locate, if some member of his family is residing on the claim.

Any person who has entered less than 160 acres, can enter enough more to make 1-4-S. Persons whose original entries have failed through no fault of their own can take another claim. You can't take over 160 acres no matter how much you try, and if you already own that much it is all off and you cannot take any government land. All applicants by soldiers or sailors or their widows must be accompanied by their discharge papers. If a homesteader dies, the land goes to the widow and all the king's



Poor Country to Homestead.

oxen can't get it away, and if he dies before final proof it goes to the widow also. Our Uncle Sam takes good care of the widows.

No foreign born person can claim any rights as heirs for a homestead unless he has declared his intentions to become a citizen. Minor children of soldiers or sailors can make an entry if their fathers have not, if their mother has died or remarried, but it must be done by their guardian. A continued residence on a claim is required—a temporary sojourn or occasional visit don't go any more. No specified amount of cultivation is stated but it must be continuous. You can use the land for pasture if you can prove it is more valuable for this. You must begin improvements within six months after locating or entering or it is all off. This also holds good for widows and minor children.

Leave of absence for one year or less if he can prove failure or destruction of crops, sickness or accident which prevent him from supporting himself and family and if you can show the United States land agent that you need it, you can get away sometimes during the winter months to work in cities or factories, lumber camps and mills. Uncle Sam is very liberal to the honest man who means well, but if otherwise, look out, or there will be something doing. The days of stealing land and pine are gone and it is well you can thank a gentleman who wears

specs and has lived in Washington, D. C., and is sometimes called "Teddy", the gent who believes every one should have a "square deal" and is trying to make it so, some people to the contrary notwithstanding.

I would say in passing that in the last five years there has been considerable "hot air" handed out about land in Canada and some have been induced to go there. I know that country and will say that some of the land is good, but it is too far north. They get caught by frost about two crops out of three and one spring (1908) the Canadian Government supplied farmers with seed wheat, they had been frozen out the previous fall, and the government is taking a mortgage for the seed.

A fine state of affairs for a country that has been tooted for a great thing for the past four years. They tried to sell it for years and had to finally give it away, and it is dear at that price. I have seen frost every month in the year in northern Minnesota even, to say nothing about Canada which is north of that yet. Still if one is frozen out, one might get a job trimming the Northern Lights winters. There might be something doing in that line.

There is an idea that all the good land is taken here in the United States. Don't believe it. There are thousands of acres of fine homes yet, enough for all if you know how to look it

up. Of course there are not whole counties like there used to be, but there are lots of good pieces here and there on the prairies and in the mountains, plenty and to spare. If you want to look it up, get a list from the H-T-T, a good compass and maps and butt in and if you don't get a good farm and home its your own fault. It's there for you if you are a citizen, and if you aren't, you had better get a move on and be one for Uncle Sam is the best man to tie up with that ever came down the pike—no other government will use you as well.

CHAPTER VIII.

PROSPECTING FOR GOLD, ETC.

What to look for, if you are prospecting for leads and are in a granite country, look for tin and quartz. If in a limestone country, look for iron and zinc. Hornblendē is the name of a stone that will be referred to quite frequently in these remarks and looks like mica, but is harder and does not split like mica. Sometimes it is found in the form of crystals. It is of a dark greyish color, it can be scratched with the point of a knife while quartz cannot.

A word here in regard to where to prospect. Always choose ground that is accessible, for the reason, if you strike a vein and it is low grade ore it will pay to work it because it is accessible and handy to get at and perhaps near water and wood. There are lots of claims discovered of good high grade ore that will not pay for the working because it is hard to get to and will cost more to get it out than it is worth. Therefore, locate your vein in an accessible place if possible and uncover as much of your vein as possible for examination if you wish to sell, and I will say here, that it is best for a poor man to sell for a fair price any quartz claim you may find, retain-

ing say one fifth interest, and if your strike turns out bad you have lost nothing and the other fellow has taken the chances. If it turns out well your one-fifth share might make you a whole lot of money, and I will say right here that I have never known a prospector to have any regard for money, only to spend it.

I can call to mind an old prospector friend of mine who made a fortune on the gold coast of Africa and spent it in six months. Then coming to California he struck it rich again, sold out for \$11,000 and enjoyed himself in 'Frisco for eight months or so. The last time I saw him he was cleaning up tailings from a stamp mill in Montana for a grub stake. His good luck had left him.

Old man Comstock who claims to have discovered the Comstock mine in Nevada, sold out for \$40,000, spent the money and blew out his brains in Montana. He was an old Canadian trapper and incidentally all our great ore producers were discovered by hunters and trappers and not by the college graduates. After the discovery is made these people can tell you all about it, but never before.

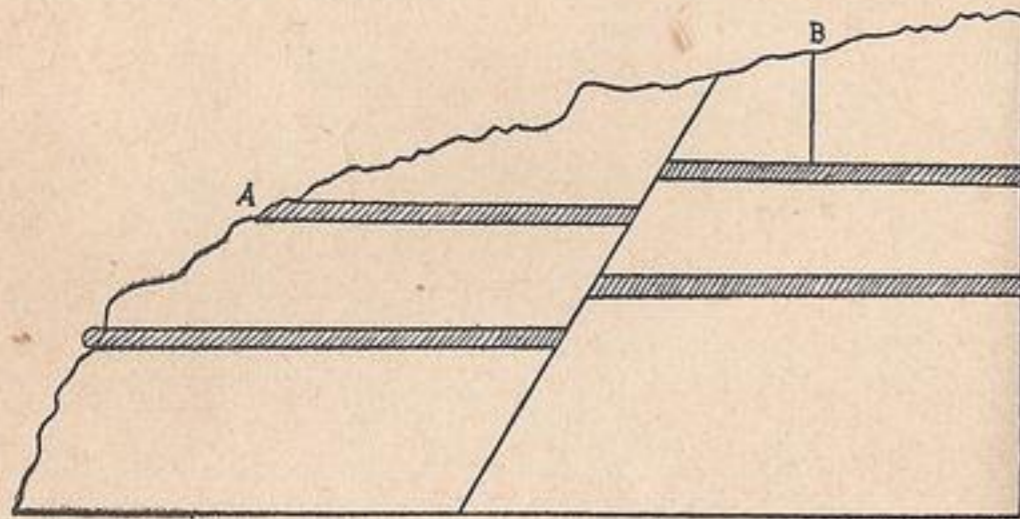
The Anaconda copper mine, one of the greatest copper producers in the world, was discovered by two boys who were from the East, or tenderfeet, as they are called in the West. They were on a hunting and pleasure trip and had an

old time hunter for a guide. On his way to camp one night one of the boys stubbed his toe against something heavy. Picking it up, he brought it to camp and showed it to the hunter who threw it in the camp fire, where it melted, showing nearly pure copper. This specimen was a piece of float and that was the beginning of the greatest copper mine in the world.

In the year 1890 I met a couple of grizzled old prospectors in Montana who wanted me to go in with them on a grub stake and prospect in the Crazy Mountains, a range of mountains lying east of the Rockies and forming a part of them. They went in on this range and worked between the Great Northern and Northern Pacific railroads and I wished afterwards that I had, for on getting back to St. Paul three months after I picked up the Pioneer Press one day and read where they struck it and sold out for \$80,000. My share would have been one-third of this or about \$26,666—not a bad three months' work.

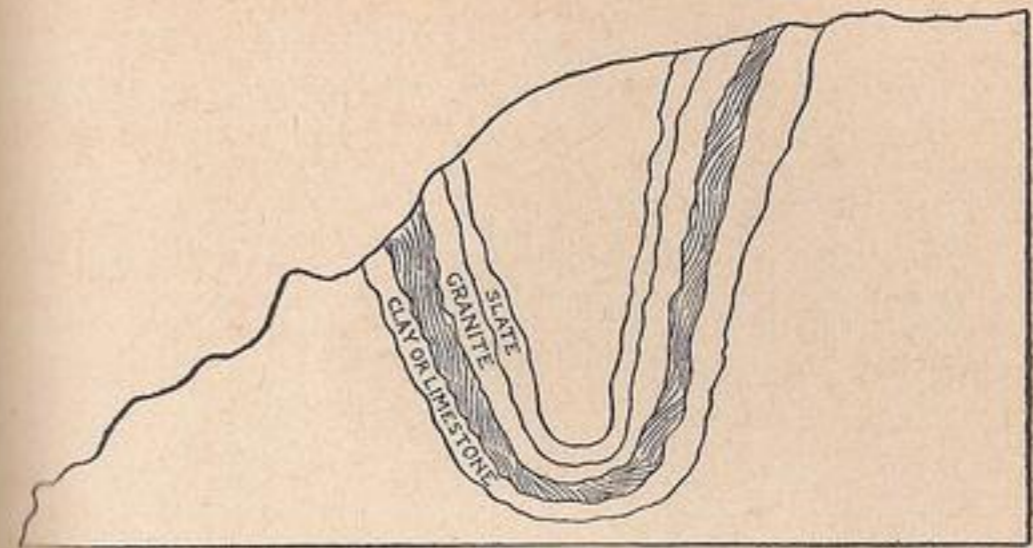
But to return to our prospecting. I assume the reader knows what a vein is in a rock. It is defined by Webster "as a seam of any substance more or less wide intersecting a rock and not like the rock itself and where this vein shows in the surface it is called an outcrop." Look sharp for these veins. They are sometimes very small, not thicker than this sheet of paper or they might be as the Comstock, which was in

some places over eight-five feet and the first assays showed over \$3,000 per ton, so large that the discoverers themselves could not believe it. They thought that the assay office had made a mistake. Sometimes these veins run most any old way, up and down, flat and twisted, sideways and widthways, zigzag and flat. Here are some actual samples.



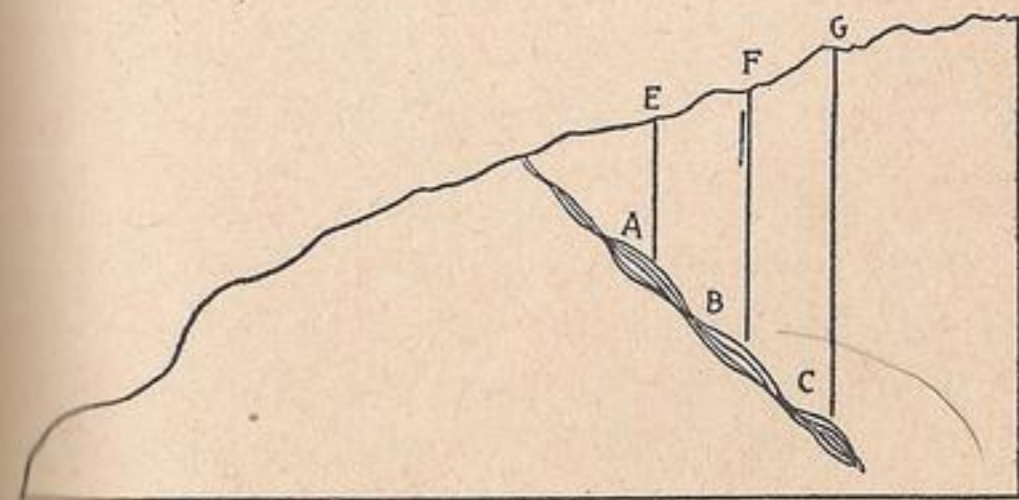
Ore Vein — Step Fault.

This step shows a step fault, so called. It seems that through some eruption of the earth the ore veins have slipped by each other. The end at A gave out but the end where it stopped was so large that it excited suspicion and a shaft was sunk at B, picking up the vein again. But the day of sinking shafts are gone. Nowadays if there is any testing to be done a diamond drill is used which will cut medium hard rock at the rate of three feet per hour.



Folding Vein.

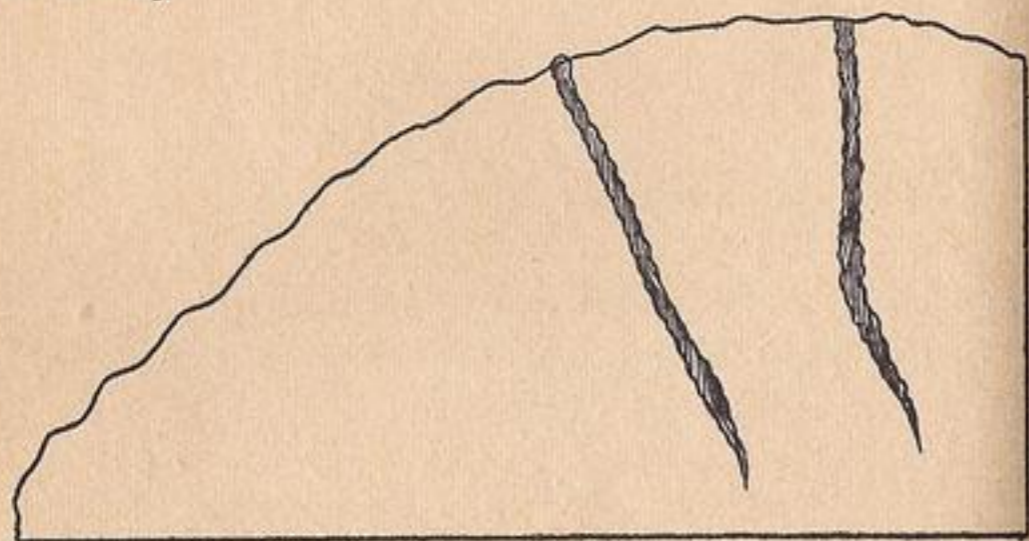
This is known to miners as a folding vein of ore and rock. These will sometimes dip opposite with the round end up.



Pinchout Vein.

This cut shows what is known to miners as a "pinchout vein," pinching out at a-b-c and being picked up again with a diamond drill e-f and g.

These veins fooled a good many miners at one time until their nature was understood, and the diamond drill got into the field of mining. In locating an outcrop one never can tell whether he has hold of the head or the tail of the vein and the diamond drill is about all that can tell the story.



Mountain Top Vein.

This represents a mountain top vein although mountain tops are considered poor places to prospect. This seems to be the nature of veins around Goldfield, Nevada, and Death Valley, California, and for this reason I believe the big Nevada mine went so long undiscovered.

When you find an ore vein it may not look like gold, not a little bit, it may look like hornblende and be dark, grey or green, depending on the iron pyrites in it and may excite your suspicion by being heavy. Always sample anything

heavy for gold, copper or tin. It may lead up to discoveries of importance. Then, again, it might be light and excite your suspicion by its color. Dark veins or seams and especially if nearly black are apt to carry copper. In river prospecting, look for a vein filling where two different kinds of rock come together called diorite. It is a mixed rock. Also look for a rock called diabase. It is a volcanic rock. Also look for a rock called porphyry. This is also a mixed rock but unlike the others it contains crystals. These kinds of rock were all used by nature for vein fillings. A vein of pebbles mixed with iron pyrites called mundic is a good sign and will bear looking into.

Find where slate, shale or granite, also limestone are pierced by different kinds of rock or any kind of vein filling for that matter. Don't depend too much on the color. Where these fillings occur, butt into them and take a sample. Perhaps some one has blundered over them forty times and left a fortune by not testing them. Most of our rich mines had this experience. Don't depend too much on the color or weight if the rock is a stranger to you. Keep into the hills when looking for veins but not into the mountain tops, although they have a fascination to you. In looking for placer mines keep to the valleys where you would naturally look for float.

Now a word about this float. It is pieces of

ore that have become detached or broken off from vein or outcrop above in the higher mountains and through the action of frost, sun or rain and wind. It may be a chunk or it may be fine particles and may look (and is very apt to) like hornblende, or, it may be a blue pasty sort of stuff or black sand. Through the action of rain it may be spread out like a fan if the side of the hill is convex or rounding. If the hill is concave it will be found more bunched and in streaks. You can do this prospecting and attend to a line of traps, or while holding down a claim of land. Anyhow, whatever you do, follow up this vein of float until the vein or outcrop is found. The less the float is worn and the larger the pieces the nearer the vein you are.

When the float ceases, run a ditch at right angles to your supposed vein for it may have to be dug for. Then, again, it may stick out of the ground a few inches or many inches, or it may be soft and spongy ore and there may be a depression in the ground. But when you find it you will find it don't look like pure gold—not a little bit. It will look yellowish-red or brownish black and it may be softer or harder. This coloring is done by iron pyrites and miners call it iron hat, and as you get into the vein it will be harder—so hard in fact you will have to blast it.

Sample often, not only for gold but silver and copper, and if you sink a shaft, keep it plumb.

If you drift, use timbers for staying the roof and sides. Asbestos veins show white, sulphur shows dirty yellow, silver dirty white and limey. It will sometimes form a bluish paste when mixed with quicksilver. Gold is very malleable and will sink in quicksilver and nitric acid will not touch it. Small quantities of gold are called calores. Small pieces of float or ledges can be examined by pounding them fine and washing in a gold pan.

Look for signs of gold on gravelly river bars and where two rivers come together. Black sand in such a place is a good sign, also quartz pebbles. You cannot scratch these pebbles with a knife point. Also small pebbles of garnet and of chrone iron. They are black in color and about the size of strat. These are all good signs. If you find calores, sink a shaft to bed rock for there is the place where you will find it the richest. Now sample some of this stuff you find on top of the bed rock.

In the southwest plants sometimes will help to locate an outcrop or vein. A plant called Spanish bayonet likes quartz and granite soil. A plant called O-ko-te-ya grows on clay and slate veins. Cactus likes limestone soil where granite and different rock come together, is likely to be a vein, and if so it is big odds that it is a tin or gold quartz ore, which, as before stated, will be

yellow, red or brown, depending on the amount of iron in it, and take a sample of it. Bear in mind some of the best mines were traveled over hundreds of years by hunters, trappers and traders before they were discovered to be precious metal. The Cobalt Mines in northern Minnesota and southern Canada are a late case of this kind.

A list of tools will be handy to the young prospector and some of the old ones too for that matter, and they are not expensive. A gold pan or horn spoon you must have, also a light pick and shovel. I have found an ordinary pick with one pick cut off about three or four inches from the hub to be used for a hammer for pulverizing ore, to be all right, and have the hammer end slightly hardened when the blacksmith cuts the pick off. You will also want an old case knife to dig gravel out of crevices with, a bottle of quicksilver in a tin or wood case and some prussic acid packed the same way. Bear in mind this prussic acid is deadly poison. You must also have a good magnifying glass to carry in your vest pocket, also a small bottle of borax and a couple of chamois skins. A good gold pan is about thirteen inches in width at the top and ten at the bottom, two or two and a half inches deep and is best made of aluminum. Also take along a small horseshoe magnet for taking black sand out of your amalgam (gold and quicksilver mixed with black sand).

A very handy tool is the horn spoon. It can be carried in the pocket and the gold pan left at home, when prospecting for samples. It is made by cutting the belly out of a large dark ox horn, the darker the better. It will show up colors and it is very handy to take small samples with. Some carry a blowpipe outfit and the chemicals that go with it would make a small drug store, and the first upset you have, and I always have two or three, your chemicals will go glimmering and perhaps spoil a lot of good grub or blankets. But if you wish to take one along they can be bought from most any jewelry supply house for fifty or seventy-five cents, and with the flame of a common candle you can practice, taking a few grains of ore, put them on a piece of charcoal, blow the candle flame on it and perhaps melt a small button of gold or copper and tin and mixed metal. Your tests with a blowpipe cannot be carried far without a lot of dope and it belongs more to the laboratory than the field, and personally I don't like to bother with them.

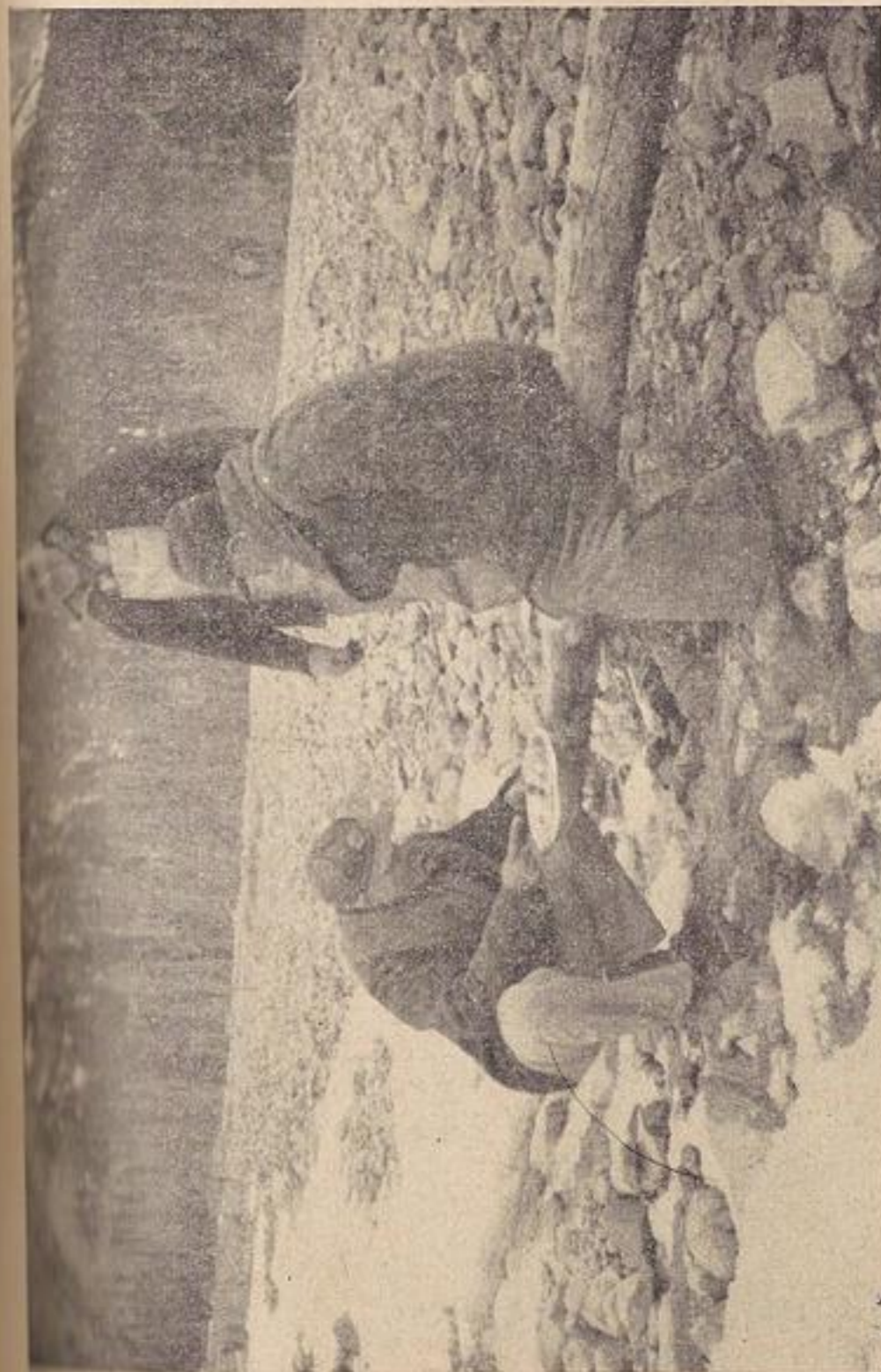
CHAPTER IX.

SAMPLING ORE.

As I have mentioned before, it is a good policy to take samples of any mineral that strikes you as being valuable, especially if it is heavy or even if it is light, and is a strange piece of rock. It is a good idea if there are any veins open in that country or district to take a look at the ore, they are taking out. This will give you a pointer of what the mineral is in that country or district and what to look for when prospecting, also the heft and color of the ore.

Now if your sample is hard, take the stub end of your pick and on a flat, hard stone, pulverize it as fine as possible, taking care to save the pieces that fly off. Your sample to be tested should be, say from one to five pounds, depending on whether you are using your horn spoon or your gold pan. Add water until you have a thin pulp or sludge. Put in an ounce of quicksilver, more or less according to the size of your sample. Also drop in a little prussic acid. Stir thoroughly an hour or two if you can stand it that long for your quicksilver must be thoroughly mixed in order to pick up your gold.

Now add more water and wash off the dirt.



Panning — Washing for Gold.

This washing process is hard to describe. You must get the water to whirling around in your pan, letting a little slop out occasionally until nothing but a little coarse stuff remains in the bottom of the pan or spoon. This is called amalgam. Pick out the coarse stuff and save it and if black sand is present, take it out with your magnet. It will stick to the magnet the same as your gold dust to the quicksilver. Now take the amalgam, place it in your chamois skin and twist it hard so your quicksilver will go through into a dish of water so you can save it. Put what is left on a shovel and heat it red hot. This burns out what quicksilver is left and leaves your gold or other mineral. This is called sponge gold.

During this heating process be careful and not inhale the fumes or smoke as they are poisonous. Stand on the up wind side. If you want to make it finer make a retort of clay, put in your amalgam or sponge gold and heat your clay retort red hot. After it cools, open it and you may have a gold button big enough to buy a grub stake if you have struck it lucky, then again you may not. Most of the old timers stop at the sponge stage and let the assay office finish it and I would suggest when taking it to be assayed, leave a sample at two or three assay offices for obvious reasons, and it is also good policy to send a sample to the nearest U. S. assay office.

It is good policy to test a vein for different minerals. To test for copper, pulverize a piece of your rock the same as for gold. Mix as much more salt with it and rub in some candle grease or fat. Then put your sample on a hot fire. If you have much copper in your ore the flame will show first blue, then greenish. It is best to make this test at night and to bake your ore a little before crushing it.

To test for silver, rub a piece of copper smartly through your ore sample after it is crushed. A piece of copper wire or an empty copper rifle shell will do. If silver is present it will turn your copper white. Another way is to heat a chunk of ore good and hot, then plunge it in cold water. If there is any silver metal in the sample it will come to the surface in the shape of a greyish scum.

To test for coal, take a chunk of the ore to be tested and seal it up in the bowl of a clay pipe with a daub of clay. Then heat red hot in the fire, letting the stem act as a vent and if you have coal it will appear in the shape of coke, when the pipe bowl is opened.

The Mexicans use a retort for retorting gold made out of a raw potato. They cut a hole in the potato, insert the amalgam, heat a shovel red hot, place it over the hole. Then set the shovel on the fire and heat it red hot. The quicksilver or mercury will go into the potato and can

be saved. This is not such a bad retort as a couple of Mexicans cleaned up a good chunk of money from the tailings of the Comstock mine before the owners got on to it that they were throwing away so much silver.

It takes 1863 degrees Far. to melt silver and about 2000 degrees to melt copper and 428 degrees only to melt tin, gold about 1983 degrees. So you will observe that with the exception of tin you must have a good hot fire and as iron melts at about 2912 degrees you need not spoil your shovel making these tests. You can test specimens from a gravel bar the same as for a vein. Some of our best placer mines were blundered over for years by hunters and trappers before they were discovered by prospectors, hence it is for the trapper and hunter this is intended.

It often happens that one wishes to get an average of his vein or outcrop. To do this, take a sample from four different spots on your vein or outcrop. Pulverize them as before stated and spread them on a floor or clean spot to an even thickness and mark it off into four squares. Now select one of these squares and repeat the operation with it. Go through this operation until you think you have a fair sample. Leave a sample at three assay offices and take the average value of the three tests. If you are selling it it is better to underrate your claim a little

than to overrate it for the prospective buyer will get suspicious the minute you begin to make excuses and you may have trouble in disposing of it. Set an honest valuation on your property as you see it and stick to it.

it is well to be posted, as sometimes men we think honest prove dishonest. As an old Hudson Bay man said to me once, they are all good fellows, but keep your eye on them, and I will add, sometimes both eyes, and the worst crooks are sometimes found in the highest places.

CHAPTER XI.

POOR MAN'S ORE MILL.

There is an ore mill that has been used in Mexico for hundreds of years, called the Arrastras, and with all the so-called modern improvements they can hold their own and better for good work. Their only fault is their lack of capacity. On the great Comstock vein in Nevada they continued their use long after they got their improved stamp mills, and in case a man of small means wishes to get some of the gold out of his mine for himself before selling, and has not the means to buy a lot of machinery, that perhaps would not be of much use to him anyhow, the Arrastras is all right. If you can get a little timber and a few hard, sharp stones they are cheap and handy. Of course it works best on free milling or soft ore and for clean work it is the best or as good as any.

It is made the same as an old-fashioned cider mill we used to grind our apples in. A circular pit about ten feet in diameter and from sixteen to eighteen inches deep is dug or built up of stone and clay or cement. Then the bottom of this pit is lined with good clay to about eight inches and pounded down hard. This pit is

lined with hard sharp stones to the depth of eight or ten inches, making provision in the center for a shaft to set upright with an arm on it set into the shaft about a foot above the sharp stones. To this arm are fastened one or two flat, hard stones weighing from five to eight hundred pounds and having the ends raised two or three inches and fastened to the arm with eyebolts or wire. A sweep is attached to the post or upright and mule or horse power can be used. The circular pit must be watertight with an outlet or plug on the side and level with the bottom of the stone paring, also one at the level of the clay bottom.

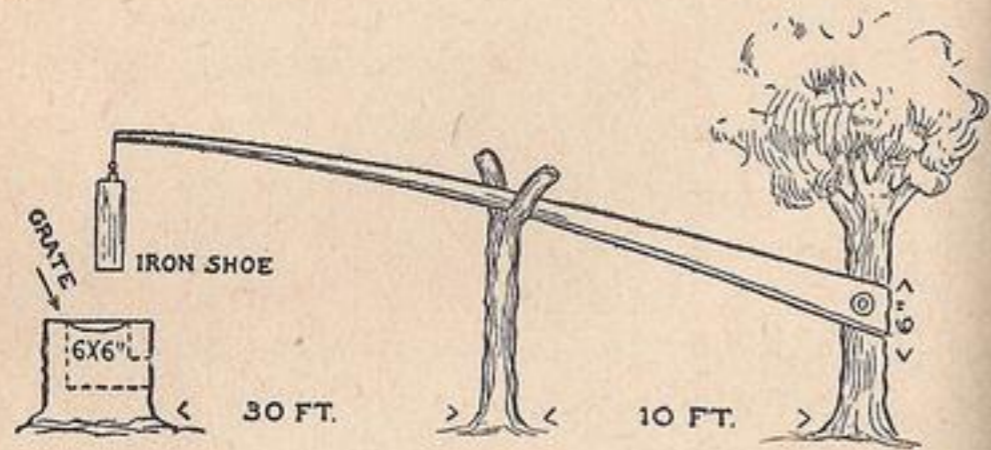
To use the mill, break the ore into pieces about the size of hickory nuts and charge the mill with about 500 pounds of ore for a ten foot mill. Add a little water from time to time, also a couple of teaspoons of quicksilver for each four or five tons of ore. Grind this charge to a slush about as thick as cream. Now scatter in a strong ounce of quicksilver for every ounce of gold as near as you can guess, and your gold pan sample shows. Grind two or three hours more, adding water and running slow until your slush is thin. Draw off the water from the plug at the top of the sharp stones, add another charge and repeat the operation, as it is not necessary to clean up oftener than every ten or fifteen days unless your ore is extremely rich

or you need the money. Ten or fifteen turns a minute is fast enough to run the mill. When you make your clean-up draw off the water, wash off and remove the sharp stones and renew dull ones with sharp ones when you put them back. It is always well while grinding to throw in a little wood ashes to kill any soapy substance in the ore. This mill will have to be tried to be appreciated. It is also good to test a vein with if your prospective buyer wants a working test. After your amalgam is taken from the pit it will have to have the quicksilver squeezed out and then be retorted by the clay or potato process, or a retort made for the purpose. It is not necessary to throw away your quicksilver, if it gets dull after being used. If it gets in this condition it can be renewed by washing in a weak solution of sulphuric acid with a little zinc added.

POOR MAN'S STAMP MILL.

As well as an ore mill one should have a stamp mill to break up his ore and here is one that will do the work well enough for a man of limited means, and breakages and repairs are not expensive. They cost nothing but a few bars of iron and a little rope and you can make it this way. Cut a log six feet long and eighteen or more inches in diameter and set it solid in the ground about two feet. Cut a hole six by six in

the end and take some strong wrought iron pieces a half inch thick, eight or nine inches long and three inches deep. Set these in the top of the 6x6 inch hole about one half inch apart. This is for the grate. Now fit a box around your grate so pieces of the ore will not fly out. Now rig up your stamp as shown in the cut.



Poor Man's Stamp Mill.

Procure a long springy sapling about four or six inches thru at the butt, make the butt flat and fasten it to the tree about five or six feet from the ground. Cut a post with a crotch on one end and set it in the ground about ten feet or so from the end. Cut another piece of timber about four feet long and eight inches through. Put an iron shoe on one end of this piece and an eyebolt in the other end and hang this on the end of your spring pole. This is your hammer and you now have a stamp mill that will do business if you have built it right.

Before closing this subject I would like to say a few words about the Klondike mines so called. These mines are, or were, a poor man's mines because they were placer diggings. The opinion is frequently expressed that there are no quartz mines there. Now I will venture the opinion that the gold found there is simply the float from immense outcrops and some day there will be discovered by somebody some almighty quartz veins and they will run north and south and not parallel with the Yukon River. They may not be more than six inches under the tundra and they may be two thousand feet, and some day some one will be prodding around with a diamond drill and find things that will put even the great Comstock load in the shade and surprise the world. My reasons for thinking this would occupy too much space here and would not be understood by many.

CHAPTER XII.

PROSPECTING FOR FUR.

The Land Cruiser and Prospector who spend many months each season in the woods and upon the plains are pretty well posted upon the best sections for game, fur, feathers and fish. Some of this class follow trapping to a certain extent while others do not. It is the latter class that give away much valuable information to the trapper.

Throughout the West and Northwest prospectors pay considerable attention to minerals as there are no doubt many times as many undiscovered mines as are known and being worked. The prospector for fur in these sections is a prospector for minerals as well. Some of the richest mines in America were discovered by prospectors looking up marten and other fur animal signs.

The successful trapper is the one who looks up his grounds—prospects—months in advance of the trapping season. While civilization ruined trapping in many parts of the United States and Canada in others it is about as good as when the Indians alone inhabited America—before the coming of the White Trapper.

It is true in many of the older states the

larger and more valuable fur bearers, such as beaver, otter, bear, marten, raccoon and fisher are gone, but in their stead the smaller fur bearers such as mink, muskrat, skunk, red and grey fox are still there—some having increased with civilization.

The impression among many trappers is that to secure furs in paying quantities they must get far away from civilization and into the forests of Alaska, Northern Canada or the Rocky Mountain sections of the West and Northwestern parts of the United States. With the exception of a small per cent. of professional trappers who catch marten, lynx, black, silver and cross foxes in the little known sections, the majority of the large catches are made by trappers in the swamps of the South and Southwest while in old settled sections like the New England states some fine catches are made each season. In parts of New York and Pennsylvania more fox, mink and skunk are caught than generally supposed.

Along the marshes of New Jersey, Delaware, Maryland and Virginia large quantities of muskrat are annually caught. Other good rat producing sections are Iowa, Minnesota, the Dakotas and the lake region of Canada.

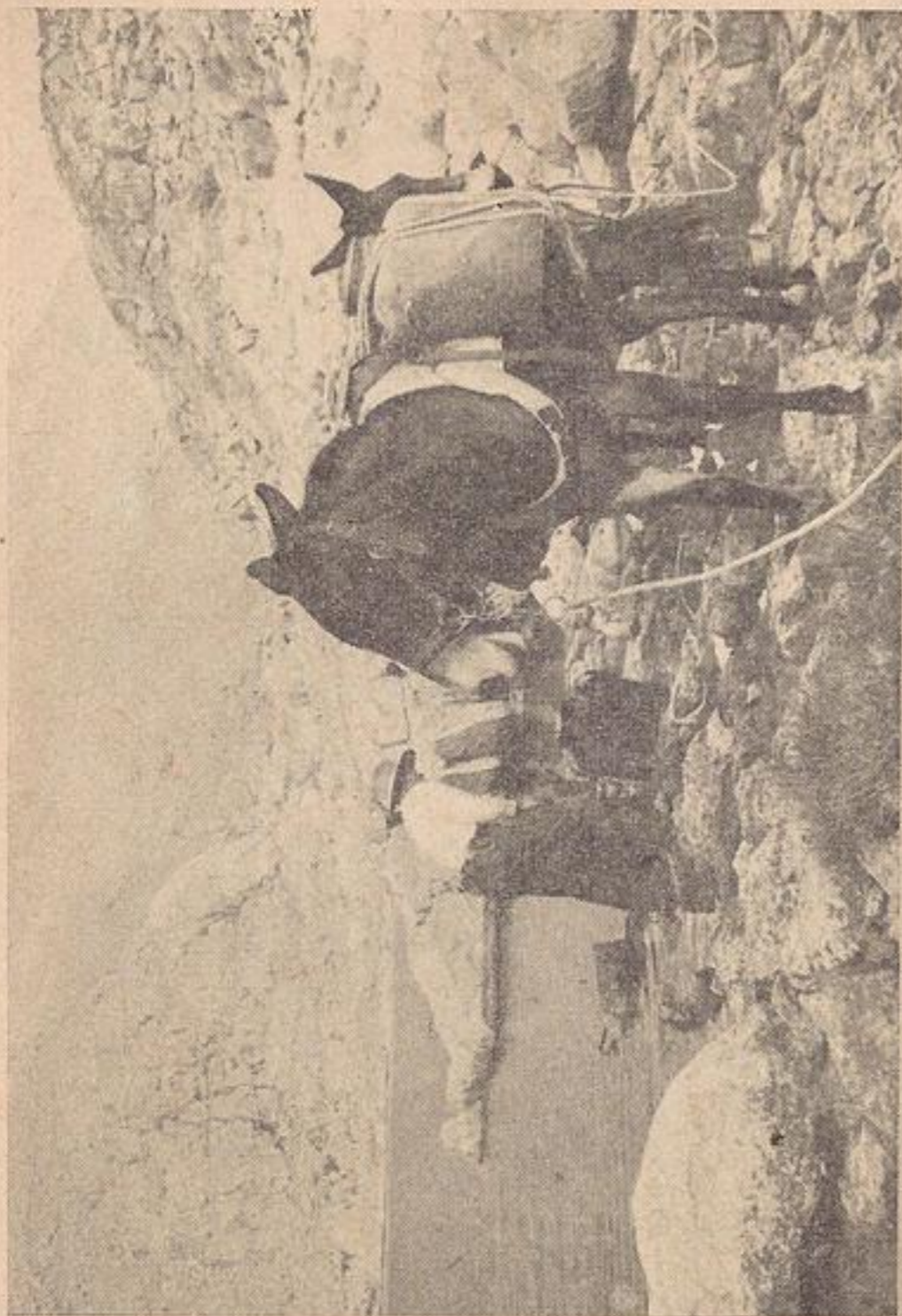
Mink and raccoon are perhaps most plentiful in the swamps of the South—Arkansas, Texas, Louisiana, Mississippi, Alabama, etc.—while

beaver and otter inhabit waters as secluded as possible from civilization. Bear are found in the mountainous sections of a great deal of the country, but their exact location each fall, in numbers, depends upon the mast. Marten and lynx are great rabbit devourers and are generally found where rabbits abound.

From this it will be seen that the "Prospector for Fur" should get busy weeks, if not months, in advance of the active trapping season. The professional trapper can tell by passing through a wooded section whether it is "rich in fur bearing" animals or not. Sign on logs of recent droppings, feathers where some animal has recently feasted, as well as many other signs are plain to the experienced. Along the streams a glance is sufficient to reveal whether beaver, otter, mink or muskrat are there.

The best time to prospect for beaver and otter signs is in the early spring before the leaves are out and vegetation helps shield slides of otter and the beaver lodges. If the prospecting is done in the spring the trapper has months to get ready for the next season's campaign. Another good time to prospect for water animals is early fall. Signs at that time will be more plentiful and unless the prospector is an experienced trapper will over estimate the amount of fur.

If beaver there will be cuttings in the water and on shore and probably a dam and houses



Prospectors Viewing Rocky Mountain Snowslides in Midsummer.

near; if otter their slides will be found but probably not until after considerable close observation; their dungs which is often largely composed of fish scales, is generally discovered near their slides; mink follow close to the water's edge and their tracks reveal their presence; muskrat either have dens in the bank or build small dome shaped houses of weeds, grass, etc.

If you want to trap bear, keep a lookout for logs torn apart. This is the work of bruin hunting ants and other insects. While bear signs may be very plentiful in September and October, by November they den up in the more Northern sections for the winter. Of course the time of their denning up depends upon the weather, but in most sections they travel but little after snow comes.

The trapping of wolves and coyotes has become quite an industry in many parts of the United States as there is a state bounty as well as ranchers' bounty in some states. In Michigan we believe the state pays \$25.00 and the county \$10.00, making \$35.00 bounty on a wolf scalp. Some of the western states pay a liberal bounty to which add the ranchers or stockmen bounty and the wolf catcher secures about the same as in Michigan. Wolves and coyotes are distributed in more or less numbers in nearly all states west of the Mississippi River.

The "prospecting" for a good wolf country

means a great deal to the "wolfers." If a good wolf country is located the "wolfers" generally wait until the pups are born and secure the bounty on their scalps as well as the old ones. Of course the bounty is not so much on pups.

Many methods are adopted by the "wolfers" in locating dens. Those who have long been at the business know the kind of country they breed in, which is in caves, large dens, etc., found in the roughest places as a rule. Dogs are sometimes used. At other times the hunter or trapper conceals himself and watches the surrounding country. They generally use a field glass. It is pretty certain that when an animal is seen it is either coming from a den or going to one. Pups are generally born the latter part of March or fore part of April.

The "Prospector for Fur" has almost all of North America as his field. While in some of the older states the larger fur bearers are gone, yet there are parts of nearly every state where there is more or less fur. To find the best sections in the thickly settled states requires "prospecting."

In the Far North—Northern Canada—there are more valuable fox than any other part of the continent, although some good specimens of both black and silver are caught in Southern Canada and occasionally in the northern part of the United States. The fur-producing area of

Canada that has been little "prospected" is still large—about half as large as the United States. In addition to the several kinds of fox there are marten, mink, lynx, fisher, wild cat, bear, wolverine, weasel, otter, beaver and rat. In the southern part there are coon and skunk. This is the settled district.

In that part of Canada say three hundred miles north of the United States there is probably not more people than there is in a couple of cities the size of Cleveland, Ohio, but the territory is as large or larger than all of the United States east of the Mississippi. It is so cold and summers so short that it can never be farmed to advantage and unless something unforeseen happens will be the home of fur-producing animals for ages. This territory today contains some Indian trappers and a few professional white and half-breed trappers.

The trapper who has always lived in the South had best not "jump" to far North at once for the change will be too great and the cold too severe. The same conditions apply to the Far Northern trapper who goes South. If the move is say from one to three thousand miles the climate will be entirely different.

The fur prospector as a rule will look over grounds but a few hundred miles off and to a great extent the methods used are the same as they have been accustomed to. If the trapper

in Northern Canada should try the swamps of the southern part of the United States he would encounter different trapping conditions and probably be attacked with fever. On the other hand, should the Southern trapper try his hand for a season in the Far North he would probably become discouraged at the deep snows and intense cold. During the winter months all traveling is done on snow shoes over snow from two to ten feet deep. All things considered, the trapper who traps in states whose climate he is accustomed to, will fare best.

There is no one section where all fur bearers, both land and water, are found in numbers, although in the Northwest, Oregon, Washington and British Columbia—nearly all are found in some sections of the states and province named.

Generally speaking the Southern and Southwestern States are the best for mink, coon and opossum. These states also furnish a good many otter and considerable quantities of beaver. Such states as Kentucky, Tennessee, Missouri, West Virginia and Virginia are good opossum producing ones. They also furnish considerable quantities of coon, mink and skunk. The states from New York and Pennsylvania west to Kansas and Nebraska which include Ohio, Indiana, Illinois, Missouri, Iowa, Minnesota, Wisconsin and Michigan are good skunk states. All the Rocky Mountain States contain more or less

bear, mountain lion, foxes and wolves and the Northern States are the home of marten in fairly good numbers. White weasel are found in all Northern States as well as throughout Canada. Mink are pretty generally distributed over all of North America; marten and fisher in the high wooded and sparsely settled regions.

Those who expect to make a paying business at trapping must prospect—whether they expect to locate in the Far North and trap fox and marten or the plains for rat, mink and skunk or in the Southern swamps for coon and mink.

There are sections where fur-bearing animals are found in greater numbers than generally supposed, but it is not the purpose of this book to locate them, that is for you to investigate—prospect. As a hint the following is given: Successful trappers as a rule do not give away the location of their trapping grounds. The looking up of trapping grounds in advance of the active season is really one of the most important things for the trapper. Before grounds are located nothing can be done towards active preparation for the season. When the grounds are located there is plenty to do such as building cabins and constructing deadfalls, if you expect to make a good catch. Supplies must also be gotten before the active season begins.

If trapping in a settled section, look up your “sets” and have traps ready. Also make ar-

rangements for lodging if you wish. Some trappers, however, prefer to keep the fact that they are trapping in any place as quiet as possible which is not a bad idea.

CHAPTER XIII.

PROSPECTING FOR PEARLS.

Pearls are brilliant, lustrous formations, consisting largely of carbonate of lime interstratified with animal membrane, found in the shells of certain mollusks. They are believed to originate by the entrance into the shell of some outside particle, such as a grain of sand, an egg of the mollusk itself, or perhaps some parasite which irritates the mantle or outer covering of the animal until it produces a secretion which in time forms the pearl. Again, it is also said that an excess of carbonate of lime in the water may cause a pearl to develop.

However, accepting the theory that a grain of sand is the more common cause, it is easy to understand how this foreign particle, of which the animal is unable to rid itself, becomes covered with a pearly substance, constantly growing thicker and larger all the time and taking on a variety of shapes and forms. It may be round, oval, flattened, mallet-shaped or very irregular. Again it may be that the mollusk in its efforts to get rid of this irritation caused by the offending particle revolves it constantly, thus making the different shapes and forms.

Whatever the cause or however formed they may be found in almost any of the mollusks, although they are confined mostly to certain groups, of which the Union or fresh water clam is the most common and is found in the fresh water lakes and rivers and streams of the United States; the color and lustre of the pearl corresponding with the inner part of the shell nearest which it lies. The West Indian pinch conch shell produces beautiful rose-colored pearls, while those of the common oysters and clam are a dead white or dark purple, as to how near they are to that part of the mantle which secretes the white or the dark material for the shell.

The mantle is the thin delicate membrane which covers the soft internal part of the animal, and it is from the surface of this, especially the outer edges, that the material is produced which forms the inner layers of the shell.

Whatever may be the method of formation, pearls can only be formed at the expense of the shell, as everything necessary to their production is drawn from the same supply as that for the shell. Therefore, their presence can usually be discovered by the appearance of the outside of the shell.

Natural, perfect looking shells very seldom contain pearls, while the humped, ill-shaped, rough ones often contain beautiful pearls. In gathering shells only the fullgrown, old, dis-

torted ones should be taken, as these are the ones wherein the pearls will be found, and by collecting only this kind the pearl fisheries will be preserved. This fact should be remembered, as the Government has had to step in and prohibit the taking of clams for pearls for a period of two years or more in many places. Then, too, the pearl bearing mollusks are becoming quite rare in the Eastern states on account of the contamination of the water by the mills and manufactories, as animal life cannot long exist in impure waters, but gradually dies or seeks pure water.

The shells should always be opened as soon as they are taken from the water, because if allowed to open by decaying the pearls become discolored. They should never be opened by boiling as the heat ruins the lustre and brilliancy of the pearl.

Many pearl hunters may open thousands of shells without finding anything of much value, and perhaps a whole season may be spent with no better result - only finding a few small ones or slugs which bring small reward for the time spent. While, perhaps, a farmer boy may happen along within the hour, kick out a single shell, open it and out drops a pearl of great value. So it is with this expectancy of finding something valuable in the next one that keeps them eternally at it. But not one in a hundred may be of good shape and quality, as the worth

of a pearl depends upon its color, lustre and form.

Many large and valuable pearls have been found in different sections. Among the most noted was one found in 1857 near Paterson, N. J., weighing 93 grains which was known as the "Queen Pearl." It was sold to the Empress Eugenie of France for \$2,500, and this same pearl is now worth \$10,000.

As late as this last summer pearls have been found in the Mississippi Valley, one weighing 165 grains, valued at from \$5,000 to \$6,000 and which would have been worth several times this amount had it been a perfect gem. Another beautiful, round, clear pearl sold for \$2,250. Others at \$500, \$700, \$900 and \$1,000. And numbers have been taken from the rivers and streams of Iowa which have sold for \$50, \$100 and \$200, while great quantities of smaller ones ranging in price from \$2.00 to \$25.00 have been gathered and sold. A pearl of 12 grains which is perfect in beauty, color and shape may be worth \$200, but with very slight defects its value may be reduced to one-tenth that sum.

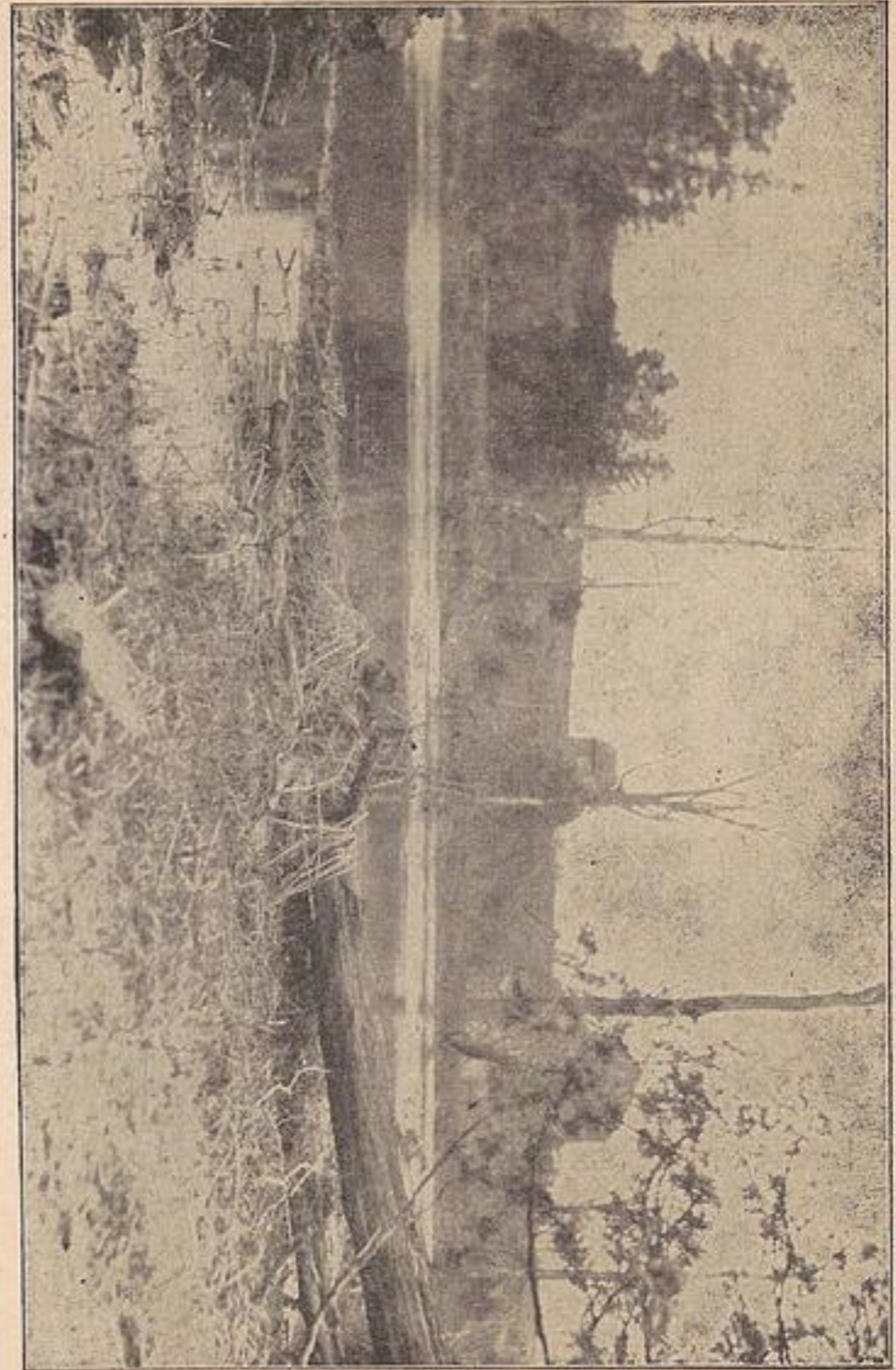
These pearl formations are not always symmetrical, in fact the number of perfect ones found is rare compared with the great number found. Some are perfectly round and smooth, some are flattened on one side and are called "button pearls", others are flattened on one side

with a somewhat irregular surface and are called "baroques" and "biscuits" and the slugs, the most common form of all. Among these there are many odd, almost grotesque shapes, some seeming to resemble human and animal heads, wings, feather-like forms, horns and a rounded variety with raised, pitted markings are numerous. But whatever the form may be, they have very little value unless they are lustrous and beautifully pearly.

In colors they present a series of shades from the dead, opaque white, which are the least valued pearls, through the many tints of pink, salmon, yellow, the different shades of purples on to a bright red, which resembles a drop of molten copper; there are also light and dark green, light and dark blue, rose color and in fact all the colors of the rainbow, all more or less beautifully transparent and iridescent. But in color as well as form they must be brilliant, lustrous and pearly, with a perfectly smooth skin, free from pimples, knots, pits and protuberances, as these several defects all lessen the value.

The pearl is the only precious gem found where no labor, work or skilled artisan is employed to perfect its natural beauty which it has when it comes direct from the clam. However, there may be a dull opaque and apparently worthless one found, when, by peeling away the outer layer a very beautiful pearl may be pro-

A Pearl Stream.



duced. Again its imperfections may extend all through and the work of peeling makes no improvement.

Kentucky, Tennessee, Texas, Wisconsin, Ohio and Iowa are the leading pearl producing states and many valuable pearls are taken from their lakes, rivers and streams of the finest grades and highest values, while the White and Black river sections of Arkansas produce many beautiful ones. In fact, in every state in the Union they are found in more or less abundance. In an early day the Miami Valley of Ohio was a great pearl producing section, until the clams became almost exterminated by the ceaseless hunt and destruction of the clam beds. A score or more of American heiresses are today wearing "ropes of pearls" representing values of a hundred thousand dollars and up, while all the nobility of Europe prize them as the highest valued jewels worn by them and fortunes are represented around the necks of many a Countess or Princess. All taken from some little clam and by some man's hard toil in the waters searching for these gems.

Many of the poorer pearls find a market in Germany, the finest and most valuable in the United States and France principally.

The most noted marine pearl fishery on the American continent is lower California, the pearl oysters preferring sheltered bays or har-

bors where fresh water empties in, and in these places some of the finest pearls have been found. At these fisheries the season lasts from June to December, and great quantities are taken by divers who go out in small boats diving for the shells, bringing up a basketful and often a single shell has been opened containing one hundred pearls, but so very small that they were of little or no value.

The true pearl oyster of the Pacific and Indian ocean is one of the most common pearl bearers, and has always produced the bulk of commercial pearls, while the large thick shell produces the mother-of-pearl used for numerous ornamental purposes.

The history of the American pearl dates from the day Columbus landed in the New World, when he found the Indian women with many strings of them around their necks and history tells us that he took great quantities back with him, secured by exchanging some gaudy, highly painted plate or similar trifling article.

Again, the great shell mounds found in Florida which Mr. Clarence A. Vandiveer of Miamisburg, O., mentions in his article entitled, "On Indian River" in last month's H-T-T, were not pearl producing shells and for what purpose such great quantities were gathered remains yet unexplained, unless it was that the meat was used as an article of food, as re-

searches have been made in these mounds by prominent lapidaries, but no trace of pearl bearing shells have been found.

Balboa and De Soto found them in the hands of the natives in large quantities and Sir Walter Raleigh collected from the natives in Virginia several thousand, choosing only the best among them. But all of these found among the natives at that early time which were strung were mostly spoiled in brilliancy and lustre, as their crude way of burning a hole through them with a hot copper wire ruined their pearly color, while others cooked, baked and steamed by them lost their beauty and splendor as well.

CHAPTER XIV.

PROSPECTING FOR BEES.

In this article it is the intention of the writer to explain the manner in which the sport of hunting the wild bee is pursued, and I wish to explain it in such a way that the amateur may understand. If I am able to give some old bee hunters a pointer, my object in writing this will have been attained.

In hunting the wild honey bees as I hunt them, the following articles are necessary: A box 8 inches long, 3 inches wide and $2\frac{1}{2}$ inches deep, with a cover fitting loosely and down over the box one-half inch. Be sure your cover fits so as to exclude the light, but not tight enough to stick. In the center of the cover, cut a $1\frac{1}{2}$ inch hole and in this fit a circular piece of glass and wax it tight. Take a piece of comb—that which has been used as brood comb—and fit it nicely in your box. The reason I use brood comb is because it is heavier and tougher and the bees cannot break it so easily as they would a lighter comb.

Your box is now complete. Next you will need bait. Do not use clear honey, but dilute the honey by using two parts of cold tea to one

part pure honey. Tea gives the bait a flavor very much liked by bees, for they will leave pure honey to take it. I also used a good scent which I think is of great value, especially if I have to drop a line by reason of a sudden storm or night coming on too soon.

We will suppose the season is early fall, and the flowers have become so scarce that Mr. Bee must do considerable hunting. Now select your locality, if possible in some opening in the woods. At this time of the year, look for bees on catnip, golden rod or fire weed. Having found them, select your bee; if Italian, take one that is fully developed, that has two or three distinct yellow bands. This indicates that he is an old worker, and will load heavy. Now be careful in the way you go about getting this bee. Take the box in one hand and the cover in the other hand; slip the box under the bee and carefully move the cover over him. Bring box and cover together so as to brush the bee into the box. If this operation is a success, the bee will appear on the glass in an endeavor to escape. Now darken the glass with the palm of your hand and in the meantime find a stump or some other elevation three, four or five feet from the ground and set the box on it. Now cautiously move the hand that covers the glass and if the bee has settled, proceed to lift the cover off the box. Be careful not to jar the box and move

the cover away from it so that the incoming light will represent the passing of a cloud before the sun.

Now get back a rod or two from the box and sit down and watch your box. The bee will come out, examine the box and its surroundings, and will then go back in again, this time to fill with all he can carry. Now notice the direction in which the bee circles, as that will indicate the direction the line will take when you get them going. Keep still and wait until the bee has been gone ten minutes and you will see him coming again, evidently very much excited over his find. Notice the wide circles of his flight; they are for a purpose as you will soon see, for there is another bee with him. They fill and go in perhaps a like direction for it will take about one or two hours for them to get down to business. By that time bees will be at the box by the dozen and will leave the box without a circle, and one can see them for twenty rods or more. Now you can stand beside the box, for they are too busy to fear you. See that the box has plenty of bait and if near the woods take the line and examine it closely. If you don't find them, put cover on box with as many bees in it as possible, and move so as to have both lines meet. This will put them on an acre of ground. When you move and uncover box, set up high on stump or pole,

but don't keep box covered more than three minutes.

Here are some things you must consider in hunting bees: The time of the year, the amount of flowers in bloom, and the lay of the land, and the kind of bees, Italian or black. Remember that the old saying "straight as a bee line" is not always true, as I lined one swarm of bees for $1\frac{1}{2}$ miles which formed almost a perfect square, and I found the bees not over 30 rods from where I started.

When bees are heavily loaded, they will seek the protection of heavy timber and of ravines. In this way they do not have to travel against strong winds. Bees prefer to locate near water. Their color indicates the kind of timber they are in. In pine, white wood, chestnut you will find light colored bees, and in oak, beech, maple, the bees will be dark if they have been there for two or three months. One must know their nature to successfully hunt them.

Bees can be hived from their watering places. This can be most successfully done in the months of July, August and September or while they are raising brood. When there are young bees, a few are at work carrying water to the brood. Dry summers or when there is but little water is the best time for this method of bee hunting.

Hunters, trappers, guides and others who are in the forests during the early spring months,

when the snow is still on, search the snow carefully under all likely looking trees. The time for this is the first warm days as after venturing out they often get cold and drop. This method, of course, is only good in the north where the snow gets deep.

Honey and beeswax are cash articles and the prospector, land cruiser, trapper, hunter, etc., may be able to make a few dollars by "prospect-ing" for bees during idle moments. A little honey and beeswax in camp comes in useful.

CHAPTER XV.

RATIONS AND CAMP COOKING.

This book would be incomplete if some account was not taken of rations, camp equipage, guns, tents, bedding, etc. One cannot do better than to follow the U. S. Army ration as Uncle Sam is very practical and liberal. He issues the biggest and best rations to his boys of any government on earth.

Here is his ration in ounces for one man for one day. Flour 18 oz., corn meal 20 oz., crackers 16 oz., rice 2 oz., hominy 2 oz., peas or beans $2\frac{1}{2}$ oz., salt $\frac{3}{4}$ oz., coffee roasted $1\frac{1}{2}$ oz., tea $\frac{1}{4}$ oz., sugar $2\frac{1}{2}$ oz., bacon 12 oz., pork 12 oz., fresh beef 20 oz., salt beef 22 oz., soft bread 18 oz., coffee green 2 oz. This makes a ration of about $2\frac{6}{10}$ lb. per day per man.

Of course only one bread ration or one meat ration is issued at one time. If you have a fresh meat ration you are not issued any salt beef or pork ration. If you have a soft bread ration you are issued no flour or cracker ration, and if peas or beans, no hominy ration, and if corn meal no flour ration.

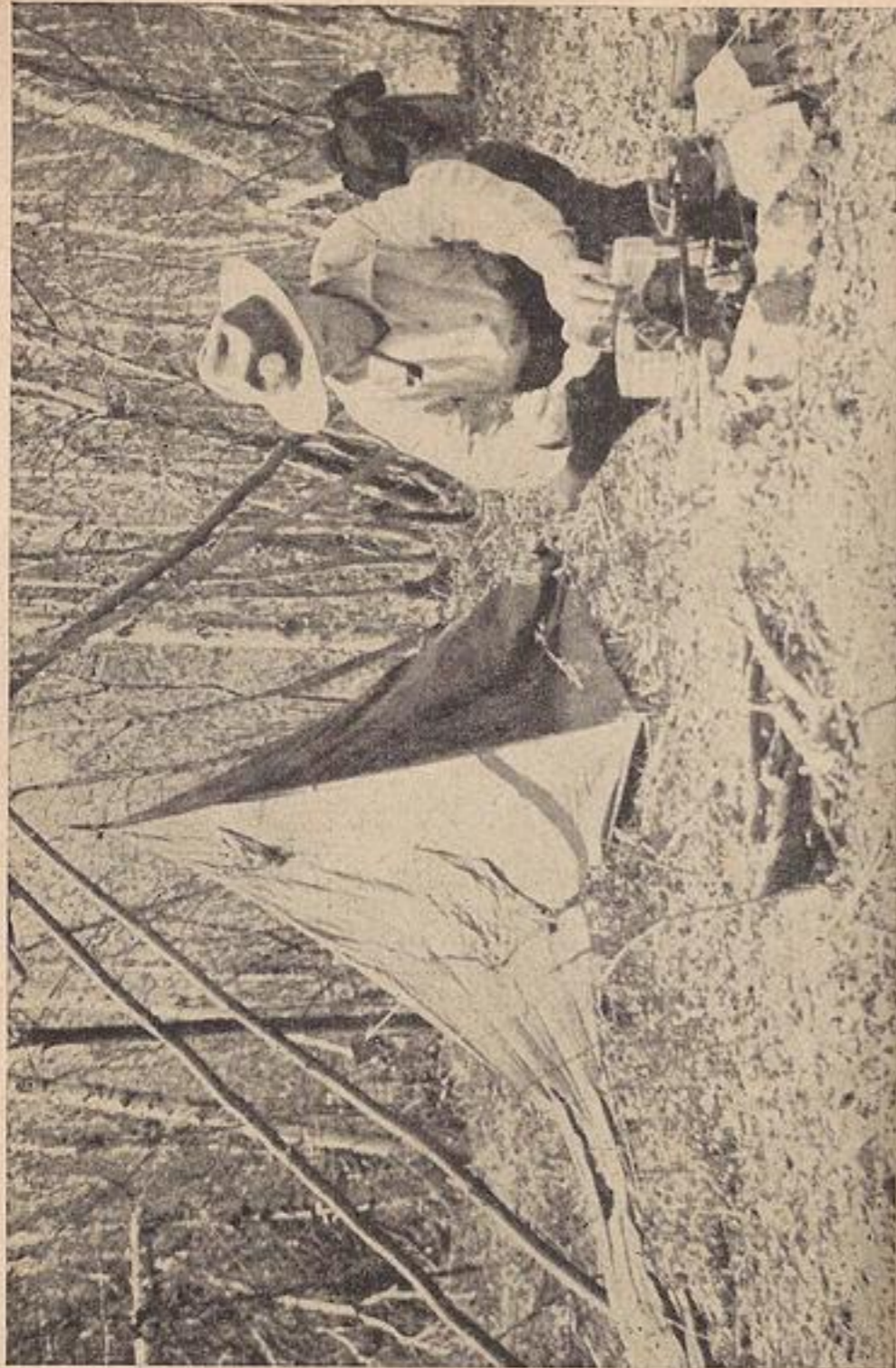
Now for one month for one cruising or prospecting this would be: Flour 34 lb., corn meal

37 lb., crackers 30 lb., rice $3\frac{2}{3}$ lb., hominy $3\frac{3}{4}$ lb., peas or beans $4\frac{3}{4}$ lb., salt $1\frac{1}{2}$ lb., coffee roasted 3 lb., tea $\frac{1}{2}$ lb., sugar $4\frac{3}{4}$ lb., bacon $22\frac{1}{2}$ lb., salt pork $22\frac{1}{2}$ lb., fresh beef $37\frac{1}{2}$ lb., salt beef $41\frac{1}{2}$ lb., soft bread 34 lb. As before one bread or meat ration etc., at one issue.

A ration that I have found to be good for my use and have used it on a good many trips is for one week and one man. Bacon $4\frac{1}{2}$ lb., corn or flour $5\frac{1}{2}$ lb., potatoes $\frac{1}{2}$ pk., ($7\frac{1}{2}$ lb.), onions 1 lb., beans $1\frac{1}{2}$ lb., coffee $1\frac{1}{2}$ lb., tea $\frac{1}{4}$ lb., syrup in tin $1\frac{3}{4}$ lb., salt $\frac{1}{8}$ lb., pepper $\frac{1}{8}$ lb., tobacco 5 oz., candles $\frac{1}{4}$ lb., matches in two different tins $\frac{1}{4}$ lb., vinegar one bottle $\frac{1}{4}$ lb., crackers $\frac{1}{4}$ lb., soap $\frac{1}{2}$ lb., cake $\frac{1}{8}$ lb., baking powder $\frac{1}{2}$ can, $\frac{1}{2}$ lb., dried apples 1 lb.

This ration is for a week for a man and is about the U. S. ration. Of course you can add to or take from it, always keeping near the government ration of $2\frac{6}{10}$ lb. per day per man. The pack can be lightened by carrying evaporated potatoes and apples. This ration assumes you are going into a country where fish and game cannot be depended on or you have not the time to get it.

This ration will make a variety of dishes and for one month in this time of special interests and trust which, let us hope, will soon end through a revision of the tariff, will cost you about \$5.75. So if you are thinking of taking a



Tent-Shelter Hastily Erected.

claim of land, if you go on it in the spring, you can live until you get a crop of garden truck for about eighteen or twenty dollars. Of course if you can get fish and game your meat ration can be cut down and all the fat pork or bacon you will need is for cooking, and every pound of game you get will be worth twelve or fifteen cents per pound to you as your pork or bacon costs about that.

Lieutenant Whelan of the U. S. army, an old time mountain hunter, for the past ten years or more carries this ration for a month's trip: Tea 8 oz., salt 1 lb., sugar 4 lb., oat or corn meal 10 lb., prunes or apples dried 5 lb., rice 2 lb., sweet chocolate 2 lb., one can of matches 1 lb., crystalose 2 oz.

How in the name of common sense the Lieutenant gets along on this ration I don't understand, although he figures on plenty of game and fish which would have to be 47 lbs., as the ration stands now it is that much shy of the government ration and I don't understand why so much sugar and chocolate. I believe I would substitute six pounds of good bacon to cook with as it would give me $3 \frac{1}{6}$ oz. per day. While I believe the Lieutenant to be a truthful man, I would not advise any who read this article to try this ration for more than twelve days or two weeks.

It is not safe to depend on game or fish to

much for I know of a party who had to knock over a range steer for something to eat, and came near getting into the penitentiary at Deer Lodge, Mont., just for not taking enough grub along. In days gone by if a man got short of grub he could kill a steer for grub only, so long as he hung the hide up on a tree or bush. This was the unwritten law, but it is now obsolete, as the cattle men have got so hungry after money that eight or ten dollars is of more value than a man's life.

I have dwelt some time on this grub question as it is very important, and I would say in passing to carry your matches in two tins, as if you carry them all in one box they will surely get wet the same as they do with me. Keep your candles where the woods or field mice won't get them. In hanging up meat use an iron wire instead of a string.

A word here is not out of place in regard to cooking in the camp or on the trail. A lot of good material can be spoilt in cooking or good wholesome dishes can be made from little. The best cook I can call to mind is a lumber jack cook. A good one can come the nearest to making something out of nothing as any one can. The usual feed on the trail is flapjacks and bacon.

Personally I like good light flapjacks with good bacon gravy, not sinker flapjacks, but good

light hot ones and not every one can make them. Good flapjacks are made thus, for two hungry men. Take a shy quart of flour, two teaspoons baking powder, one half teaspoon of salt, and one heaped of sugar. Mix to a drop batter and fry in a moderate hot frying pan, and when bubbles begin to show on top of the flapjack, turn it and cook the other side.

Now a word about a fire. If you are in a timbered country, take two smallish green logs, hew them flat on one side and lay them about five inches apart (sometimes stones will do for this), and build your fire between these green logs. Let it burn down to coals and if you have to replenish it use dry twigs. Don't try to cook on a green smokey fire unless you are actually obliged to.

To make frying pan bread, proceed the same way only make your dough stiffer. Make your loaf flat and have your fire built against a log or stone. Set your wood on end and have it split and dry. Set your pan of bread on edge as near as you can comfortably and as near the fire as you can and not burn it. You must watch it and turn your pan once in a while so it will bake even. Also turn your loaf bottom up so it will bake on both sides, and if you have patience and handle things right you will have a pretty good loaf of bread.

I usually carry corn meal and make a kind of

on your pail shuts in all the juices and vitality. Some of you people that are spitting blood in the city, get out and try this. It's all different in the woods. You can use for meat in this stew, partridge, rabbit, chicken, venison, beef or pork. It will come out of the bean hole thoroughly cooked and the strength and vitality right in it. If you are away some time from camp and it gets cold, add a little water and warm it up.

A fish chowder is made this way. Take your kettle and put a couple of slices of pork or bacon in the bottom, then a layer of sliced onions, then a layer of sliced potatoes, then one of fish, cut in pieces, and repeat until your kettle is full and on top put a layer of crackers or old split biscuit or bread. Fill this with water and season well with pepper and salt and bring to a boil and to the bean hole with it the same as for beans. In the morning you will have a fish chowder that if Teddy R. could taste it, he would say "de-lighted." This is the only way to cook and have a hot supper or breakfast with little trouble and the trapper or cruiser will find it all right.

Another good way to cook fish is to put some salt and water in your kettle and drop in a little vinegar and bring it to a boil. Have your fish ready, if they are not too big, and the ones I catch seldom are, and I would say in passing that some of these big fish and big catches are mostly jawbone catches. I usually scale and

remove the inwards and wash clean, leaving the heads on, unless they are bullheads. Drop them into the hot water, first taking it off the fire. After your fish are in, set it back on the fire and just let it simmer, not boil, for about twenty minutes. If your water boils your fish will all go to pieces in no time. Oatmeal is fine cooked in a bean hole. I give these methods of cooking because I don't like 'too much fry pan around camp for I have so much of it and it gets old in time.

There are some plants and weeds that make fine greens. For instance, dandelions and the branches and tips of nettles, but I would not advise monkeying too much with herbs or toadstool mushrooms. If you get poisoned, bring on vomiting by drinking warm water and mustard, and sticking your finger down your throat and keep quiet and stay in camp and eat light food, in the shape of gruel made of flour and water. If it is very serious, better send for a doctor and his pump.

CHAPTER XVI.

CAMP KITS.

A good many people differ on what constitutes a good light camp kit for a cruiser, prospector, hunter or trapper. I can give my own which has done me good service for quite a while. My cooking outfit is very elaborate. It consists of a two quart tobacco pail with the handles or bail riveted on and a tight cover, a one quart pail that fits into this with bail riveted on and also a tight cover, two tin plates about eight inches in diameter, also a tin cup and a case knife, a fork and tablespoon. The whole thing cost me about 25c. One of the plates I use for a frying pan over a bed of hot ashes and coals, to fry meat and fish in, not burning them on, mind you.

All this cooking jewelry goes into a flour sack with three or four shot sacks that contain my sugar, tea, coffee and salt and pepper mixed and another muslin sack with my slab of bacon or fat pork in it, also a shot sack for my beans and another larger one for my cornmeal or flour. All these sacks are marked in ink what they contain and they all go into the flour sack with cooking outfit. I also carry a canteen for good

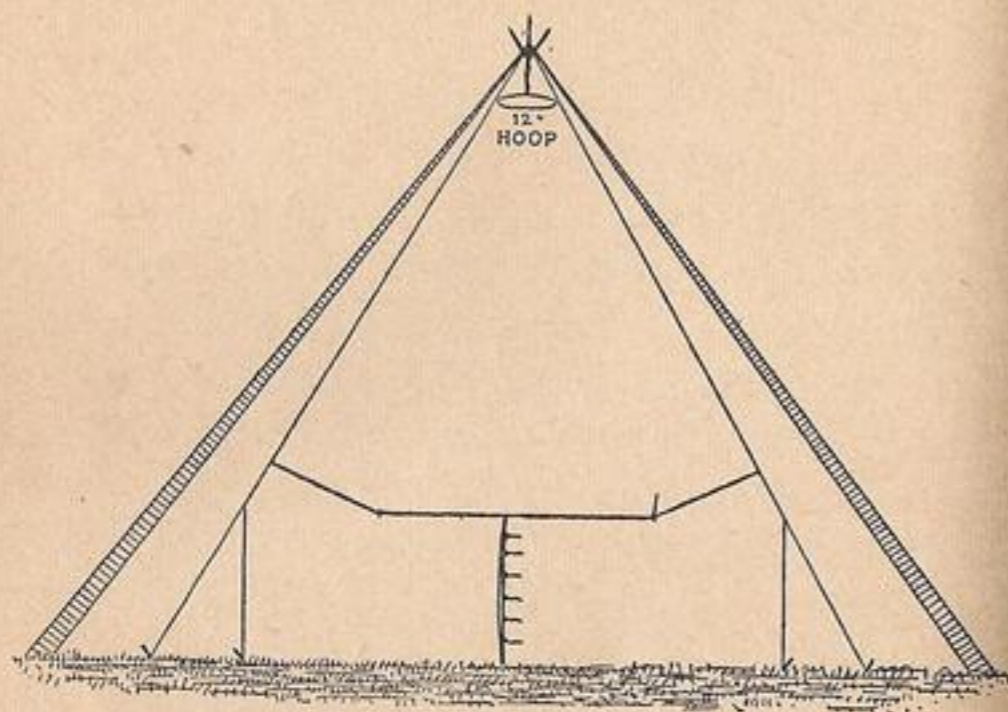
water and cold tea. I have found this a very handy thing in any country. Of course this outfit won't suit everybody but after such experimenting it fits all my requirements to a tee, and I think if any cruiser, prospector or trapper tries it he will be satisfied and it will be heavy enough when it comes night.

TENT AND BEDDING.

I have had a good deal of trouble with tents and bedding. I have tried A tents, wall tents, miners' tents, shelter tents and some more tents and they are all too heavy except the shelter cloth and they are utterly useless unless one wishes to chop down the whole woods and go into the wood yard business, in order to keep comfortable if the weather is chilly. All these open tents let in mosquitoes and these gentlemen are to be reckoned with at some seasons of the year. I have also used dog tents with rope ridge poles. They are not so bad but you can't stand up in them to get your duds on.

I finally had a tent made for me of sail drill. It is five and a half feet wide by six feet high and seven feet long and weighs, without stakes or poles nine pounds. I got four loops sewed to the ridge pole to stick the tent pole through and use a couple of crotched sticks for the end poles. In timbered country you can throw these sticks away when you break camp, but on the prairie

you must take them along. I got my tent some time ago and it cost me \$3.50. On a chilly night by taking a few large stones and putting them inside it is quite comfortable and just the right size for two men. It is waterproofed by sugar of lead and alum process and dyed kahki color

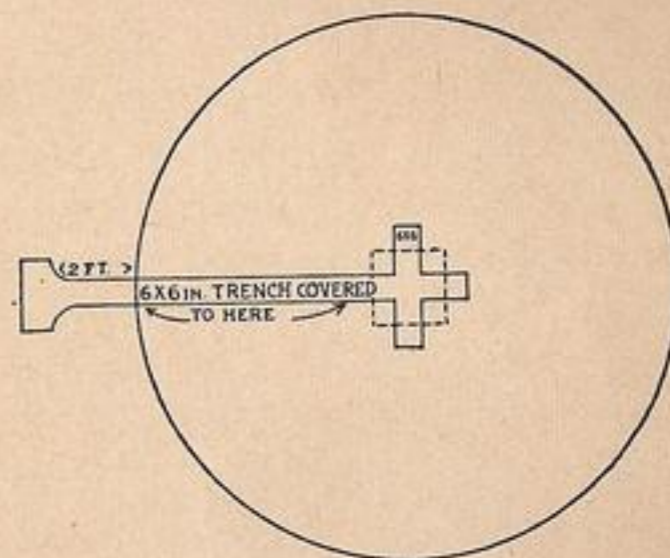


Tent and Poles.

with white oak bark. I do not like a white tent for every one to rubberneck and visit, and they show dirt.

A tent that I can recommend for hot or cold weather, wet or dry, is the teepee tent shown in the cut. They certainly are the clear thing for cold weather and should be made of twelve ounce double filling duck and an eight ounce sod cloth

and colored kahki with oak bark and water, fireproofed with sugar of lead and alum, four pounds sugar of lead, four pounds alum and three buckets rain water. Soak your tent in this after it is thoroughly dissolved. Soak it over night and hang on a fence to dry, this after you have colored it. The tent here shown is eight feet high, 10 feet in diameter and a two and a



Tent and Trench.

half foot wall. The peak of the tent is cut off and a hickory hoop sewed into it to which is fastened these cords that form the peak and the tent poles go in. It is a Sibley tent with the peak end of the tent cut off.

The tent poles are set tripod fashion. The plan shows a six inch trench in the tent and this must be covered up to near the cross and a flat stone laid on for your fire. If you have no

trench your smoke will not go out. Make the hoop twelve or fifteen inches in diameter and use dry wood and get some in your tent before a rain or storm. The tent is heavy and will take one man to pack it, but it is solid comfort in cold and stormy weather and you can make your bean hole in it. These tents can be procured from any large dealer I think, and 12 ounce double filling duck will cost you about \$10.00 or about \$5.00 apiece for you and your pard, and are first class for what they are intended.

For a permanent camp for extreme cold weather the dugout is the best. Select the south side of a dry knoll or hill and dig out a space 12x15x6½ feet. Cover the roof with poles, then lay on long grass and cover with two thicknesses of sod. Build up the front with sod or logs and pack in a door and glass sash if you can get them. These dugouts are much warmer and more comfortable than a log house, and you can stand any weather in them that ever blew. Build a fireplace in the back end of stone and clay and a chimney of sticks and clay and use a little sand in your clay. Don't make your chimney too big, 5 inches x 10 or 6x15 is plenty large. Use dry wood and you will have no smoke and use a large green back log.

Bedding is another thing I have had trouble with until I found something that suited me. I now use a five pound all wool army blanket.

They can be procured from the dealers in campers' and cruisers' goods for about \$6.50 or \$7.00 per pair, if you get a good one. In buying a blanket, look out that the weight is made up in thickness and not in length and breadth and make them guarantee all wool or no sale. Take your magnifying glass and examine it for cotton threads. There is lots of humbug in blankets. I also use a piece of 10 ounce canvas, water-proofed, the same size as the blanket or a little larger. With the blanket and canvas over you, you can stand pretty cold weather.

I freeze out oftener from too little cover under me. I use a couple of cheap 90c cotton blankets sewed together as for a common bed tick. This I fill with dry grass or leaves, putting a bed of small limbs under for bed springs, laid smooth and even as I believe in "smoothing" it instead of "roughing" it in camp, or anywhere else for that matter. When you break camp it can be emptied out and rolled up for the pack sack. Also don't forget a flour sack for a pillow. In a permanent camp your tick can be stood away during the day.

Perhaps a few words will not be amiss in regard to clothing. For summer most any old thing will do, but for winter this is not the case. The best thing I have ever found is an all wool 36 or 40 ounce four mackinaw. It is warm, light and comfortable and with a knit jacket and vest

and good wool overshirt and undershirt, one can stand any weather in the United States and I never go out of Uncle Sam's dominions. A good pair of pants of the same stuff as your mackinaw coat and a pair of wool drawers under and a pair of light overalls will fix any one all right. If you are on a long tramp a change of underwear is desirable, although I have made many a long cruise without, washing the ones I wore on warm days.

Footwear is another important thing with a cruiser or prospector. For summer a good pair of oil tan single sole calfskin shoes pegged with large eyelet holes for lacing and about the same height of leg as a common shoe suits me first rate, and made to order they are easy on the feet. A pair of canvas leggings are all right but I don't like the weight on my legs so I wear my pants inside my socks.

In winter you will find a pair of extra heavy gold seal rubbers with realed soles and about three pair of wool socks under them to be all right. The low cut rubbers are the ones I have reference to. The socks will curl down over the edges and keep the snow out. Put your pants inside your socks. If your rubbers get damp inside, heat some gravel, or, better still, some oats if you can get them, and fill the rubbers and they will be nice and dry in the morning. I don't like moccasins. If they get wet they are hard to

dry without burning and get stiff. They are like a canvas canoe when wet, sloppy and soggy, although around camp they are nice and I will say in passing I have no personal use for a sleeping bag, though some like them or pretend they do after they have been stuck for one. They bother in getting in and out quickly, and if they get wet they have got to be ripped apart to dry them. In summer they are too hot. The outfit given here will be found to be warm and light and that is all one wants.

CHAPTER XVII.

GUNS, AXES AND PACKSTRAPS.

There is a great difference of opinion in regard to rifles. Every one has his pet and one has to consider what kind of game he is going after. A barrel should be rifled with a twist that will spin a bullet just right. If it spins too fast it will keyhole or go sideways, and it will do this same thing if it spins too slow. I have never had a sunstroke or a brainstorm over these small bore high power and d—d high cost of ammunition guns. They may be and are all right for what they are intended for, that is for killing men with and will do for the army, but in my opinion there is no gun today for big game that can compete with the old Sharp's Reliable or Ballard 45-90-300 black powder gun.

They were the only meat getters and with the Springfield Needle gun did more to civilize and pacify the Indians than all the Peace Commission that ever came down the pike. Although the first issue of breech loaders made by the government I am free to say were a delusion and mistake, otherwise there would be a different story to tell of the Little Big Horn and Custer. They would not extricate an empty shell

and especially so if they were a little dirty or dusty. One had to get a gum weed or stick or take his pocket knife, if he had one, to get the empty shell out of the gun.

This was soon rectified and another good gun was the Spencer, but the load was a little light, but they had a firstclass reloading mechanism. If I was rich and could have a big game rifle made to order I would take a Needle gun and have a Marlin or Winchester breech put on it, to handle about eight shots. I know an army officer who had a Remington barrel put on a Springfield breech and it was a daisy. The old government barrel was too long for him.

In my opinion the best big game gun for the Rocky Mountains is the Marlin or Winchester 45-90-300, and for the timber the carbine size. I am not considering smokeless powder at all, for this reason: Shells that are kept too long in stock are apt to deteriorate and lose power, if kept in too high or too low a temperature and this accounts for the automatic balking sometimes. And besides it is tricky to handle. Even men who make a study of it blow themselves up on our battleships every once in a while.

As to the high speed small bore rifles the steel jacket bullet cuts the rifling out or spoils it in about 1000 or 1500 shots and that is too expensive shooting for me, as I do not trot in the Oily John class. The Automatics are all right

in their place, but the place burned down, and, speaking seriously, there is too much machinery about them for a practical hunter or trapper. A whole lot of these guns are made to sell more than anything else and the "dude tenderfeet" make a fad of them.

Understand, I am speaking of big game rifles and Mr. Grizzly bear is in that class, and in figuring on big game we must figure on the biggest and most dangerous we will have to meet. If any of the boys meet him and wish to cultivate an intimate acquaintance or even to be on speaking terms and say "Howdy" I would advise that he have a good 45-90-300 and have the magazine full and one in the barrel.

I could never understand the condition of a man's mind when he is in a country where no big game exists, why he takes along on a cruise, trapping or hunting, some of the batteries I have seen. Guns of all kinds, revolvers of all descriptions made out of tin and pot metal castings, knives that would scare a wooden Indian to death, and that is all they are good for, ammunition from 4-11-44 up and loaded with powder of the Lord knows what kind. I wonder if they ever think that every pound of such trash they pack bars out so much grub or good traps. Still different people have different notions and I suppose mine looks as odd to others. I have found my outfit very light, practical and durable and

after experimenting some time and spending some money I have got what I want.

Some time ago I came to the conclusion that I wanted a light, strong take-down gun that I could put in a pack-sack out of the way when traveling or in town. One that I could kill either a deer or a rabbit with. I found in the gun store a Hopkins & Allen, single gun that suited, but the barrel was too long. I wrote to the H. & A. people and got a stubbs twist barrel, 28 inches long, modified choke, bored, 16 gauge take-down and automatic ejector. It weighs 6½ pounds and costs the whole sum of \$8.00.

This gun answers all my purpose to do all my killing with and as there are no more long shots on the prairie at buffalo and elk the largest thing I can find are chicks, coyotes and ducks and I never made a howling success shooting these with a rifle. In the timber 40 or 50 yards is all the distance you can see. My gun with a bullet cast from a mould I had the Ideal people make and backed up with 60 grains of good black powder, rather coarse in grain, so it will burn slow and give power the whole length of the barrel and not kick. It is dead medicine up to 70 or 100 yards and its smashing power is sometimes immense. You don't have to follow a deer all day after he is hit and with a small load of shot I have put many a rabbit and partridge in

my kettle and fry pan, when I wanted a change of meat.

I carry a sheath knife in a leather sheath of my own make. The knife was once a Wilson sticking knife with a five inch blade and four inch beechwood handle riveted on. I have carried it for about ten years and find it first-class to dress meat, cut bacon, or fish poles, dig bean holes and for a general all round tool it is O. K. and cost the whole amount of 60c ten years ago. The blade is pretty well worn and the handle has some brass wire wrapped around it, but it is an old friend of mine and we would not part company at any price or any of Mr. Marble's more aristocratic knives.

I carry an ax that with sheath and all weighs one and a fourth pounds and cost 70c about eight years ago. The ax is shaped the same as any ax and the handle is 13 inches long over all. There is a hole through the end and a rawhide string looped through to slip over my wrist so I won't lose it when cutting a hole through the ice or when using it around the water. I also carry a small whetstone for my knife and ax. Cartridge belts I don't use. If I want to shoot quick I want my shells loose in my pocket and if on a runaway and a single barrel gun I lay a few beside me in the crown of my old hat. If you don't get what you shoot at the first time,

the second shot is a quick snapshot and usually draws a blank.

Before closing the arms subject, I would say never fool with the ax or have any loads in your gun around camp, and I never pack a revolver or a bottle of whiskey and won't have any around my camp. Get this stamped on a piece of sheet brass and rivet it in your hat, a jug of whiskey and a fool revolver have no place in a camp or on the trail in any man's country. The whiskey belongs in the medicine chest with the rest of the drugs and the revolver with the fool killer.

I like a good pack strap better than a pack sack as it can be adjusted to your load. Mine I got in Chicago and cost 90c, but there is no head strap on it. That you will have to put on yourself. I like a head strap—it rests your shoulders and back and don't ever let your load come on your hips or the small of the back. You will tire out much quicker.

In making up your pack, lay your strap on the ground smooth and the strap properly arranged, fold and adjust your tent for the pack cloth. Now fold your woolen blanket and lay it on. This makes a soft cushion for your back, next your bed tick, then your canvas sheet, then your flour sack of cooking utensils and flour. This will probably leave some humps on top of your pack. Now gather up the corners of your

tent and pack cloth and fold them nicely over your pack. Pick up your straps and draw them tight between the humps your cooking utensils make and you are ready to hit the trail.

I usually stick the small ax under a strap on top of the pack and tie it with the string in the handle as this is the first thing you will use when you start to make camp. Your pard takes the hatchet and starts a fire while you undo the pack. Your cooking kit and grub comes first. Then lay aside your bedding, and if it is storming spread your waterproof canvas sheet over it and proceed to pitch your tent, as by that time your pard has got his wood ready and you can use the ax for tent poles. By the time your tent is up the bacon, flapjacks and coffee are ready for you, fill the canteen at the last creek you crossed and you don't have to hunt for water. In 30 or 40 minutes you are ready to turn in well sheltered, fed and housed. Of course you have not had time to fill your tick as you are going to hit the trail in the morning so you lie on it.

I will say if you encounter storms and cold and blow, go into camp and wait for it to clear up. There is no use wasting your strength bucking up against something you can make no headway at. Save your strength for useful work.

CHAPTER XVIII.

BUILDING CABINS, TANNING, ETC.

As I have seen so many inquiries in the H-T-T about building cabins, making moccasins and tanning buckskins, and other inquiries, I thought I would write and let them know who don't know what I know. Boys, it takes everybody to know everything, so don't be afraid to tell. We trappers are scattered too much to hurt each other with the secrets we tell. The market won't be flooded either. So I will begin to tell a little of what I know. My methods are adapted to rough and mountainous countries where packing on back or horse is required.

First in building a good and cheap cabin, select a place (in the spring of the year), where it is best suited for water and wood. Cut your logs and peel them so when you go to build your cabin in the fall your logs are light and dry and you don't need anybody to help handle them. For tools, an ax, shovel and one and a half inch bit is all that is required. Cut your notches in logs to suit yourself, flat, V shaped or a hollow notch in bottom of log to drop top log in suits me good enough for fast work.

Get on a side hill so that you can get enough excavating for a fire place. This will also save several logs and less danger from fire and from fireplace. I have built a good cabin against a big boulder that had a good smooth side to it. Notch your logs deep enough so that there is about two inches of space between the logs. Be sure and cut out a starter for a small window pane on any side you want to. I prefer the east and west side, also a starter for a door, the smaller the door, the better.

When you have the cabin high enough, lay across small poles for roof. Cover next with branches or bark. Then about a half foot of dirt on top. Then in center of this roof on each end place a log as big as you can get up there. This will give you the slope of the second roof. Put split poles on the log and let them project over the sides of the cabin about a foot and a half. Then when laid close together will turn rain and help hold snow off the bottom roof. I never had one to fail me yet. Chink up cracks on inside of cabin and mud the outside.

If you can't afford to pack up window panes, cut a hole for one any way and split some thin shapes to cover them so that you can take them off and have light in the cabin whenever you want it. For a door split small poles in half and nail together with split strips. For home-made hinges, drill holes in two logs about three feet

apart, one on the top and one on the bottom, the same as you would for ordinary hinges. Into these holes drive wooden pegs, flat on one end with holes bored through on ends. Into these holes on ends of pegs fit a small pole pointed on each end. To this pole nail your door and you will have a door that will swing good enough for anybody.

I have seen dry deer and elk hides used for doors, and they were nailed to the cabin on one side, inside of cabin mostly with hair side out, and they would snap shut like a steel trap when you went in and out. But varmints are apt to eat your door up when you are gone for months. Build your fireplaces of rocks and mud, also the chimney. Put your fireplace just opposite the door. It makes a good draft and is not so apt to smoke.

Here I will describe a way to have a home-made stove, those who prefer it. Get a piece of light sheet iron (stove pipe will do) about two feet wide and four feet long. Cut as many holes as you want in this. Cut a cross in one end for stove pipe. Bend up the point of the cross cutting to hold stove pipe. This piece of sheeting will make a good top for your stove. Build the sides of small rocks and mud mixed together, and leave a big hole for a door. This kind of stove is "sure heap good." Try it boys. I have

kept fire in one all night without feeding it, between retiring and rising.

TANNING DEER SKINS. Put the hide in a thick soup of ashes, slacked or lime, and leave in that until hair slips easy. Then throw over smooth log and scrape off hair and by using a sharp cornered piece of iron, and by scraping and pressing down real hard, you remove what you call the grain. After this operation, grease flesh side with bacon, use bacon grease, it is best. Hang up for a day or two. Then put in a bucket full of water that has a bar of common laundry soap dissolved in it. Indians use dried brains in water in place of strong soap water.

Leave in this until you can squeeze water through the hide easily. It takes from five to nine days in this solution. Then take it out and wash it out in weak soap water. Then wrap the hide around a sapling and run a stick through and wring it as hard and dry as you can. Then pull and stretch it dry, which will take about three hours hard pulling until it is as soft and woolly as underwear. This produces the fine Indian tanned buckskin. When putting the hide in that soap solution, keep it in a moderate room if possible. It won't take so long.

From these skins tanned this way I have made my own moccasins, gloves, and clothing. Try it boys, and if you don't succeed let me know. You can tan a hide over again if it does

not get soft enough the first time. I make the Sioux and Crow moccasin. Can make a pair of low or high moccasins in an hour. By making a pair out of oil cloth and putting that on over your socks and then moccasins over that, you have the best and lightest and nearly dry footwear you ever wore. In hunting and trapping, I wear nothing else. I can walk on to more game with them than with any other footwear.

I used to wear over buckskin moccasins, raw elk or horsehide with the hair outside and slanting backwards, which keeps you from slipping on wet snow, and if ever a marten comes across your trap trail he will follow you up to the first trap. He smells the scent the rawhide leaves on the trail.

WHEN YOUR WEB SHOES GET WET AND SOGGY, oil them in linseed and it sure will make them tight and waterproof. For skees grease the bottom with tallow or candle and burn it in with hot stove lids, and the snow won't stick to them as long as it lasts. For going up hill so that they won't slip backwards, nail a strip of deer hide with the hair on the bottom with the hair backwards. When your skee starts to slip backwards the hair will stick in the snow and in going forwards you will not notice that it goes harder or heavier.

COYOTE SET. Take your bait, whatever will interest a coyote, put it in a low place that has

a few little high mounds within 10 to 25 feet away. Stake the bait down, and if any coyote attempts to eat from it put some old horse shoes or any old iron around the bait to keep him away, and he will sit on these high mounds and howl for some time. Now there is where you want to set your traps. Never set by the bait but set in such places where you think he is apt to sit down to look at it.

Use grapples and dig trap down level with the ground. Put wool or cotton under the pan and cover the whole trap with paper. Then brush dirt over the trap and be sure to cover it good, not too deep. A trap set this way will spring in three inches of snow. Set several traps on such places and also in trails, and I bet you will catch coyotes. That is the way I catch them. Did you ever notice how they will walk in your footsteps and how sure they are to step in your tracks? Set a trap in the trail and remember the place well. Then walk on this trail as natural as possible, and when you come to your trap step lightly on your trap, just enough to leave your footprint, and watch the next coyote how he will step in your footprint and get caught. Try it.

JERKING VENISON AND DRYING FISH. Cut the meat off the bones, cut in long, thin strips, spread on the hide and sprinkle with one and a half pints of salt (more or less according to the

size of the deer) on it. Turn the edges of the hide over so as to cover the meat entirely. Leave it that way for an hour or so. Then spread the venison on the drying frame made as follows:

Set four crotched stakes five or six feet apart in a square. Take two poles and lay them in the crotches and tack willows or some other sweet wood from one pole to the other, leaving about one inch spaces between them. Lay the meat crossways of the cracks. This frame should be about four feet from the ground. Keep a fire of sweet wood under it for twenty-four hours.

Cut your fish open on the back, remove the backbone and insides, salt real heavy and leave for several hours. Then wash and lay on the drying frame, using fire same as for the venison. If you are where you can put the fish on a drying frame in a smokehouse and use but little fire, do so. Don't attempt to hang them up, for when they get warmed up a little they are very tender and the weight would pull them apart.

CHAPTER XIX.

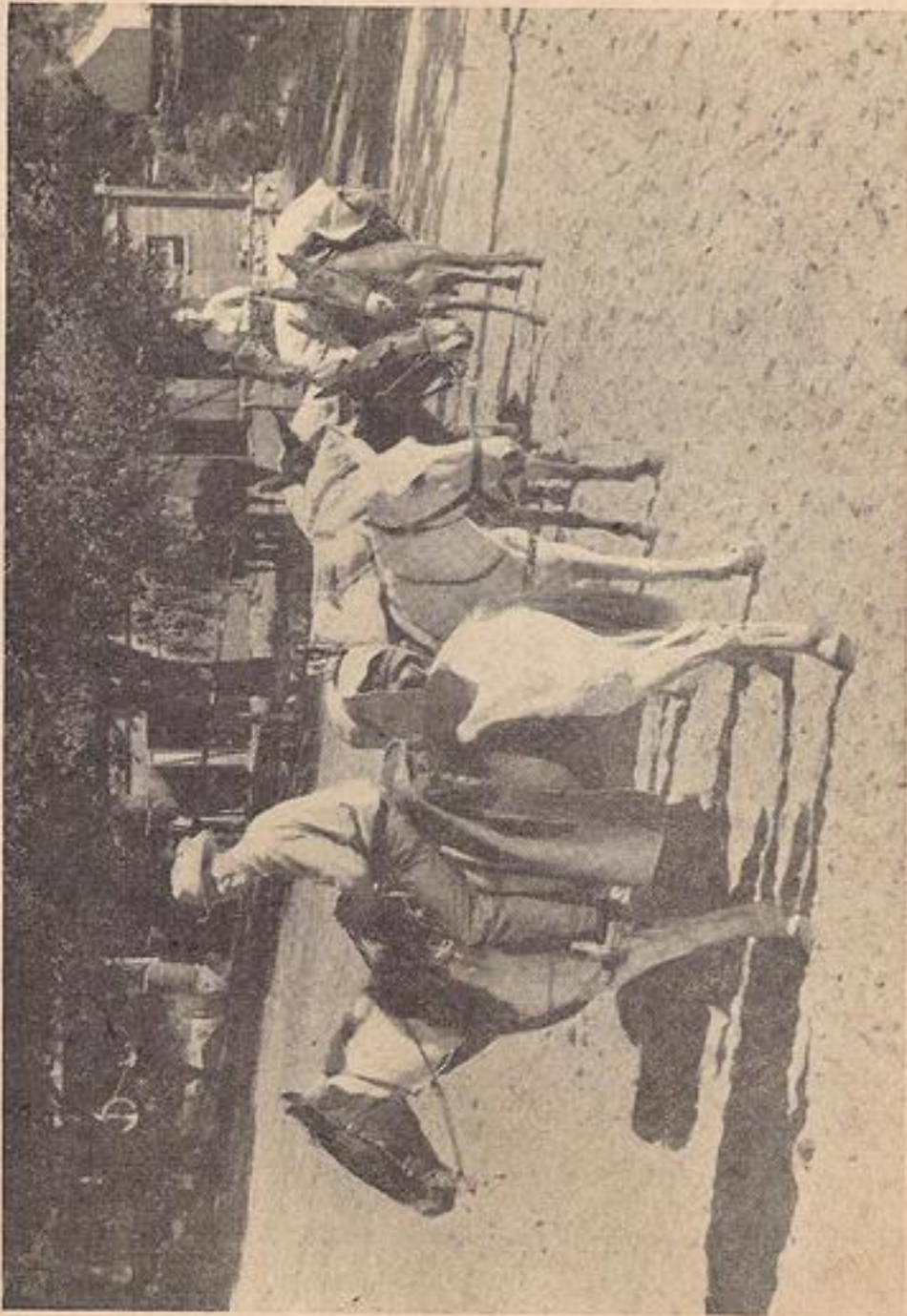
GETTING LOST.

This is not intended for the man who goes into the wilderness and mountains with a proper compass and maps — he don't need any advice. If he has these articles he probably knows how to use them. This is intended for the man who leaves camp for a little hunt or to visit some other camp or to look up strayed stock and gets turned around — and the best of them do. I have been there myself. The worst mix-up I ever got in was in a foolish little forty acres of large sized brush and before I knew it I was circling and had to stop myself and lay a straight line the best I could, as the confounded brush was all the same size.

I have known of some sad cases of this getting lost or mixed up. One being the Grohs brothers who were the true discoverers of the Comstock mine. They were two good moral young men, born of good Christian parents, their father being a Pennsylvania clergyman and lived up to it. They went to California in the time of the rush to the placer diggings and not being very lucky started into the mountains to look for quartz and found the monster Comstock

vein. They staked off some claims and uncovered their vein and traced it and had some of the ore assayed. Went back to their claim and were doing work on it when one of the brothers stuck his pick in his foot, making a bad wound, from which he died of blood poison. The other brother stayed rather late in the fall as there was a range of mountains to cross to get to Sacramento and winter was on when he started to go out and file on his claims. He was part way across and was overtaken by storms and had to stop and make snowshoes. More storms coming and his grub giving out, in his weakened state he got to circling and lost his sense of direction. He was so far gone when he got out that he died from the exposure and others got the credit for discovering the monster vein of ore. Now mind you, this man was not a tenderfoot by any means. They are not always the ones that get mixed up.

Another case I call to mind, some hunters in the north woods following a wounded moose came upon a man's track who was circling. They followed his trail until dark and returned to camp. The next morning as soon as they could see, they picked up the trail again and found the lost man was following their trail of the day before. Taking the back track to their cabin they found him lying on the floor dying. He had got to the grub, eaten his fill and it killed



Prospectors and Cruisers in the Northwest.

him. They could get no word from him as he was too far gone. He had torn off his clothes to wrap around his feet which were frozen almost solid. He was reduced to skin and bone, his face was cracked and black from frost and looked like a death's head, the skin looking like parchment. They gave him a Christian burial but could never find out who he was, altho they tried hard to do so when they came out of the woods and he is a mystery to this day. He had thrown away his gun and there were no papers on him. It was certainly pitiful and all the more so because it was absolutely unnecessary.

Supposing you leave camp in the morning for a little hunt and when you start to return you don't find camp where you expected to and you find you are all turned around or have lost your sense of direction. Now as soon as you become aware of this fact, stand right there and don't on your life move from that spot. Build a fire and sit down. If you have no matches you are surely out of luck but this will not bother an oldtime trapper or prospector any — it will only delay him for a few minutes from lighting his pipe. He will sit down on a log and proceed to take a piece of his old kerchief or part of an old pocket lining, but it will be cotton and not wool, and he will pick it into lint or tow.

Now he will take his knife and a dry limb and whittle some fine trash. If it is storming

he will find this under the bark of a dead tree or stump. Next he will proceed to pull a cartridge out of his belt or pocket and pull the bullet out and lay it aside. He will then pour out the powder on a dry leaf or piece of bark. He will now put back a little powder loose in the cartridge shell and put a piece of tow loosely on top. He will now put the shell in the gun and, holding the muzzle a few feet from his other piece of tow, he will snap the trigger and presto! his tow is afire, probably both pieces. He will now put his fine trash on and blow it a little and your fire is going and your trouble is over about a fire. You have simply traded a primer and a little black powder for a good warm fire and a good trade you made, did you not?

With a cold night before you and lost at that and perhaps the snow falling, you will now light the little pipe and warm up and as you get warm your think box will go to work about like this. Infantry soldiers march about three miles an hour and when you left camp it was about 7 A. M. and it is now about three or four P. M., and getting dusk so if you have gone straight away from camp you are twenty-four or twenty-seven miles away from it, but you did not go straight away, you went slow and looked for game and you followed that dry trail of a deer until he heard you and went into that swamp and you gave it up and came back across

that creek and on down here and it is considerably more than an even break that you are not more than six or eight miles from camp at most, but the dickens of it is, which way.

Now here lies the secret. Just stay there until some one comes and tells you. Get some wood together and make a longish fire and let it burn until this long spot is thoroughly warm and dry for you want this place to sleep on. Put a couple of logs or some brush at your back and move your fire a few feet in front and lie down on your warm spot between your fire and logs. I have put in quite a few comfortable nights this way and was not lost either.

Now about 9 P. M. they will begin to think in camp what has become of you and wonder what has happened and by daybreak they will get busy and about this time you want to get busy. Fix up your fire and get some green stuff and make the worst smoke you can and keep it up and fire your gun once in a while and by 9 A. M. I will guarantee there will be some one there to give you the horse laugh and show you the way home.

But here is another case. Suppose no one knows you are lost. Then you will have to do differently. You certainly know there are several railroads that cross this continent, on the north the C. P. R. R., then the G. N. R. R., then the N. P. R. R., the U. P. R. R., also the St. F.

R. R. and S. P. R. R. Now you certainly know which side of one of these roads you are on and somewhere near how far you are from them. Next you must find north and south. This is easily done at sunrise or sunset. If at sunrise, face the sun and your right hand will point south and at sundown your left will point south. If at night old Polaris or the North Star will wink at you and tell you that is true north and he won't be telling you any lie either. You can find him easy enough. Find the big dipper and the two stars farthest from the handle point right at him, looking from the bottom of the dipper and the dipper makes a circle around old Polaris every night for fear he will get away. He has been there to my certain knowledge 53 years. An old sailor can tell the time of night pretty close by the dipper.

After you have north and south, lay a stick on the ground that way. Now call to mind carefully if you have crossed any railroad track lately since you have lost your sense of direction. Supposing you have not and you think the nearest one is south. Go to your stick that lies north and south and select some object as far away as you can see and travel towards it, but before you are quite to it, select another farther on and in a direct line to your course and continue this plan. Take it easy and if you get up against a swamp, make a turn and continue this plan,

being careful to note which way you turned, east or west. When you get to the end of the swamp, turn again south, still running your line. Take it easy and drink lots of water if it is good water. If not, keep a pebble in your mouth.

You have the little fish line and some hooks in your pocket that all old time cruisers and trappers carry and you can find a grub in any old rotten log or stump and that is good for a fish. If you have a gun, keep your eye open for a squirrel, rabbit, partridge or any old thing that will make meat and don't pay too much attention to old logging roads, unless very recently traveled, and it is a sure bet you will come out O. K. long before you strike the railroad.

But by following my advice and laying your line you will come out all right if you don't get rattled and go to running and if you do and ever get out, for God's sake, stay out for a peanut headed man has no right in the woods and should be confined somewhere with the rest of the old women.

The following under the heading "Lost" by A. L. Johnson, appeared in the Hunter-Trader-Trapper, published at Columbus, Ohio, and suits so well here that it is reproduced.

Were you ever lost? The writer has never really been lost, altho a little tangled up a few times. The reason for me not getting lost is

that I am something like the Indian who was found wandering aimlessly about the woods. A pale faced trapper happened to find him and asked if he was lost. Mr. Redskin said "no, me no lost, wigwam lost." I have heard of some people that claim they can walk in the wild forest without even a compass, rain or shine, and never fail to go in the right direction. I have tumbled around in the woods some, but must admit my inability to perform such a wonderful feat. I believe if anyone should be able to walk in the woods by merely following the inborn instinct, the Indian would surely be the first one, yet, I know at least one Indian that was afraid of getting lost.

Some time in December, eight or nine years ago, I was trapping on Mud Hen River, and an old full blooded Indian trapper, (his name was Joe Tucker, I knew him well) came to my camp and told me he had followed a bear, but the snow kept falling so that at last he lost the track entirely. About two weeks after part of the snow melted away, and the first thing I knew Mr. Tucker came along and told me he had come back, picked up the old track and killed his bear. He told me where he had killed it, close to a small lake. I asked him why he didn't go right across from the lake out to the main trail and save two miles walking. His answer was "no sun, no good, bad day, me no compass," and this

Indian was a first class trapper, a hustler from way back, and not one of those lazy things lying about the reservation and drawing government rations.

That shows that even an Indian depends on something for his guide. The easiest and quickest way of getting lost is by following the track of some animal during a snow storm. The hunter is constantly looking at the track in the snow, or else watching ahead for the game he is following without paying any attention to the direction he is going. He may encounter well known places and objects during the chase without taking any notice of it, as the snow laden timber and bushes changes the appearance and surroundings of everything and makes it look strange. After perhaps a further attempt of bagging his game, he finally gives up and makes for camp. If he has a compass and knows how to use it, or retraces his own trail, good and well, but if he has forgotten his compass in camp and the falling snow has obliterated his track many miles to camp and night fast approaching, then indeed the young hunter will find himself in a rather uncomfortable position.

Of course you know where the camp is, it's right over there the other side of that big bunch of timber, but after going towards "that timber" you, in some mysterious way, find yourself back on your own track. Oh, no, you are not lost

yet; you just happened to cross your track a couple of times more and you will begin to feel a little "queer" about it, and at last admit to yourself that you are lost.

Sit down on an old log and think it over. If you have a road, a trail, river or lake in the neighborhood of your camp and you know which side of it you are on, there may be some hope for you, but whatever you do, don't get rattled at the prospect of spending a night in the woods. Just take it easy and think it over; try to recollect which side of your face you got the most snow on when you went after that "moose," and compare it with the snow that's falling now; try to remember how the wind was blowing "when you a gunning went," and notice how it is blowing now. If the snow has stopped and no wind, put one of your fingers in your mouth and hold it there long enough to become thoroughly warmed, then hold it up above your head, and you will soon notice one side of it becomes cold quicker than the other. That is the side the current comes from, and if the wind has not changed since you left camp you will very likely soon wonder how you could be so foolish to think "the camp was over there."

However, if you have nothing to guide you, it will be almost useless to try to reach camp. You will most surely walk in a circle (due to the muscles being stronger in one leg than the

other) and only tire yourself out. Better prepare yourself to stay in the woods over night before it gets too dark. Find a place where there is plenty of dry timber for fire wood; select a place for your bed alongside of a big log if possible, and make your fire a little higher than the bed. Build your fire and burn off all the long timber to make them more handy to handle during the night. Take some saplings and put in the ground outside of the big log, let the logs lean over your bed at an angle of about 45 degrees, on top of this put plenty of balsam, spruce, cedar or pine brush; stick some more of the brush in the ground at the ends where your head and feet will be; scrape the snow away in the bed and put plenty of brush there also, and your quarters are complete. Gather some birch bark or small dry twigs to start fire with in the night if it should be needed. In selecting your wood always remember that spruce, balsam and cedar are the worst spark throwers; dry poplar and pine with green hard wood is the best, although the latter is impossible to get without an ax.

If you are very tired, and cold is intense, do not allow yourself to go to sleep at all. There are strong reasons why you should not, but if you don't feel "all played out" and the weather is moderately cold, there is no danger in going to sleep. You will readily wake up when you get chilly.

Don't let those awful bear stories scare you. Those terrible man-eaters you hear so much about, and see so little of, is mostly imaginary, gotten up by the would-be sport, for the chief purpose of impressing you with the dreadful monsters he encounters and repels in the brief time of a two or three day's outing. Remember that all wild animals will take a piece of meat of any kind in preference to even a nice warm porter-house-end of a young trapper.

In my opinion no one has any business in an unsettled region without a good compass. What is meant by a good compass for a trapper is not one that costs \$10 or \$15, but one that can be bought in any hardware store for a dollar or a dollar and a half. It should be one with a jeweled needle to prevent wear. Practice with it occasionally; walk in a certain direction a half or a whole mile; pay no attention to timber brush or anything else, just be governed by the needle and pace the distance walked. Then turn around and go back, but don't try to follow your own steps; go exactly as the compass indicates and pace the distance back also. If you have done it right, you should strike the starting point, if not, note the difference of courses taken and take the average of the two.

The practice will save you a lot of work sometimes. If you happen to kill a moose or deer on bare ground, a mile or so from any road

or trail, you would not need to run a blazed line from your game out to that trail. All you would have to do would be to make an approximate guess of the nearest direction to the trail, run your compass accordingly and pace the distance, (2000 paces to a mile is the standard cruising pace.)

Many people believe that the north end of the compass needle points to the north pole. Such is not the case. There is only one place in the United States where the needle points to the true north (the imaginary end of the earth's axis); that place is on a northwesterly line from Charleston, S. C., passing close to Columbus, (where our H-T-T is printed) and running through Lansing, Mich., into Lake Superior. At any other place the needle will point to the West or East of the true North. At Bangor, Me., it is about 18 degrees west and at Olympia, Wash., 23 degrees east.

But as astronomy and surveying is only to a limited extent included in a trapper's education, it is not necessary to go into a lengthy detail of this magnetic variation.

CHAPTER XX.

THE RED RIVER TRAPPER.

Moulton, known far and wide as the Red River trapper and hunter, worked with me and for me off and on for two years. He was a man whom I never knew to utter an oath, never knew him to drink anything stronger than black coffee. He was clean of heart and mouth, a man about five feet, ten inches and weighed probably 190 or 200 pounds and not an ounce of mush at that. I never asked him his age—he was reserved about his antecedents, but I should judge him to be at that time—1883—about 49 or 52 years of age. There was always a smile on his face and in his grey eyes and I never knew him to lose his temper under the most trying circumstances and sometimes they were many, although they said if occasion required Moulton was a bad man in a mixup. He was one of a fast disappearing class of men that were found on the prairie and in the woods in those days and this country will soon see them no more.

He was somewhat reserved in his speech, but what he did say was always pleasant and wholesome to listen to and was usually good horse sense. He was handy around camp and could

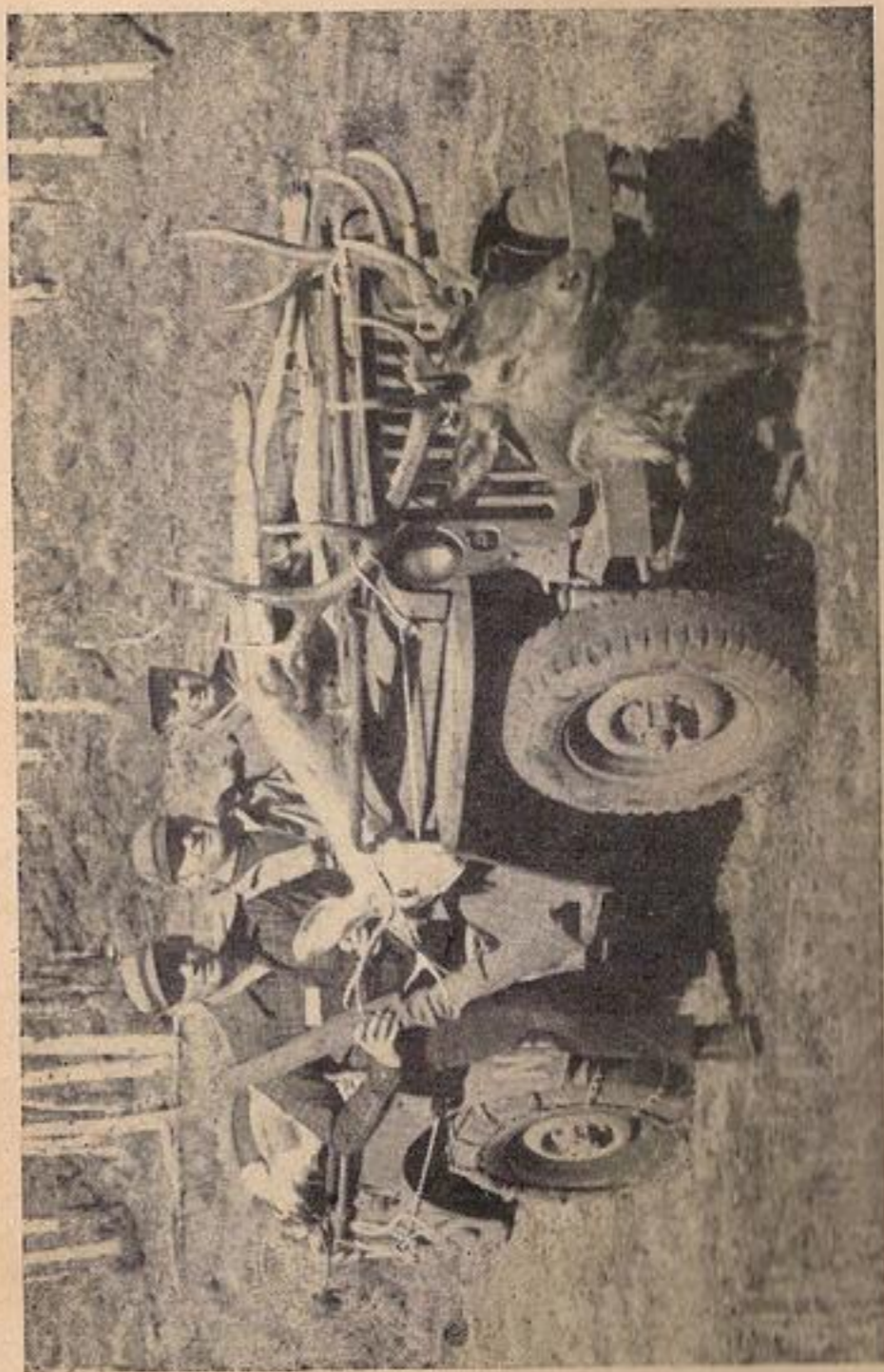
make anything from an ax handle to a log house and was a mighty good and handy man around camp. I saw him one day take an ax and cut a good fitting pair of pants out of a couple of oat sacks and then put a half sole on the rear of them, as the boys used to call it, the same as caveberry pants, only it was made of a Pilsbury's Best flour sack, with the words showing very prominent. From that time on the chap that wore them was known as "Pilsbury's Best" all over the Red River country and he wore these pants until he wore them out. I met old "Pilsbury's Best" this last winter here, and of course extended to him the courtesies of the day, in the shape of interviewing several good members of the bar and the accompanying wet goods.

He bitterly bemoaned his fate that he had got so low-down as to work in a packing house stock yard, said as soon as he could get an outfit he was going back to trap, hunt and work on the ranches. I would have staked him, but it was a case of too much nose paint. If you were reducing your force on account of having the work nearly done Moulton was one of the last men you would let go. In working he did not seem to be so fast as some, and you would think he would lose out, but somehow when night came Moulton was to the good with the best of them and seemed to be as fresh as when he started in the morning. He put in his sum-

mers on the ranches and winters he hunted and trapped and incidentally he was a wonderful shot with a rifle.

If I would tell you of some of the shots I have seen him make you would put me down as a prevaricator, so I won't attempt it. He was not an ignorant man. He could discuss most any subject intelligently, but if you wanted to have a conversation with Moulton and get him intensely interested, talk rifles and traps. I have lain many a night in my blankets and discussed this subject with him as it interested me very much also.

These were the days when the Springfield Needle gun was at its height of popularity, but were hard to get, as the United States government controlled them and to be found with one by a government man in that country was to have it confiscated. I will never forget the day that Moulton took me secretly to an old government granary and told me in whispers that he had bought a Springfield. Digging down in the oats he pulled out a nearly new one. I did not ask him where he got it for such questions were not considered good form in that country in those days, but wherever he got it he gave value received to some one and asked no questions, for he was thoroughly honest. At the time I was night horse wrangler for the United States gov-



Bringing in Game.

ernment and had bought some equipment from the discharged soldiers myself.

Moulton was a successful trapper when he was at that business in its season. He told me that one of his most successful methods was to run a line of traps across a river valley or draw and on both sides at intervals of a mile or so, connecting them with a drag scent made of fish oil, and incidentally this fish oil was the most abominable smelling stuff ever invented. He would catch a lot of fish along in August or September, cut them up in small pieces, put them in a glass jar and hang it in the sun for six or eight weeks with the cover loosely screwed on, and at the end of that time they would smell to heaven. They were sure the worst stink that ever stunk. This was his medicine and he said it was the best he had ever found, bar none. He always used Newhouse traps of the best quality and usually large ones for he said he could never tell what you were going to catch. He always used the cubby house set if he could not find any hollow logs or trees.

He would build a little house of dead limbs and bark, using old stuff, never leaving any chips or new litter around and always using a pair of buck gloves to handle things with. He would build these inclosures about eight or ten inches high and twelve or fifteen inches long and the cover he would make as near weather tight

as possible and stop up all holes but one end and then poke a little leaf trash into the bottom of them and they all looked so natural, built against a log or tussock of some kind, you would think they grew there. He would let them stand a while before he put in his traps and he would wash them in lye and boil them in hay and leaf chaff. With a good-sized canvas haversack filled with leaf trash of the surroundings he would start out and set his lines of traps. When near one of his cubby houses he would stop and put on a pair of moccasins over his shoes, made of raw muskrat hides, fur out, and set his traps with them on. During this operation he used a pair of buck gloves for this purpose only, wearing another pair when doing other work.

He usually used a bird or piece of rabbit for bait as this was about the only bait you could get in this country in late fall. He would put his bait in the back of his cubby and his trap pretty well in, to keep it out of the weather. Lastly he scattered a few feathers or some fur over his trap and came away. He always clogged his traps and this clog was put there when he first made his cubby house, and he never failed to daub some of that almighty fish oil inside his set. He seldom set a trap in water for he said it was too much work to chop them out if frozen and he did not like to get wet and daubed up with mud, for it was most all clay banks in that

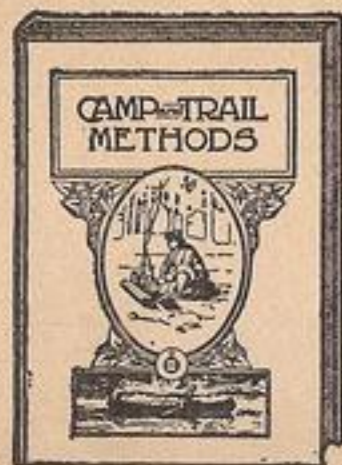
country. Besides, he said it made tracks and gave things away. He had traps with a piece of nickel plated tin riveted on the pan. These he used for otter with a water set, as he said an otter was very inquisitive, and for beaver he used beaver castor daubed on the brush around his trap and this was all the bait he ever used that I know of.

Moulton was a successful trapper for he had money laid away and quite a sum, and he used to send money home to a sister back east. The last time I saw Moulton was in Fargo, Dakota, before it was a state, and he wanted me to make a trip with him to the Bad Lands on the Little Missouri river. Good old Moulton is now trapping beyond the Divide in the Happy Hunting Grounds, if there is any trapping there. Shortly after I saw him he went to the Little Missouri river with a pard, built a shack and got in grub and began to prepare to trap, and had got a line out. At that time it was considered policy to leave one man in camp as there were known to be Indians off the Reservation without leave of the agent, and it was Moulton's turn to stay. When his pard got back he found him shot and scalped and the shack looted but not burned. His pard heard the shot, but thought Moulton had got a crack at a deer as they were plenty there then. The Indians were trailed to the Reservation but could not be identified and were

probably on hand to draw their supplies the next ration day. I have seen some good Indians—quite a few in fact, but they were made so by a Sharp's Reliable or a Springfield in the hands of Uncle Sam's boys.

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