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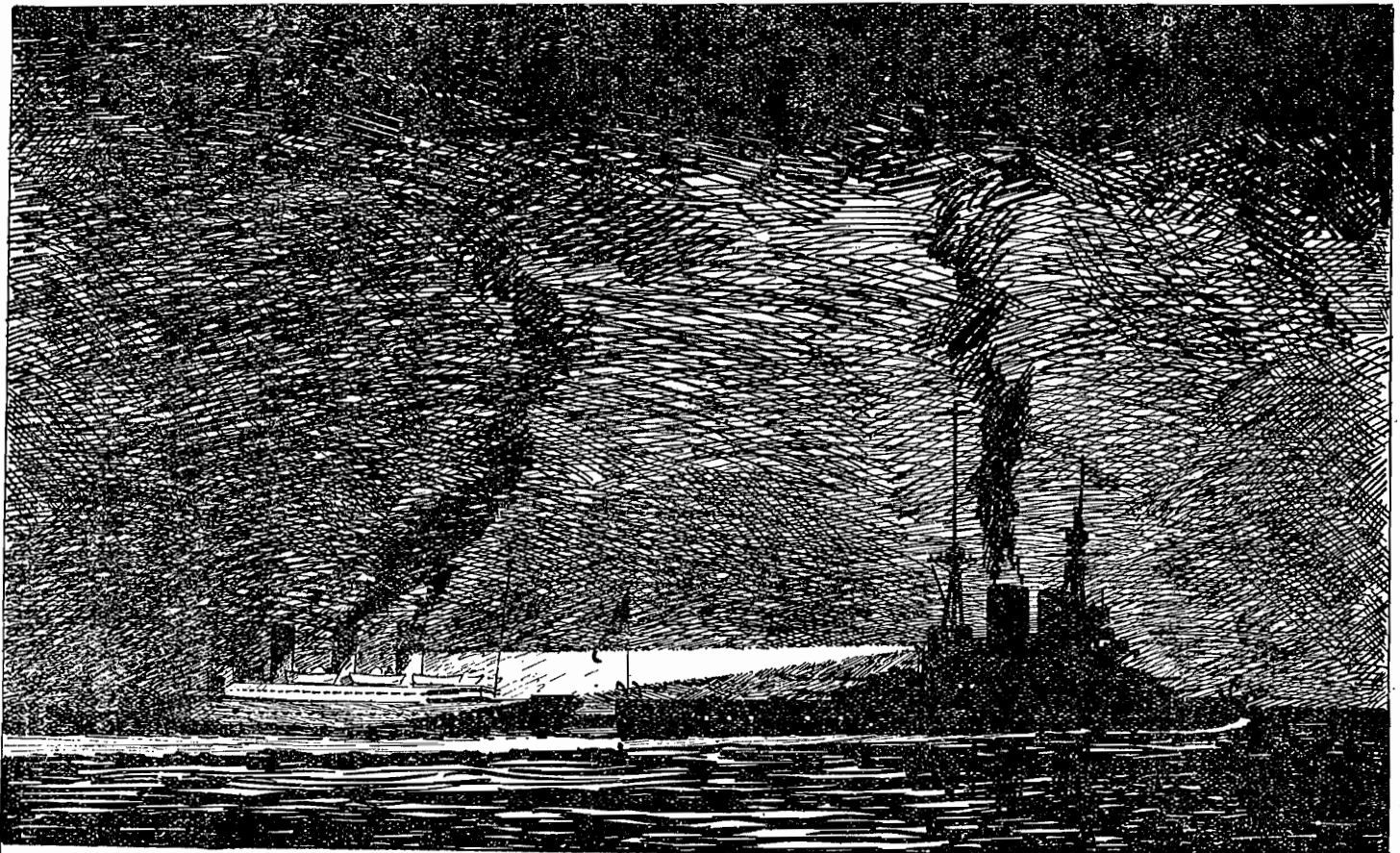
ROOT AND BRANCH

BRITISH COLUMBIA
LANDS DEPARTMENT
FOREST SERVICE

Vol. II.

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No. 11.



• VISIT OF THE FLEET TO B.C. • *KHC*

- Here's to the Fleet - no Fleet for idle vaunting, •
- But for six hundred years, in Peace and War, •
- Tested and tried, and never yet found wanting. •
- Here's to OUR NAVY - Mail, and Au Revoir. •

This magazine is a staff publication, and is not in any sense a medium for the expression of Governmental policy.

The object of its publication is to promote discussion, foster exchange of ideas, disseminate news of "family" interest and, through the encouragement of individual initiative, to strengthen the spirit of co-operative effort.

SHORT CUTS IN SURVEYING

(Ranger F. H. Pym)

I do not know whether you publish dry and dusty stuff of this kind in our magazine, but thinking it might perhaps be useful to members of the ranger staff, I am submitting a method of rough surveying, which does not require the use of tables, and is reasonably accurate. The stock-in-trade required is an ordinary memory, compass, 6" rule, pencil, clinometer and squared paper.

The following must be committed to memory:-

Let. A = angle or bearing
D = Departure
L = Latitude
50 = a constant
C = a correction

Then we have three short formulae

$$(1) \frac{A}{50} = \frac{D}{L} \quad \text{for angles } 0^{\circ} \text{ to } 5^{\circ} \text{ and } 33^{\circ} \text{ to } 37^{\circ}$$

.00 to .09 .65 to .75

$$(2) \frac{(A-1)}{50} = \frac{D}{L} \quad \text{for angles } 6^{\circ} \text{ to } 32^{\circ}$$

.10 to .62

$$(3) \frac{(A+C)}{50} = \frac{D}{L} \quad \text{for angles } 38^{\circ} \text{ to } 45^{\circ} \quad \text{Corrections for C are below}$$

38°	.78	C = 1	These have been arranged to assist memory. The angles advance by 2 except the last, The decimals by 6 except the last. The corrections are a straight series from 1 to 5.
40°	.84	C = 2	
42°	.90	C = 3	
44°	.96	C = 4	
45°	1.00	C = 5	

It is not necessary to go beyond 45°. The corrections for angles between must be interpolated, For instance C for 43° is 3.5. This looks like a lot to remember, but a few examples worked out and 15 minutes should suffice.

Supposing you wish to lay down any angle or bearing
(1) Example:- Given angle 4° This angle is between 0° and 5° so we use formula (1) = $\frac{4}{50} = \frac{D}{L}$ To save space it is generally

necessary to divide $\frac{4}{50}$ by 10 = $\frac{.4}{5}$ Now starting at a corner of

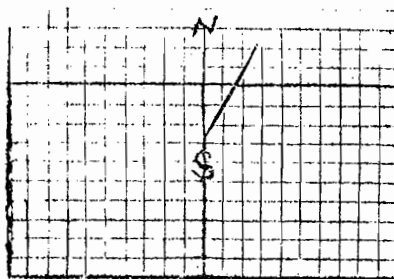
a square, count up 5 small squares and move over to right or left .4 of a small square, join the starting point and the point moved over. Thus



The angle between the two lines is the one required

(2) Example:- Plot bearing N 30° E. 30° is between 6° and 32° so we use formula (2) $\frac{(30-1)}{50} = \frac{D}{L} = \frac{29}{50} \div 10 = \frac{2.9}{5}$

Thus



The required angle or bearing.

(3) Example:- Plot bearing N 42° W here we use formula (3) C for $42^{\circ} = 3$

$$\frac{42+3}{50} = \frac{45}{50} \div 10 = \frac{4.5}{5}$$

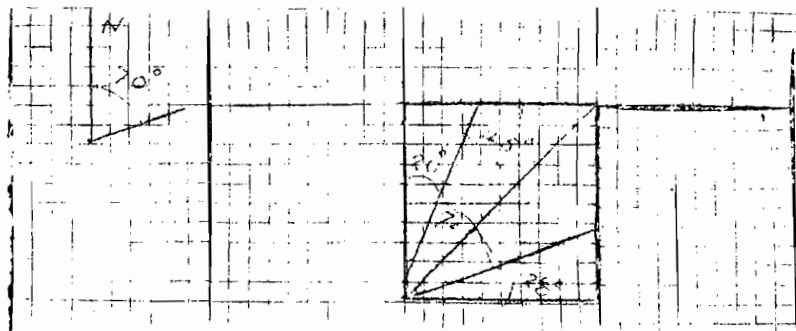


The required angle or bearing

(4) Plot N 70° E In this case as we do not go beyond 45° we subtract 70° from $90^{\circ} = 20^{\circ}$ which requires formula (2)

$$\frac{20-1}{50} = \frac{19}{50} \div 10 = \frac{1.9}{5}$$

but we must reverse the latitude, and departure, counting 5 to the East and 1.9 to North, thus



This little diagram should explain the principle. After 45° is reached you work up the other way

This takes longer to explain than to do. Traverses can be plotted without a protractor, on the ground as the work proceeds. All the above of course is done mentally once the formulae are remembered. It comes in handy for traversing fire lines, trails, and can be used in many ways as a few more examples will show.

(5) Given latitude 100 chains, Departure 30 chains to find angle $\frac{D}{L} = \frac{30}{100}$ In order to find which formula to use $\frac{30}{100}$ must be put in decimal form, and $= .30$, which is between $.10$ and $.62$ so formula (2) is used $\frac{(A-1)}{50} = \frac{30}{100} (A \times 100) - 1 = 30 \times 50$

Note:-
The greatest error can
be 48'

$$A = \frac{(30 \times 50)}{100} + 1$$

$$A = 15 + 1 = 16^\circ$$

which is 42' too small

(6) Given latitude 80 chains, Departure 65 chains $\frac{65}{80} = .81$ which is between .78 and .84 so we use formula (3) C would = 1.5 in this case $\frac{(A + C)}{50} = \frac{65}{80}$ $\frac{(A + 1.5)}{50} = \frac{65}{80}$ $(A \times 30) + 1.5 = 65 \times 50$

Note: Instead of working this out we could have called the result 39° by inspection since .81 is between .78 and .84

$$A = \frac{(65 \times 50)}{80} - 1.5$$

$$A = 40.6 - 1.5$$

$$A = 39^\circ$$

which is 1' too small

(7) A hill is 3 miles away. The vertical angle is 15° what is the height? (or Departure) 15° is between 6° and 32° so formula (2) is used

$$\frac{(A-1)}{50} = \frac{D}{15840 \text{ ft}} = \frac{(15-1)}{50} = \frac{14}{50} = \frac{D}{15840}$$

$$D \times 50 = 14 \times 15840$$

$$D = \frac{14 \times 15840}{50}$$

$$D = 4435 \text{ ft high}$$

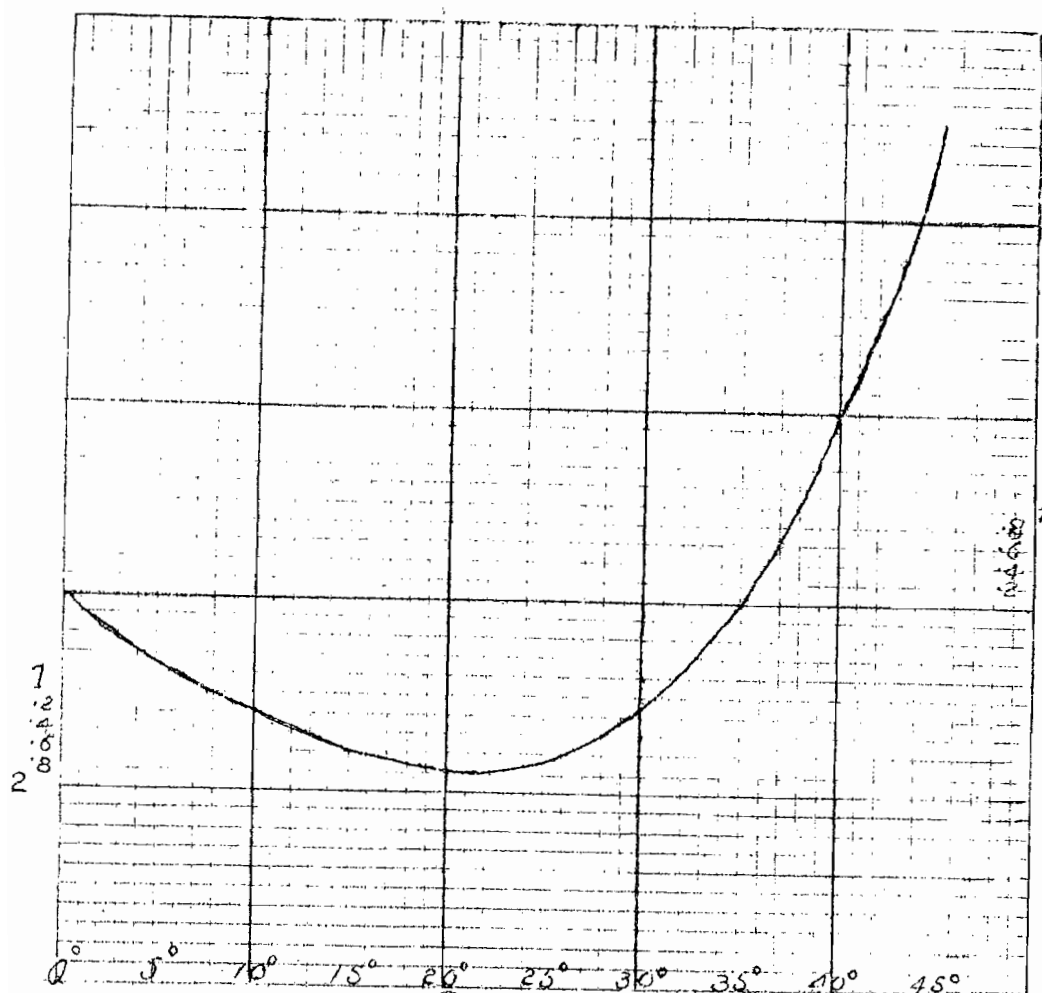
which is 169' too high but better than a guess

(8) Hill one mile away, vertical angle 65° find height. $90^\circ - 65^\circ = 25^\circ$ which is between 6° and 32° so formula (2) is used $\frac{(A-1)}{50} = \frac{D}{L}$ $\frac{25-1}{50} = \frac{24}{50}$. Now as the angle is over 45° we reverse the latitude and Departure, so we must put the 5280' in the place of D and not L.

$$\frac{24}{50} = \frac{5280}{L} \quad L = \frac{5280 \times 50}{24} = \frac{264000}{24} = 11,000 \text{ ft high}$$

which is 88' too low

Below is given a diagram of corrections for more accurate results it will be noticed that the use of it eliminates formula (1) except for 0° and 35° . The corrections above the line are + and those below -



If the correction for examples (5) and (7) are taken off this diagram the results will be found far more correct.

Incidentally any triangle can be closely solved, partly graphically and partly by use of the formulae

(A COMMENT ON THE FOREGOING)

By C. E. Tildesley
Survey Branch

The method of obtaining an approximate ratio between the latitude and departure of a survey course here adopted depends upon the fact that the natural tangent of any angle between 0° and 45° happens to be approximately equal to the numerical value of the angle divided by 50.

In order to approximate more nearly to the actual value of the natural tangent, it is necessary to amend the numerical value of some angles by a positive or negative increment.

The author applies a negative increment of unity only, for angles between 6° and 32° , and a positive variable - increment, "C", to angles from 38° to 45° inclusive. I would suggest that the above be amended by introducing a negative increment of 2, to angles between 14° and 27° inclusive.

By so doing a much closer approximation to theoretical accuracy is obtained.

In order to obviate this further tax on the memory of those proposing to utilise this method, the following jingle may be found useful as a mnemonic:-

For angles up to five degrees
Use A/50, if you please.
From 6 to 13, (A-1)
Is put for A, and the deed is done.
From 14 up to 27.
By (A-2) is the answer given:
While 28 to 33
Harks back to (A-1) you'll see;
And 34 to 37
Needs only A/50 even
'Twixt 45 and 38
Use the factor "C" and interpolate.

It must of course be remembered that a curve or graph of natural tangents would give even closer results, the value of the natural tangent being found by inspection.

As pointed out by the author, this ratio of the latitude and departure of a survey course only enables the (approximate) direction of the course to be plotted on the squared paper, it does not enable the actual latitude and departure to be obtained, having given the bearing and distance of the course. In other words, it does not enable the actual course to be plotted. To effect this, the length of the course must be marked off along the line whose direction (in reference to the meridian) is given by the method here proposed.

It is however, quite conceivable that this method of arriving at the approximate direction of such course might appeal to the rule-of-thumb man who is not familiar with graphs and their uses, and as an approximation to theoretical methods is not without interest.

TOO MUCH MODESTY: Quite by accident, in the course of a casual conversation the other day, we heard tell of a Ranger who had constructed an admirable fire-line in a very short space of time by the simple expedient of wrapping some lengths of chain around a log and dragging the log behind a team. It is unfortunate that we should hear of these things by accident, and the Ranger who evolves a scheme of this sort, having tried it and found it good, is not doing the right thing by himself nor by the Service if he neglects to give it publicity through the medium of 'ROOT AND BRANCH'.

TRIPS ONE REMEMBERS

(J.M.Gibson, Prince George)

At the District Forester's Convention, along with all others present, after a vehement exhortation by the Editor, I solemnly promised to contribute to the "Root and Branch".

Since then I have pondered as to the subject to write upon Stumpage Appraisals, Cruising and Uniforms have been extensively discussed, so just to be different I will describe a trip recently made in company with Mr. Orahard to a survey party engaged in running a traverse on the McGregor River.

Such a trip as this has been made by every field man in the Branch, and it may bring back to them memories, fond or otherwise, of similar trips made in the course of their work.

From the District Headquarters at Prince George we went by rail to Aleza Lake, a small mill town on the C.N.R., about 40 miles east of Prince. I say "mill town" although at present it lacks a mill, the mill having been burned during the fall of 1922. It will again assume its correct nomenclature this summer as another company have bought the site and will build a mill during the summer. Making our headquarters at the "Store" we spent three days making a reconnaissance of the timbered area south of the town. It was our intention, should the dog teams of the survey party come out for supplies, to go back up river with them, but as they had not appeared when our reconnaissance was finished, we decided not to wait. In our sojourn at the store, the storekeeper in his congenial and obliging way made our visit very pleasant, introducing to us a new decoction known as "Aleza Lake Special". One of the ingredients is Orange Crush, the rest are unknown, but it would surely make a Scotchman rejoice. Lacking dog team transportation we decided to back pack grub and bedding for the trip, for although we hoped to reach the camp of the survey party in a days trip, more bedding than is needed by the party is seldom carried, and it would either mean stoking a fire all night or inconveniencing the boys.

With a din that would wake the dead, the old alarm clock rattles out its pleasant tune about 5.30 each morn. Breakfast at six, so we hiked a mile up the track to the mill. It was a cold raw morning with snow in the air and three inches of fresh snow underfoot. Ever notice how silent a bunch of loggers are at breakfast. Its the trying meal of the day for a man's spirits are not exactly lively on a dark cold raw morning, even if the eggs are fresh and the bacon good.

About seven just as the first peep of dawn was visible we put on the packs, weight then negligible, and set out. For the first three miles we followed the railroad track, and did not need snowshoes, but leaving the track at a point marked by an old pair of snowshoes hanging on a telegraph pole, we had to

don the webbs. Great stuff snowshoes, didn't you ever see pictures of man and maid blithely skimming along with a flurry of snow and dressed in bright colored makinaws with parkas. Well that wasn't our picture and believe me snowshoes are only the lesser of two evils. You can travel with them and without them - you may flounder out of sight - you take your choice, but it is mostly work. It was now good and light although overcast, and having stepped out in good time and had a fiver and a smoke with the prospect of twelve or fourteen miles to the camp, we were in good spirits.

After travelling a couple of miles along the trail to the river, we met the dog mushers from the survey party and found that the party had moved camp up river. They cheerfully informed us that it was only twenty-two or three miles to camp, and optimistically forecasted that their river trail made the day before was probably drifted over. Ever notice how optimistic fellows are when most of the trail is behind them? Following their trail was good travelling to the Fraser River where we left the trail and hit north by compass for three miles to the McGregor River. Before we got there, for the snowshoeing was heavy and the packs starting to weigh, Orchard and I decided that either the map was wrong or they had moved the river. Did you ever feel that way when you would have sworn that you had walked a mile and likely had not gone half that distance?

Between the rivers the scenery was wonderful, trees and bushes festooned with clinging garments of snow; a winter picture, but every time you touched a tree the snow lost its cling and quickly sifted down your neck or under your mits at the wrists.

We boiled the kettle and had lunch on the McGregor and then started about one o'clock up river to camp. The snowshoeing along the broken trail was good, and we set a good pace and travelled steadily. The river in the lower stretches is wide with banks about ten feet above the water, the land appearing to be comparatively level for some distance back from the banks, before rising into low ridges and then high mountains. Further up, the river was broken by a great many islands with a heavy stand of cottonwood. Having had various land marks described to us by the dog mushers, our greatest interest was in looking for these, and thus checking the distance we had still to travel. The packs which seemed fairy like in the morning now felt as though someone had stuffed them with stones, and our feet became cramped and stiff with continuous snowshoeing. About four-thirty we saw fresh snowshoe tracks made apparently that day by the survey party running the traverse, and thinking that they would not have worked more than five miles this side of camp, it cheered us up. Following these tracks we came to the spot where work for the day had ceased and began to keep an eye out for smoke on rounding each bend. The sky being overcast and a light snow blowing at intervals, darkness began to creep in, and with it the question as to whether we had better plug on or camp for

the night. Deciding in favor of the former we plugged along in the semi-mechanical way you walk at the end of a long day. Just when we figured camp was just around the next bend, we noticed the track left the river and following it were soon greeted by a chorus of barking from the sleigh dogs and the welcome sound of dishes rattling in the cook tent.

Say fellows did you ever hear a more welcome sound when its dark and you're tired and hungry. It wasn't long before we made a personal investigation of those rattling dishes and soon sat down to as fine a meal as anyone could wish for.

BRUSH DISPOSAL

Timber Sale X.....contained a clause in the contract that the brush shall be lopped and scattered. The sale covers an operation for cedar poles, and the following story is vouched for by the ranger in whose district it lies.

On going over the operation he noticed that although the lopping had been done, the brush or the bulk of it had disappeared. He also noticed throughout the cutting numerous moose tracks and on enquiry found that moose were seen daily in the operation browsing on the cut brush. The foreman told him that on one occasion, having just felled several trees before lunch, on going back to work the moose was found eating the brush off the freshly fallen trees, and had the tree partly limbed.

Could not our contracts have an optional clause to cover brush disposal by moose, which if it did nothing else would reduce the fire hazard?

The Ambassador Café, Vancouver, was the scene of an interesting function, pleasant in all but the occasion, when a number of his late confreres met on June 17th to present L.R. ANDREWS with a Forest Branch pin as a memento of his years in the Service.

"PREVENT FOREST FIRES:- IT PAYS!"

(Ranger A.S.Coburn)

That "Prevention" is better than "Cure" has been instilled into most of us from the time we were "knee high to a grass-hopper" to our present years of discretion, and one of our well known slogans, which is the above caption, is the old "saw" filed for a "set" purpose of the Forest Branch.

As most of us agree with the above, the slogan partakes of the nature of an axiom, and, therefore, we can scarcely be going very far wrong by putting our own slogan into practical effect, and thus practise what we preach.

In this matter we have had a splendid lead from a firm which has more than demonstrated how it stands on the matter of Forest "Protection", and Fire "Prevention". I refer to the Brooks, Scanlon, O'Brien Co. of Stillwater.

In the matter of equipment this Company has left no stone unturned to put their men equal to any condition they might encounter. With tank cars on the track, sprays on trestles, 35 fire pumps, hose by the thousands of feet, and other equipment too numerous to detail, the Company has invested \$75,000.00, (Seventy five thousand dollars) on fire-fighting equipment, and can equip, efficiently, two thousand men.

The Brooks, Scanlon, O'Brien Co., it would appear, is "hot stuff" on fire-prevention, eh? But the Company has gone one better. Not satisfied with the above, the Company would rather have it's firefighting equipment lie idle, and they have found a means of doing it! They "prevent" fire in the first place by giving their men an additional 5% on their daily pay, as a bonus, to encourage them to "prevent" fire. Every day there are no fires this 5% accrues, but every day they lay off to fight fire this 5% stops! Result?-Three fires only on their operation in 1923, cost about \$450.00.

In the season of 1923 the B.S.O'B Co. spent \$18,000.00 on this bonus idea, and in the words of Superintendent Phelan himself "it is the best insurance we ever had". It sounds expensive, but when we come to remember that in one day in the Stillwater fire of 1922, two million feet of timber went up in smoke, it looks ridiculously cheap.

"By the way, how did that Stillwater Fire start"? I fancy I hear you asking yourself. Here's the answer taken from the official history of the fire. "From enquiries made among employees of Messrs Brooks, Scanlon, O'Brien, who were in the near vicinity when the fire started, the only evidence which could be gathered was to the effect that the fire started approximately 400 feet distant from where two oil burning donkeys were operating, and soon after the yarding and loading crews

changed shift (the Company was working two shifts on their operation at the time), or about 1.10 p.m.

The absence of any strong wind on the day the fire started would preclude the possibility of any spark, which may have been emitted by one of the donkeys, being carried a distance of 400 feet, and considering that the fire was discovered soon after the crews changed shift, it can only be surmised that the fire originated from a lighted match, or cigarette, carelessly thrown down by one of the rigging crew."

Now this is where the Forest Branch comes in. It is suggested that the Forest Branch offers to operators who reciprocate, a 5% bonus on the men's pay, the operator offering a like amount, this bonus to cease when fires occur.

This would appear to be an almost infallible panacea for fire and it would appear to have more points in it's favour than the reverse. It would do away with most of the necessity of enforcing the law by making those most interested keenest to prevent fire. We would see on most operations, each man carrying his own fire-fighting equipment, and chokermen carrying, each his own bucket of water, as they do at Stillwater.

It would appear to me to be a lead the Forest Branch cannot afford to neglect. If 5% were considered too high, the amount could be reduced, but the Government is bound to win, in the natural order of things, for loggers have the necessary interest to stay and fight any fires which might possibly break out, instead of making a bee-line for the boat, to dodge fighting fire at 25¢ per hour, as often happens now.

If this is good insurance for Brooks, Scanlon, O'Brien, it must of necessity, be good insurance for the Government's Royalty, not to mention the insurance for all along the line. When 2 million went up in one day at Stillwater, \$2,000.00 of Royalty went West also! It is probable that if 86% of fires are due to human agency, 3 out of every four of these occur in logging operations.

Give the men in the woods a concrete incentive to prevent fires, a share in that which they are protecting, and there will be no fear of the result. A man in the woods, careless with fire, would be as popular as a coon in a henhouse, and would soon be run out of camp.

What think you, Merry Gentlemen?

Any scheme which has the prevention of fires as its object is good, but there are times when cost must be considered in proportion to the value of the material to be saved, in proportion to risk involved, and in proportion to the funds available.

If the bonus system is responsible for reducing fires in any operation, it is simply proof that the cause of operation fires is known. The men are bonused under the present standard wage scheme, for so long as there are no fires; they receive their ordinary wages, when fighting fires, their pay is reduced.

The law demands that all men shall fight fire. Are we then to pay men for carrying out the Law? Imagine this system carried out to all other forms of social life! So long as a man remains honest, he will receive a bonus; so long as he does not commit murder, he shall receive his wages, plus 5%!!! The bonus of 5% is a small increase compared to the reduction to 25 cents per hour. The object, we take it, is to provide a financial incentive to preventing forest fires. The standard wage does that same thing.

If we bonused the logging crews whose fire season's payroll may be conservatively estimated at \$15,000,000, we would require to put aside, at 5%, \$750,000 or over one and a half times the revenue annually received for forest Protection purposes. Even one percent requires \$150,000 and anything less than one percent would not be a bonus - it would be a joke. Again there would arise the question - why bonus logging crews? They stand to gain most by preserving the means of their livelihood from fire. Why not bonus every camper, fisherman, hunter, prospector and berry picker who does not start a fire? As for three out of every four fires occurring in logging operations, we suppose it must be as stated, only our annual report, which is compiled from the information turned in by the field, states that 7.82% of the 1922 fires were started in logging operations, and for the past five years, approximately seven percent of the fires were caused by all industrial operations.

There is also this point to be considered. The Forest Protection tax amounts to two and one half cents per acre. Assuming that 50,000 acres per annum, which pay Forest Protection tax, are logged off and we pay a 5% bonus to the loggers, we would be returning \$1.50 per acre to the loggers for protecting their own means of obtaining a livelihood. True, we have an equity in the timber, but the risk has already been shown in this case to have been caused by the loggers, so why pay a bonus for creating a risk to our equity. Besides, can it be supposed that our Royalty equity can be compared to the loggers, in equipment, camps, etc.

Further, the B.S. & O'B Co. has around Stillwater some 20,000 acres. The F.P. Fund receives 2-1/2 cents per acre. If it cost the B.S. & O'B Co. \$18,000 to protect 20,000 acres, (only a portion of which they are logging,) it cost them 90 cents per acre,

and 1923 was a good year. Does this look like good business from a Departmental point of view, which has 120,000,000 acres to protect?

Looks as if we do not quite agree with the bonus scheme, so we may as well confess, that from a Departmental point of view ----- we don't. It is, however, a free country, and any firm is at liberty to pay their employees all they like. We only wish we could share in the distribution of the odd five percent.

C.S.C.

... ..

As we go to Press, we hear that a bad fire broke out on the operation under discussion and burned three donkeys, several thousand feet of logs and took over 200 men to fight. Humidity on the day this fire broke out was 26° and it shows that the bonus system is not infallible, as report states that the fire broke out where the fallers and buckers were working.

NO TASTE FOR TRIMMINGS.

By Emery E. Wilson, Jefferson

In the Service Bulletin of January 28, headed "Marks of Faithfulness" we have another feeler for attraction in our personal make-up.

I am not a raving pacifist, or anti-militarist, but these decorations do sort of get on my nerves. I have never been fully reconciled to the belief that we ought to wear a uniform, but this is now a requirement and I respectfully surrender.. Now with our uniform whereby we are distinguished from the men that we meet, mingle with, and do business with day after day, here comes another attraction in the form of tape wound around our arm.

We have the public to deal with for the most part in a different way than the postman, street railway men, coast guards, and policemen have, and the more firmly we keep this in mind the better the Service will succeed. The railroad companies do not require their business solicitors or the men that mingle on the business getting side of their work to wear distinguishing marks. Neither does any other business concern that I have knowledge of.

On our ranger districts we live with the users of our forest resources as neighbors; we associate with them as friends; do business mainly on an equal degree of rank and not by force or show of authority. In other words we should make ourselves fit in to attain that likeable respect and confidence. All these decorations tend to widen just this very gap that we are trying to fill up.

EXPERIMENTAL FORESTRY - SWEDEN

Very often it is difficult to get good regeneration after cutting in the old forests of Norrland; The pine and spruce plants brought up either by sowing or planting will be small and delicate; they are little capable of development and do not live for a long time. However, it is remarkable what fine, densely and vigorous young forest stands are to be found on the areas once overtaken by forest fires. These formerly burnt off areas, often of a very large extent, are now as a rule covered with pine forest, but on the slopes and other localities of a higher quality also mixed coniferous stands are present, usually mixed with hardwoods as birch and aspen.

In a raw humus cover no saltpetre is present, and also the ammonia is scarcely represented. This is by the experiments the main cause of the poor development of the plants. A raw humus cover can be converted into a saltpetre producing humus by a slight burning of the ground, by mixing the humus with the mineral earth and by exposing a clearcut area to the sun for a long time, the result being a more vivid mouldering process. On the open treeless areas on the pine heaths the nitrogen is especially hard confined, but in the humus cover in the neighborhood of the older trees and around the mouldering stems it is more easily available. There is a certain correlation between the development of the plants on different places and the accessibility of the nitrogen in the humus. Hence it follows that measures, furthering the conversion of the nitrogen in the humus, are of a great importance for the forest regeneration work.

(Continued from page 12.)

I firmly believe that those modest and old-time rangers that Mr. Guthrie speaks of in his article - who are not shouting their years, who worked along with the people dressed in the style they dressed in, and talked in their language - really played the greater part in placing the Service with the people where it is to-day. To be sure they did not advertise themselves, but they did advertise the Service and are now remembered, not by tape or any other marks on a uniform, but by the service they gave.

(U.S. Forest Service Bulletin,
March 10, 1924).

PAUL BUNYAN - LOGGER.

Paul Bunyan, the legendary hero of all woodsmen, was a man of might and held sway through the whole of North America but, in particular, carried on his logging operations throughout this mighty and expansive West. There is much speculation rife regarding his place of birth but it is certain from all evidence at hand that he was born in the West only, somewhere in British Columbia or the United States. It doesn't matter where particularly so long as he was born.

He was quite an active baby and was extraordinarily big for his size. His cradle was an enormous affair and was made by his father. After Paul's birth a definite decision regarding the size of the Bunyan family was arrived at by his parents and the cradle was sold and a large portion of old Seattle as well as Vancouver was built from the lumber cut from it. It is said that nearly six sawmills also were built from it and that ties for a 12 mile section of the Northern Pacific Railway and a portion of the Canadian Pacific Railway were cut from the scraps.

Prior to and immediately following Paul's birth his parents led quite a nomadic life, but they had to settle down. Paul was so restless that every time he rolled over he destroyed over a section of standing timber. Being true conservationists his parents couldn't stand that, so they made a big raft which they anchored off the coast and cradled Paul thereon. They had considerable trouble with the authorities, however, for every time Paul rolled about trying to suck his big toe he caused 50 to 100 foot tidal waves to roll in which interfered with fishing and the use of the beaches by the holiday crowds. This raft was afterwards used in the construction of most of the docks at San Francisco.

Paul's babyhood exploits are many but they do not compare with the wonderful things he did when he grew up. It is recorded, however, that when he was a boy of three years he chased a grizzly bear to the top of Mt. Olympus in the State of Washington, jerked its hind leg off and beat the bear to death with it before the bear reached Port Angeles. The three-legged bear is now in a private collection at Seattle and is evidence of this exploit. Paul early became an expert woodsman and it is said of him that he one time found the skeleton of a bull moose that had died of old age and, in order to test himself out in this respect, he tracked it back to the place it was born even though most of the tracking was done in mid-summer when the ground was covered with three feet of snow.

Early in his life Paul was sent to school. He, however, caused such consternation and dismay by insisting upon using that fearsome creature of the lumber-woods, the "Whirling Whimpus", as a spinning top that he was forced to drift from one school to another. It became impossible to keep school-marms in any district and this fact, together with the protests of bachelors interested in school-marms required that Paul finish his education in the woods.

SCENERY A GREAT ASSET.

The Dominion Parks Board has estimated that the tourist traffic was worth \$36,000,000 to the Province of British Columbia last year. It is also estimated by competent authorities that the value of the tourist trade in 1924 will be at least double 1923.

In point of revenue producing ability the tourist business is now one of the province's best earners. It is contended that its activities result in a much larger margin of profit than do most others.

Tourist traffic is now counted a national asset by Great Britain, Switzerland, France and other European countries, and everything we can do to increase the attractiveness and accessibility of British Columbia's beauty spots will increase the tangible wealth of the Province.

This is one sense in which the Forest wealth is inexhaustible. The scenic beauty need not be depleted but will remain a source of joy to lovers of the great outdoors in this and succeeding generations, and an ever increasing source of revenue to the people of our Province.

What stronger argument can we find for Forest Protection? The grandeur of our mountains would quickly fade but for their Forest cloak of eternal green.

One of our posters says, "A match has a head but can't think," but there is more in the head of the match than in the head of the man who through carelessness with fire will depreciate one of the greatest assets of our province.

If a man would view a priceless collection of art treasures and then deliberately attempt to destroy them society would insist that he be confined to a mental hospital.

Sometimes I feel the same treatment should be meted out to the fool who will feast on the unparalleled scenery of our hills and then through carelessness with match, cigarette, cigar or camp fire destroy the priceless picture of forest beauty which has been wrought by nature's hand through the slow procession of time.

MAKING A START IN CANADA

(A Canadian's Good Advice to Lads.)

Major Clark expressed to the Commissioner and all present, but especially to the lads who were starting out on their great adventure, the good wishes of the Agent-General for British Columbia and his sincere regret that he was unable to attend. He congratulated the lads upon their good sense in laying hold of the opportunity of proceeding, under the auspices of the Salvation Army, to the great new land of Canada across the sea. Their love for the Motherland, he said, would be strengthened by their experience, and their loyalty to the flag would be increased.

"How easy to go with you in fancy on your trip," he continued; "the short train ride to Liverpool; the big ship at the docks, and the busy scene there. Then up with the anchor and slipping away, the lights of England gradually blinking out; getting your sea-legs, and a wonderful appetite by the usual process; life aboard, with its games and yarns and eating and sleeping. Then the first sight of land (how the blood races through the veins in the thrill of setting foot on Canadian soil!); tying up at the docks; the fuss over baggage; all aboard the train (you will think them great trains); the never-ending interest; the clean cities and grand railway stations; the activities of spring on the prairies; the mighty rivers and lakes and mountains - it will appear truly a wonderland.

"Now a word of advice. You are, I understand, all going to agricultural work. Take notice of the small things. Tackle anything that comes along. To succeed in farming when starting with nothing but a clean, healthy body and a will to work you must be Jack-of-all-trades and master of most of them. Just recall how many times you've seen a job done and go at it; you will never learn any other way. And so learn how to use a saw (and sharpen it), an axe (and sharpen it), a hammer (but a claw one, if you please), and first thing you know you will surprise yourself what a good carpenter you really are. And so with the purely farm work, notice keenly how the harness goes on and off, how the teams are hitched up to the implements, how the neck-yoke is over and not under the wagon-pole. Tackle the ploughing and the milking with a will to succeed, and you will get there all right.

"Take an interest in the plant life, study botany; find out about the animals and birds, watch the flights of wild-fowl, and be comforted, too, with the grand thought of William Cullen Bryant in his 'Ode to the Waterfowl.' You may not have seen a flight of wild geese in England; you will see many in Canada. Bryant had watched a flight of these birds in their V-shaped formation, away up in the thin, cold atmosphere, on their long journey to their nesting grounds in the Far North, and he gave us his grand thought in these words:-

He who from zone to zone
Guides through the boundless sky thy certain flight;
In the long way that I must tread alone
Will lead my steps aright.

"Let that thought comfort those who are left behind, and cheer those who are starting out on their journey. All's well if God leads. You will find hearts as kind there as they are here. You will find less of poverty, more of living, and less of dying, because Canada is a young nation with a mighty future before it. See that you live up to your heritage, up to the Canadian ideals. Oh, yeas; we have our mistakes over there, but in a new land they are not so hard to right as they are in the Old Land. There is room to have wide streets at the start, wide spaces for mankind - in short all the difference between three to the square mile and 600 to the square mile. Men can have wider, broader visions and strive to live up to them.

"So go forward; go forward and inherit the land; go with faith in your Creator and courage in your hearts; and good luck with you; God bless you each and everyone."

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(The foregoing is reprinted from 'CANADA' of April 12th. It has nothing to do with Forestry, we know, but we make no apology for its inclusion in 'ROCK AND BRANCH'. Incidentally, we might mention that Major J.W. Clark belongs to the Department of Lands, but we quote his remarks less on that account than for their straight forwardness and honesty. We cannot but feel that it would be infinitely better, both for the settlers themselves and for this country, if all our immigrants landed here with just such counsel fresh in their minds. They would be spared the bitterness of disillusionment which comes to those who have been urged to Canada solely by promises of swift and easy affluence - in other words, those in whom cupidity has been the only sentiment aroused. Editor.)

THE GUN-TOTING HABIT - Glancing idly through the pages of an American magazine devoted to the Moving picture industry, we were struck by the frequency of advertisements of fire-arms. We counted nine separate and distinct advertisements of revolvers and automatic pistols at prices ranging all the way from six to twenty dollars. "SEND NO MONEY" reads one of these urgent appeals to the reader to equip himself with a lethal weapon. Apparently in the United States no home is complete without one, but the serious aspect is that seemingly there is nothing to prevent any half-wit who has the price from acquiring one. A strange state of affairs in the country which sponsored the plea for Universal Disarmament and the Washington Agreement.

H U M I D I T Y

(C. S. Cowan)

A great deal has been heard of late about the term "Relative Humidity". Some of you, no doubt, know that it really means the relative amount of moisture contained in the air at any particular time. There are various ways of measuring the amount of humidity in the air; one of the easiest of which is with an instrument called a hygro-thermograph, which records mechanically both temperature and humidity at the same time on a chart. There is another instrument called the psychrometer now familiar to you which is simply a wet and dry bulb, the difference being read and the humidity ascertained by referring the difference to a table. This is of course but a sketchy outline, but details have already been given at the various ranger meetings and you have since gained the necessary knowledge by experience.

We have known for some years that we have fire days even more than fire seasons. This is borne out by the following history:-

Some years ago this office started to keep a chart of fire occurrence, in which we recorded the occurrence of fires week by week, together with the temperature and the rainfall. It was noted that the fire occurrence did not necessarily follow the maximum temperature, neither did a showery period necessarily put a stop to the fire occurrence of that particular week, as the following diagrams will show. We did not know exactly what we wanted; we were in search of information, and the chart we instituted was the first step in the chain. Later Dr. Hoffman and Mr. Gisburne of the U. S. Forest Service, in their research work, tied in humidity, both of air and of duff, to fire occurrence. We have partly applied this to our chart and find that there seems to be a solution of our problem. During week of May, 1922, if you look at our fire charts for Prince Rupert, Prince George, Vancouver and Cariboo, you will notice that there is a very sharp ascent of fire occurrence. At the same time during the preceding week a very appreciable amount of rain fell, and although the temperature rises during this week rather sharply, at the same time the fire occurrence rises in a still sharper line. The chart shows, when placed on relative humidity curve what the real reason apparently was. The facts of the matter are simple. When the air is dry the forest material dries with it. You all know that it is possible in British Columbia, to have high temperatures with moist, muggy air, during which period fires do not run. This is a period of high humidity, and again you can have lower temperatures in which the air is very dry and fires will spread rapidly. This appears to be the reason for our fire losses.

Having found out that fires will spread when humidity

is low, we naturally want to find out what we can do about it. Boiled down, it simply means that our old, reiterated statement of "kill the fire as soon as you see it" holds good still more than ever. But we can use our knowledge of humidity for other purposes. Thus, humidity varies from what is generally its lowest point at midnight, rising somewhere around 8 A.M., reaching its maximum at about 2 P.M. and then gradually dropping again. This is the usual course, but there are occasions on which humidity remains low throughout the night or even drops, and then again drops still further during the day, and during the summer 24 to 36 hours of this condition will create a very dangerous forest fire situation. This is what happened in May 1922. This may happen again, and if you can watch this condition you will naturally be prepared to take every possible step to get your fires out before the humidity has become so low that your fires will break out of control for no apparent cause, but which you will now blithely ascribe to low humidity. It is a good thing to find out what normal is for your District, generally throughout the Province.

We can also use this knowledge for the purpose of setting back-fires. Thus, you would generally set a back-fire during a period of rising humidity, or in the afternoon, if the instrument records that humidity is rising.

We hope to place very shortly in the hands of our rangers, instruments which will measure humidity, and you will thus be able to know on the ground, at any particular time, what the conditions really are.

A member of the U.S. Forest Service brings out a very good point, and that is, while the humidity of the air may be very low, at the same time it has not had sufficient time to dry out the forest material, and what is really necessary to know is the moisture content of forest material. This is perfectly true, and is a very good point, but should only be used, so far as laymen like myself can judge, with a view to using the humidity of the air as a guide or forecasts to the condition of the forest floor or debris. We hope to shortly place in your hands the book entitled "Relative Humidity and Forest Fires", and you will note in figure 3, that while relative humidity drops below 30, there is a certain lag of the moisture content of moss as one material and of needles and twigs in the other, but moss goes well over the inflammable point, or the point at which it will ignite readily, and the needles and twigs reach it on the following day, following generally the curve of the humidity. Figure 2 shows the condition existing on May 14, 1922 by hours, and you will note in this figure how the forest material such as fern, pearly everlasting and fire weed crosses the inflammability point following the line of relative humidity. This is interesting, because it is simply an explanation of a condition which we knew existed but could not explain. Thus, the charts will show you exactly what was happening so far as

British Columbia was concerned, by having the relative humidity placed on our charts. You will note how the fire occurrence follows the humidity curve.

This brief article is simply intended to open what will, I hope prove to be a very extensive question box. If you have any questions to ask, please ask them.

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RULES FOR INTERPRETING RELATIVE HUMIDITY READINGS.

In utilizing relative humidity readings for determining or predicting changes in the degree of hazard, it is first of all necessary to understand the decided changes which normally occur in the relative humidity of the air (i.e. its percentage of saturation) at different periods of the day.

Normally the relative humidity is very high at night (80 - 100%) and reaches its highest point a little before sunrise, or about 4:00 a.m. Starting sometime between 7 and 9 a.m., it usually decreases very rapidly for an hour or two, as the air warms up; and then remains fairly constant or continues to decrease at a gradual rate until sometime between 2 and 5 p.m., when it usually begins to rise rapidly, due to the cooling of the air, ordinarily getting up to 70 or more by 9 or 10 p.m. Usually it is lowest during the middle of the afternoon when the temperature is highest. (The well-known tendency of fires to begin picking up between 10 and 12 a.m., to burn most fiercely during the afternoon, to begin dying down early in the evening, and to almost go out between midnight and 4 a.m., is a direct result of this normal falling and rising of the relative humidity.) With this in mind it is obvious that relative humidity readings can be most effectively interpreted by noting any marked departures from the normal readings for different periods of the day.

Observations of the continuous automatic records of a hydrograph very soon enables one to detect instantly any marked departure from the normal. With sling psychrometers, however, the normal daily changes for the region under observation should first be determined by a series of readings taken at the same hours for several consecutive days.

General rules in regard to the interpretations of relative humidity readings are:

1. That an unusually low relative humidity throughout the night or early in the morning is indicative of extremely low humidities and a very high inflammability later in the day. (For most regions a humidity of 60% at sunrise would constitute a danger signal.)

2. That extremely low humidities continuing for two hours or more will normally result in an extremely high inflammability, the degree of inflammability tending to increase materially with the duration of the low period. (In this connection humidities below 35% would be classed as dangerous, the degree of danger increasing rapidly with lower percentages.)

3. That an extremely low humidity lasting only for a half hour or so will not necessarily result in an extreme hazard.

4. That phenomenally dangerous conditions may exist at any time of day or night as a result of phenomenally low humidities.

5. That normally the inflammability of materials decrease and fires tend to die down materially within an hour or so after any marked increase in the humidity.

6. That high humidities continuing for two hours or more will result in such a low degree of inflammability that there is little danger of fires being started from sparks or making any material spread except insofar as intensely hot fires already burning in heavy slash or similar materials might carry on through drying out materials in advance (this will hold with humidities above 60%).

7. That the hold-over effect of rains which may have occurred within the last two or three days will naturally tend to reduce the hazard and modify the normal effect of low humidities. In this connection, however, experience has proved that extremely low humidities will bring about conditions favorable to very rapid spread, in less than 48 hours after a heavy rain. This is due to the fact that the fine materials on which fires travel dry out very quickly under favorable conditions.

8. That unusually low humidities occurring several days in succession or within periods of extreme drought result in the most extremely dangerous conditions in all types.

9. That while the effect of high temperatures is adequately accounted for in the relative humidity readings, high winds tend to increase slightly the degree of inflammability which would normally exist under the same humidities with little or no wind.

10. That under any degree of inflammability which permits burning, a wind or steep slope will naturally tend to increase the probable rate of spread of any fires that become established.

11. That in applying relative humidity readings, the readings should preferably be taken on sites similar to those on which the data are to be applied. For convenience, however,

readings may very properly be taken in large clearings which are exposed directly to the sun and wind and correction factors applied to determine the approximate relative humidity which will prevail at the same time in dense shaded stands, north slopes, etc. where lower temperatures and slower circulation of air will naturally result in a comparatively higher relative humidity.

THE FLEET

Those of us who were privileged to view the SPECIAL SERVICE SQUADRON during its visit to Victoria and Vancouver must without exception have gained a lively and lasting impression of the strength and dignity which clothes, as with a mantle, our First Line of Defence.

This impression is created not so much by the massive bulk of the ships themselves as by the general atmosphere of calm and complete competence with which they are invested. Six centuries of splendid tradition and glorious achievement have set their seal upon our Navy. The ships are not the ships of Drake and Nelson, naval battles are no longer fought hand to hand and yardarm to yardarm, and naval gunnery has been elevated from a pointblank exchange to a scientific plane beyond the conception of ordinary mortals; but one great fundamental remains unaltered - the spirit which animates the personnel remains the same.

The shock of Coronel brings the swift vengeance of the Falklands, the desperate campaign of the U-boats results only in an offensive more terrible than their own, and the imposing fleet built in anticipation of "The Day" finds an inglorious resting place among the mud and silt of Scappa Flow. Perpetual preparedness, a high state of efficiency, and an unruffled consciousness of its own strength combine to make our Navy great, but it is the Spirit which makes it incomparable.

Editor.

FOREST PRODUCTS LABORATORIES OF CANADA.

We have a very cordial letter from Mr. J.H. Jenkins, of the Vancouver Laboratory, part of which reads as follows -

"I never realized before what a quantity and variety of information is handed out from this Laboratory. The field staff (especially Rangers) who are generally unable to have access to a reference library, must have many little technical problems put up to them by various operators, which they are unable to answer, but which this laboratory would be only too glad to answer for them. This laboratory is ready at all times to supply information on the properties, preservation and identification of woods.

"I wish that one of the Headquarters staff could be sufficiently interested to pay the laboratory a visit the next time he was in Vancouver to determine how the laboratory could best be of assistance to the field staff and to the operators through the field staff."

Mr. Jenkins is known to many of our readers, particularly those in the Prince George and Vernon districts, where most of his work was done during his year with us as a Junior Forester, and up to the date of his resignation to accept the post of Timber Test Engineer (with special reference to kiln-drying) with the Forest Products Laboratory at Vancouver.

"I must apologise for bringing propaganda into a friendly letter," writes Mr. Jenkins in conclusion. He has our cordial assurance that no apology is necessary, and it affords us great pleasure to know that he entertains these feelings towards the Service.

We trust that full advantage will be taken of Mr. Jenkins' invitation to make use of the facilities provided by the Forest Products Laboratory.

AN EXPLANATION AND AN APOLOGY - "Has 'ROOT AND BRANCH' ceased to function?" is a question which has been put to us several times in the course of the past few weeks. This and the preceding number, however, will (we hope) establish the fact that 'ROOT AND BRANCH' is still alive.

A number of circumstances have combined to upset our schedule. In the first place, the CONFERENCE number proved so voluminous that we decided in the interests of economy to forego the publication for April. Another reason has been the tremendous pressure of work in the Printing Department, which prevented our getting our covers printed; and as these covers have become an established feature of 'ROOT AND BRANCH' we were reluctant to abandon them, even temporarily.

We trust the several readers who have written us on the point will accept this explanation and apology - together with our thanks for their friendly interest. Editor.

PERSONAL PARS

So Tom Clarke, Assistant District Forester at Prince Rupert, has joined the ranks of the Benedicts. Well, well, well! We extend our very best wishes. May every Joy and Happiness be the portion of Mr and Mrs Tom Clarke.

Rumour tells us, too, that one of our District Foresters contemplates taking action along similar lines in the near future. How many bachelor District Foresters have we? Well, you can count 'em on the index finger of one hand.

It may not be generally known, but it will be a matter of general interest and certainly of general regret, that Major Andrews, District Forester at Vancouver, has tendered his resignation to take effect at the end of the current month, when he will assume charge of the affairs of the B. C. Loggers Association. The Service as a whole wish him every success in his new field of endeavour.

In consequence of the resignation of Mr. P. SHARKEY, T. A. Clarke becomes Assistant District Forester at Prince Rupert, a promotion which is deservedly popular. This has involved a slight reshuffling of the personnel in the Northern Districts; Supervisor Leighton assumes the duties of Fire Inspector, and Supervisor Brewer has been transferred from Prince George to Prince Rupert.

We have been asked to announce - and we do so with very great pleasure - that the Staff of the Vancouver Forest District will hold their Annual Picnic and Sports Day on Saturday JUNE 28th at Maple Grove Park, Kerrisdale. A hearty invitation is extended to all out of town members of the Service and their families who can make it convenient to attend.

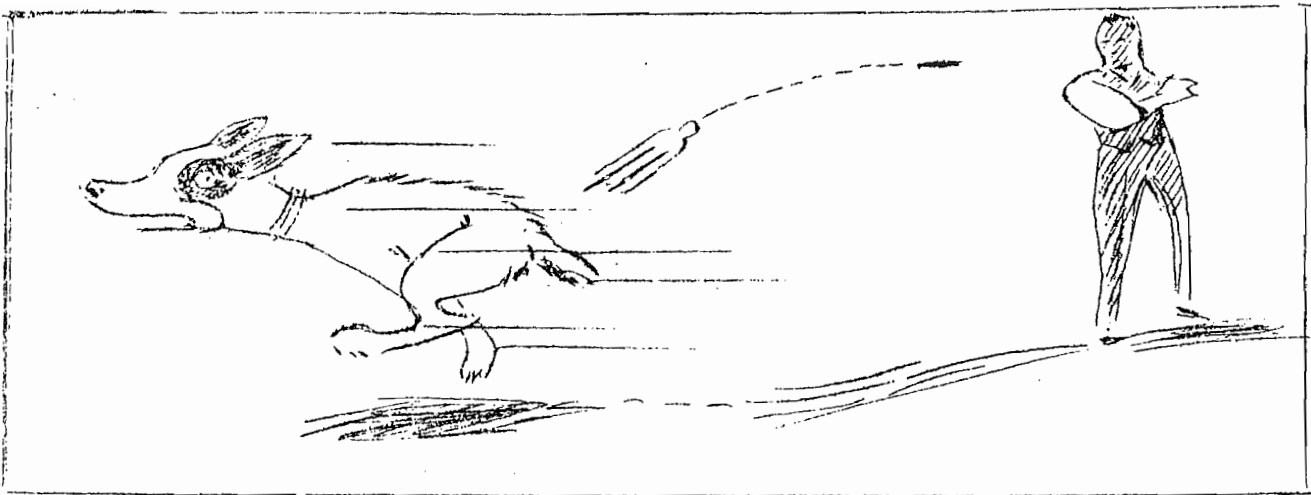
"White coyotes have been seen along the Prince George and Quesnel Highway," reads a bulletin from the Cariboo district, "by rangers returning from the Ranger meeting at Prince George. Next to the Blonde Eskimo and Dr Chase's 'Pain-killer' this is the most important discovery made in late years, and should call for special investigation by the Game Board. First hand information in regard to weather conditions and roads in the locality of the White coyotes can be obtained from Forester Melrose of Victoria."

(We have referred the matter to Forester Melrose, but he is oddly reticent. We shall have to revise our views in regard to mules, though. Heretofore we have held to the opinion that Mules and Eugenics had nothing in common, but now it would appear that White Mule (taken in sufficient quantity) begets the White Coyote.)

From the Cariboo, we hear that George Gilchrist, who has been Asst. Ranger in the Barkerville district for a number of seasons, is still in Hospital at Quesnel suffering from a bruised leg, the result of an accident while patrolling the Goat River trail last season. This, it is feared, will preclude his taking over his duties as Assistant Ranger this year.

OUR BOOK SHELF

- Theory of Light Burning in Yellow Pine Disproved.
Timberman, Jan. 1924.
- Minimum Requirements for Reforestation, E. T. Allen.
- A Forester's Code of Ethics. T. S. Woolsey, Jr.
- Consider the Christmas Tree, H. R. Christie.
Ill. Can. Forest and Outdoors. Feb. 1924.
- The Genesis of the Pacific North West Lumber Industry.
W. Coast Lumberman, Jan. 1, 1924.
- Rapid Growth of Western Yellow Pine on Stump Patches.
W. Coast Lumberman, Feb. 15, 1924.
- How Fast Does a Douglas Fir Tree Grow?
W. Coast Lumberman, Jan. 1, 1924.
- Appraisal of Forest Fire Damages. H. R. Flint.
- Fires and Fire Weather. E. Fritz.
The Timberman, March, 1924.
- Relative Costs of Yarding large and small Timber.
Un. of Cal. Agric. Exp. Station, Bulletin No. 371
- To Find Weight of Logs,
Canadian Lumberman, March 15, 1924.
- High Lead Logging in California.
The Timberman, March, 1924.
- Cruise and Yield Study for Management. R. R. Penska.
Journal of Forestry, Jan. 1924.
- What is Sustained Yield?
Pulp and Paper Magazine, Feb. 14, 1924.
- Special Report of Proceedings at Vancouver and Victoria of
Royal Commission on Pulp Wood.
B. C. Lumberman, March, 1924.
- Resources of Country are Natural Assets. C. L. Lyford.
Canadian Lumberman, March 15, 1924.
- Canada's Forests, The passing Show. L. S. Webb.



SPORTS AND PASTIMES (at Kamloops) : Slinging the
Psychrometer.

IT'S A HARD WORLD

A year has	365	days.
Sleep, 3 hours	<u>122</u>	"
Rest, 8 hours	<u>122</u>	"
Sundays	<u>52</u>	"
Saturdays, 1/2 day	<u>26</u>	"
Lunch, 1-1/2 hours	<u>28</u>	"
Annual Vacation, 14 days..	<u>14</u>	"
Which leaves One Day, on which (being Labor Day) nobody works.		
