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ROD AND GUN IN CANADA

Sylvain L. P. May '04
Lib. of Parliament
OTTAWA, ONT.



By the Athabaska.

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OF CANADIAN SPORT
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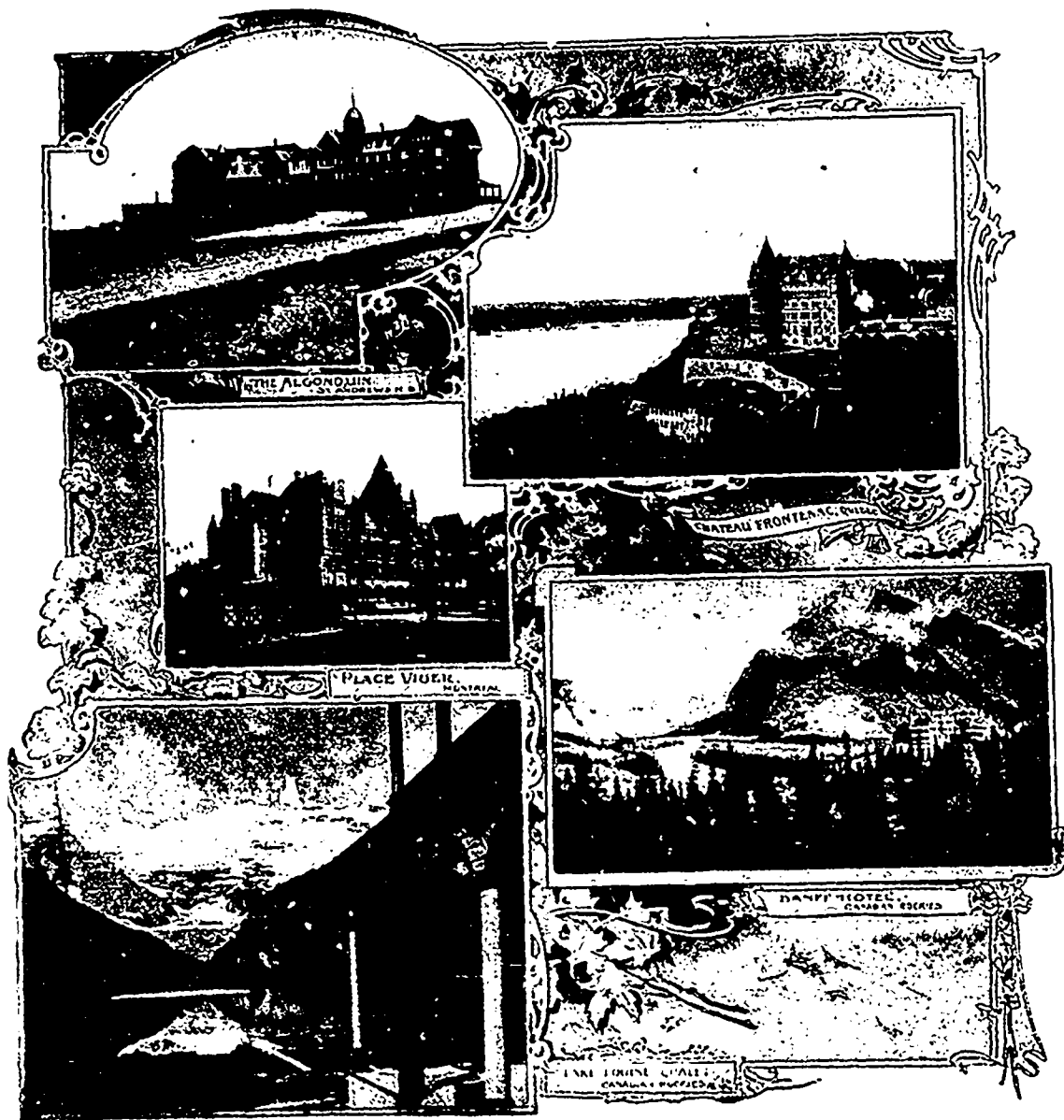
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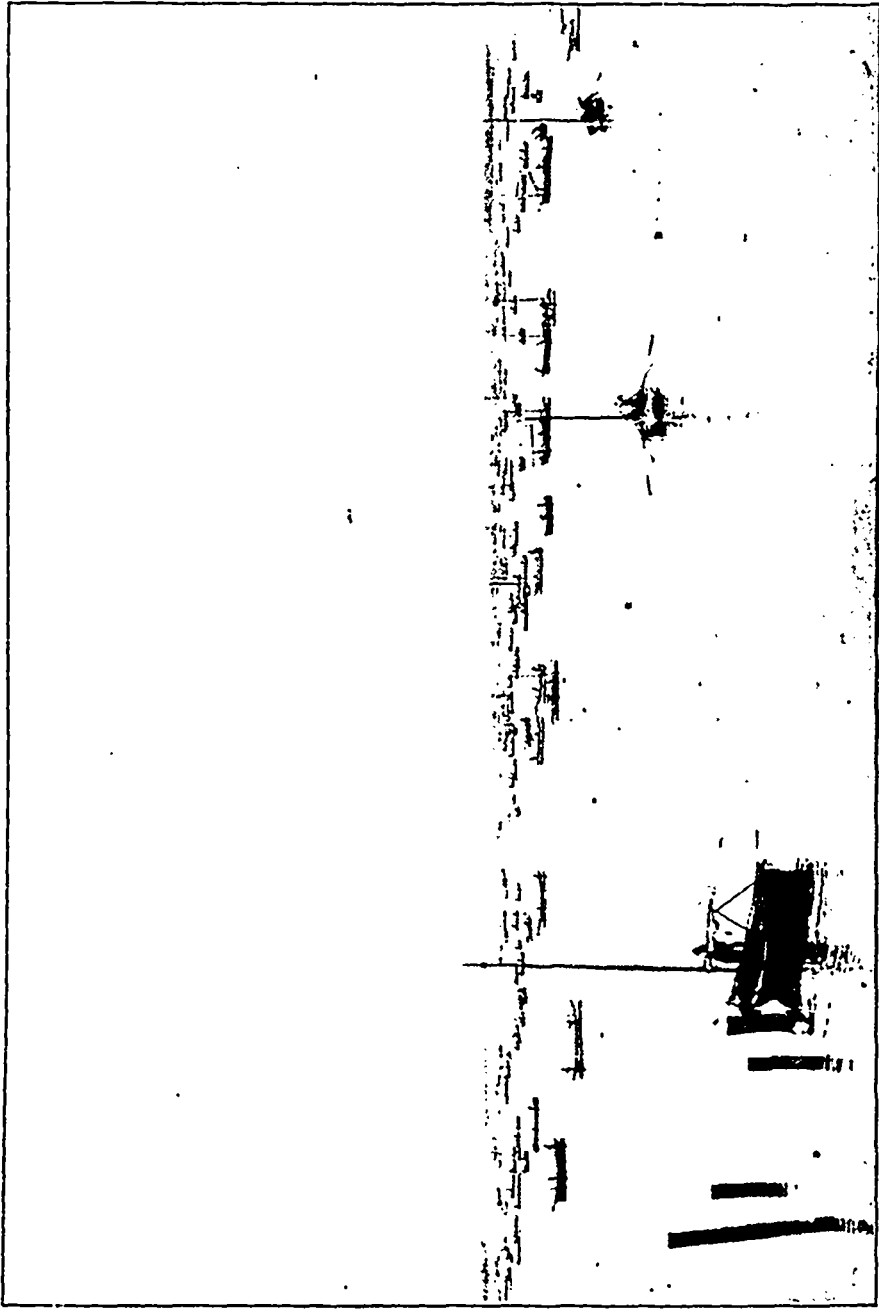
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Canadian Edition

ROD AND GUN IN CANADA

VOL. VI.

MONTREAL AND TORONTO, NOVEMBER, 1904

No. 6

With The Indian.

By C. G. COWAN.

To the sportsman, the man fond of freedom and Nature, fond of the wilderness and the solitudes of the mountains, I know of no country to be compared with the northern region of the Rockies. For many years it has been my good luck to spend at least some part of the twelve months, north of that wonderful institution, the Canadian Pacific Railway, trapping and hunting with the Indians. The particular trip I am about to give an account of occurred some years ago, and took me to the head waters of the Saskatchewan, Athabasca and Frazer rivers. I purchased my provisions at Edmonton, one of the most thriving and beautifully situated towns in North-Western Canada. It was a simple outfit, and only consisted of the bare necessities of life for twelve months. Thirteen pack horses carried it all. I had two half-breeds, Alexis and Alfred, and an Indian, called Jack, to accompany me. It was in the early spring we left behind us the lights of civilization; the warm winds and hot suns were doing their utmost to rid the ground of the snow. Our journey to the mountains occupied the best part of fourteen days. The road was a narrow pack trail, through forests of pine, over netted masses of fallen timber; across swiftly running rivers, and through almost bottomless muskegs. On arrival at the mountains we found our horses fagged and unable to go further without rest and feed, so, we selected a good valley, made permi-

anent camp, and remained here for several weeks. We were now at the entrance to the Yellow Head Pass, and sheep and goat were plentiful, so there was no scarcity of fresh meat. White fish were, also, in abundance in waters close by, and every day we remained here our horses showed signs of improvement. One day, whilst hunting with Jack, I met a half-breed Iroquois, and after some conversation with him, agreed to visit his camp next day. I found him living with his wife and family in one lodge, his brother with his wife was in a tepee close by, and two other lodges of Indians completed the camp. The whole party were known as Rocky Mountain Indians and lived entirely by hunting. They objected to white men hunting in this section of the mountains, but thanks to the officer in charge of the H. B. Co. store, where I bought my provisions, I received a good introduction to this little band, and they did all they could for me. To make a long story short, I joined them at once, and instead of wandering about in mountains quite unknown to me I was guided by one of the most civil and courteous half-breeds to the best hunting fields in the Rockies.

We were now a party of sixteen, men, women and children. The head man and guide was John, a most congenial companion to travel with. His brother Alex, who I regret to say was afterwards killed by a white man in a dispute about beaver skins,

was also a useful friend to me, and with these two men, their families, and their followers, I travelled to the head waters of the Saskatchewan, Athabasca and Frazer rivers. I had brought with me a cross-cut saw and other tools necessary to build a comfortable log cabin, and whilst the horses were resting and gaining flesh, we put up substantial winter quarters, located in a place convenient to wood and water, in the centre of a good game country, and close to where there was plenty of trapping. This completed, we gathered together one night outside the cabin and held a great "tea dance," (there was also a little Hudson's Bay rum.) The Indians and half-breeds came from the adjoining valleys, and on that night I became known to all in the Yellow Head Pass. To my own lot I suggested we should visit the country around the head waters of the Saskatchewan, and after caching in the cabin such things as we did not require, we started. As I looked back on the train of pack animals,—the men, women and children that followed us,—for John was leading, I thought to myself a happier lot never started on journey before. Even the dogs, and we had plenty of them, wagged their tails freely as they moved off in rear.

From the Athabasca to the Saskatchewan we found a rough trail. We travelled up Rock Creek, killing mountain sheep and goat every day as we moved on. John, Alex and myself would take the side of the Mountains, just above timber limit, on foot, whilst the remainder of the party, with the horses, kept at the bottom of the valley until they heard us shoot; then Alexis and Jack would bring two or three of the ponies to where the shooting occurred, and, if we had made a kill, the meat would be loaded, and all would return to the trail, where the women usually had a comfortable camp already established. In this way we went on for eight or ten days, until our arrival at Saskatchewan river. Here we remained several weeks, hunting elk, sheep and bears, in one of the most beautiful countries it has ever been my lot to travel in. The meat of the animals we killed was carefully cut up, spread on poles, and properly dried and cured for winter use. There was a salt lick close to our camp, visited daily by num-

bers of sheep, yet the big rams seldom if ever came to lick. One day, about sunrise, I counted no less than seventy-two wending their way in single file, down to the salt. Out of this lot we killed seventeen, which doubtless the reader may think unsportsmanlike, but remember the number we had to feed, the distance we were from any means of purchasing food, and the long winter before us! Our stay on the Saskatchewan did not last as long as I expected. My party had seen the fresh moccasin tracks of other Indians, and were afraid there might be trouble if they were caught hunting in grounds not their own, as every little band of Indians had their own portion of the valleys and mountains to hunt in, and they consider it a great breach of etiquette to hunt in other fields, without first acquainting the Indians who had the prior right. (Making trails, etc., gave them this right.) I agreed to a certain extent with my party, so we retired, leaving this magnificent field of sport, with every horse heavily loaded with dried meat and trophies. We arrived at the Athabasca a week later, deposited our loads in the cabin, and started within a few days on our next trip, which took us onto the summit of the Rockies, near the head waters of the Frazer river. Here we were in a country teeming with caribou, and after each day's slaughter, I can call it nothing else, as we had to kill freely in order that we might obtain sufficient meat for winter use, the Tom Toms of my companions would strike up and weird and melancholy tunes would reach my tepee until late in the night.

It was now getting on in the season, snow had already fallen to some depth, so we hastened back to the Athabasca river and made ready for winter. The thermometer registers daily below zero and the charm and pleasures of tent life have gone, but there are yet fascinations for me. To know this country perfectly and to have an accurate knowledge of the animal life in it, one must have the experience of a winter. It is only at this season one begins to realize what the natives can endure; what cold, what fatigue, and sufferings, what hunger and deprivations. On one occasion I had travelled some forty miles to a mountain where sheep ranged in

the winter, with a view to procure even a little fresh meat. I had Jack and three ponies with me. The snow lay deep on the ground, which made travelling very slow, yet I was able to cut off a portion of the journey by crossing a lake, which was frozen to such a thickness as to bear my cayuses. Darkness coming on we had to camp en route, so we made for some pine trees, where smoke was issuing from an Indian wigwam, off saddled and turned loose the ponies. Entering the tepee I found a squaw frying the entrails of a mountain sheep, and pouring off the grease into an empty tin. Another, much younger and beautiful to look at, with long jet black hair hanging loosely down her back, was scaling a white fish. Two youngsters, half clad and smeared from head to foot with the scales of the fish, hid themselves behind the women. The men of the lodge were out and had been off for three days visiting their traps. They returned that night, loaded with fur-bearing animals, and one of them told me they had not eaten, excepting a porcupine they killed, for fourteen hours, and here in their camp was nothing but a few fish and some black tea, yet they had still before them five months of a nearly Arctic winter. We got some flour and bacon in from my packs, and before they turned in for the night, we all had a good meal. They had laid two skins near the fire and wished me to camp in the lodge. I did, and was soon asleep, but not for long, as some one woke me, by adding more logs to the fire. Then we all seemed to rise as if by instinct, tea was made and drank, we had a smoke, and lay down again. Then the dogs wormed in one after the other and we all fell asleep. Leaving a little flour and bacon, and taking away a beautiful marten skin, I left the lodge and its hospitable occupants, and moved to the sheep mountain, where we encamped until we had secured enough meat to load the horses. We took the same trail on our way back and met with an experience on the lake that I shall find it hard ever to forget. We were about half way across, when a blizzard came up from the northeast, a blizzard such as I had never encountered before. The atmosphere was filled with drifting snow, making it impossible to see a yard ahead of us; the

wind struck the lake with such force as to blow the snow from under us, and the lake became a sheet of black glare ice, the horses could no longer travel, and were lying down, bleeding freely from their mouths, which were cut and lacerated from the many falls on the ice. The increasing cold was unbearable, we unloaded the horses and piled the loads in the air, then we dragged the horses by the tails and slid them into position, making a wall high enough to create some shelter. The saddle blankets we put over the horses, our own bedding we wrapped round ourselves, and lay down on the ice, back to back, with the horses. Night came on and with it a drowsy feeling, and a dreadful longing for sleep, our hands and feet were freezing, and I could see clearly if we remained here, one long sleep would be the last end. The gusts of cold wind, sleet and snow drifted furiously over the lake, as Jack and myself, leaving the horses to their fate, made for the shore. Jack took the lead, carrying with him a portion of the frozen meat. We reached the timber, but not before both of us were slightly frozen, and it wasn't until our fire, which we had kindled with great difficulty, began to throw out heat that we knew how badly we were to suffer. The wind abated about midnight, but the snow kept falling steadily all night, and at daylight we found the horses had gone ashore on the opposite side of the lake. Bringing them back, we loaded them with the meat and on the evening of the same day arrived at the cabin.

It was now nine months since I had left civilization, and although I sometimes felt lonely, and at times, for a moment, doubted if the near neighborhood of my own race was not absolutely essential, I gained much satisfaction in the feeling that I was alone: the only white man in the valley, that the mountains and the game on them, the rivers and the lakes and the fish in them, were mine; that the snow shoe trails I had "broken" all through the mountains bore no footprints but my own, my Indian and the wild animals that the medicine on our shoes lured to destruction. What man, under like circumstances, could help gaining a perfect knowledge of the country, and the animal-life in it? One day I left camp alone to follow one of my old

trails some few miles, then to break a new road, through the deep snow down to a small creek. I had turned off my old trail and was busy preparing a place to set a marten dead-fall, when I had a presentiment someone was watching me. I looked back on the trail, thinking Jack might have followed me, but there was no one in sight. Yet! I could feel there were eyes upon me. Dropping down on my knees I continued the making of the trap, only for a second, and I was on my feet again, looking anxiously around me, and I believe I felt like calling out. For the moment my thoughts darkened. Had I fallen a prey to the awful superstitions of the race I lived amongst. No! there before me, moving slowly from behind a fallen tree, was a huge timber wolf. It pleased me to see something, but when I recollected my only weapon of defence was a small hatchet, it would have pleased me more if the whole thing had been imagination. I watched him closely, with his tail gently wagging and his eyes rivetted on me, he moved a few yards nearer, stopped, sat up and looked at me. What a target, had I my rifle! For want of something better to do I commenced chopping at a sapling beside me, which I pushed when ready to fall, so that it would drop across the wolf. As the tree fell, he jumped to one side, showing freely those beautiful teeth. Then he howled until the howl echoed and re-echoed through the forest. Slipping my feet quietly into my snowshoes, I started towards the cabin, looking round at every second. Presently his mate joins him, and they both follow on my trail. It was an exciting walk and lasted until I arrived within a few hundred yards of the cabin, when the wolves suddenly turned from the trail and beat a hasty retreat into the thick undergrowth.

It is now the end of February, perhaps the best month for trapping, at all events we are getting plenty of fur every day. Our supplies are beginning to run short, all the dried meat we put up in the summer is finished, besides the fresh meat of twenty-eight caribou, that two wolves had driven off their range on the summit of the mountains, where the snow is blown off, into the deep snow on the side where the animals could no longer travel, and were about to be killed by the wolves when an

Indian spotted them, and collecting his forces, surrounded and killed every caribou.

The trapping was a pastime I enjoyed keenly. As I write now, I can hear the familiar sound of my snowshoes, going through the great forests of fir trees, where that strange stillness of Nature always prevails, where that rasping caw of the raven, or the weird yelp of the coyote, brings one to a standstill for the moment. On one occasion, whilst visiting my traps, I came upon the carcass of a full grown deer, which had evidently been pounced upon, dragged to the ground, and killed by a lynx, at all events these were the only tracks in evidence. I built a miniature fence of willows round the carcass, leaving three small openings, putting a trap in each. Next day I found the lynx in one of the traps. The following day I got a wolverine, and on the evening of the third found to my astonishment a beautiful specimen of a golden eagle, which I released, to fly back to its mate and its "Bald Mountain" home.

The snow was still deep on the ground, yet it was soft enough for the horses to travel, consequently we rounded them up from the valleys they had pawed in all winter. Some were fat, others too weak and thin for the trip so many hundreds miles back to civilization. The fat ones we made ready, loaded with skins and trophies and after a farewell shake with my good mountain friends, our homeward journey commenced. We had little or no food when we left the cabin, however three days travel brought us to a salt lick, where we killed two mountain sheep, the meat of which we partly dried, and lived on for many days. As we journeyed the ice in the rivers and creeks began to break up, the snow melting filled to the banks the smallest water courses, all of which we had bridged by felling three big trees across, and placing pine boughs on top. The horses took fright going over, crowded each other and one unfortunate pony, pack and all, was pitched off into the rushing water some distance below. Alexis, ever good with a rope, lasoed the pack the first throw, and in three minutes from the time of the accident, all was well, and we were again on the move. We had finished the sheep meat, and as rabbits were scarce, we were

compelled to kill a horse. Our victim was "Buck," an animal fairly fat and useless in a muskeg, therefore more deserving of death than any of the others. On its flesh we dragged out an existence for eleven

days, when we met a party of prospectors, from whom we traded a sufficient quantity of flour to satisfy our wants, until our trip came to an end, and the comforts of civilization commenced.

Indoor Rifle Shooting.

By STEPHEN P. M. TASKER.

Now that the cold weather is approaching and one is planning for diversion during the winter evenings indoors, there appears to me nothing so amusing and entertaining as small bore rifle shooting, and this can be done and a range fitted up in almost any garret or cellar about as follows:

In the first place, as 25 yards is the standard distance for 22-caliber and indoor shooting, we shall try to get that distance exactly, or if this is not possible with the location in question, measure off 12½ yards and the regulation target can be reduced one-half, as by this method you can accurately compare your scores with those made by the best amateurs and professionals as they appear each week in the shooting and fishing magazines. For instance. The German ring target being used almost exclusively, we will reduce it one-half and instead of having a 2-inch bull at 25 yards, with one-quarter spaces, we will have a 1-inch ring with one-eighth inch spaces, and ignoring the diameter of the bullet (which theoretically should be also reduced one-half), a score made at 12½ yards of say 240 would be exactly the same as if made at 25 yards, and we can compare these with what others are doing. It is a much better way to shoot at a standard target and keep a score for every one than to shoot at any old mark, as you can keep no line on your shooting and you will not know at the end of a season if you have improved or not. It is a good plan to average every 100 shots and you will then notice your improvement, besides you can change the sights, etc., and note the different effects on your scores, but on this point give every change a good long trial, say 1,000 shots, before you try something else. Finally, and as soon as

possible, settle on what you think you would like best, and what you made the best average shooting with, and stick to it for good.

Going back to the target, you can get these 25-yard 4¼x5½ paper German ring targets with a 2-inch bull's eye at almost any gun store for \$3.00 a thousand, but if you have not this distance have a die made for a new target for a couple of dollars and you can get them that way cheaper than by buying from a store. I think my die with 10,000 targets cost \$10.00, and, of course, for the next lot they will be considerably cheaper, not having the die to pay for. These targets, as shown, have a 1-inch bull's-eye, are 4x4, which is large enough to catch all your shots, or pretty nearly when you first start to shoot, and in a little while you will be surprised to see how you can keep in and around the bull's-eye. Five shot scores are enough on one target and a possible would be 125, the smallest circle (¼-inch) being 25, and decreasing one for every one-eighth of an inch, regardless of the diameter of the bull's-eye, when you make scores of 120 with a possible of 125, you are doing very well. Some of the best shots can do a hundred at the rate of over 124 out of a possible 125, but this is practice, and don't be surprised—if you are a beginner—if you don't do anything better than 100 or less. So much for the target question.

There is nothing that I know of more exciting than trying to make each target better than the last, or to equal or excel some rival. It is an amusement, both manly, beneficial to body and mind, very reasonable, cartridges only costing from 22 to 27.5 cents a hundred, depending upon the make. But I wish to say right here if you have a good rifle—and good rifles are so

cheap—do not use the B.B. or conical bullets, as they will cut your rifle out in a short time, and if you wish to keep the noise down, as you probably will indoors, do not use the black powder cartridge, or for that matter the semi-smokeless, but stick to the Winchester or U.M.C., greaseless, smokeless kind. They are clean, make but a little report when shot, and your room is as clean after firing a couple hundred shots as before you started. These can be bought in lots of 1,000 for \$2.75. You will want a good light at the target, and if there is a gas main near, a branch can be run right to your target for a dollar or so, and have a three joint fixture added that you can get the correct position for a reflector. An ordinary gas jet with a dollar reflector is good, but better still have a Wellsbach burner and one of their special reflectors installed. These are about \$2.50. If you or your friends are shooting poorly, you can move the light accordingly, and you will have a light that is almost perfect for the purpose, throwing a strong white light directly on the target and not being visible from the rear. For the shooting position you will need no light and a very small one at the side or back. Better dispense with it if you can see to work your gun, as the target will appear all the sharper: it is easier on your eyes. Probably the most important detail outside of the rifle itself is the back ground to the target proper.

Sketch 1. You will have to have something like the following: If you want it made as cheaply as possible, have a flat iron plate about a foot square and a quarter of an inch thick with two holes drilled on each vertical side about one inch from the edge, and one or two holes in the top to support it. Do this with wire as string will chafe and break. On each side screw a piece of hard wood about 2x2 inch., and on this nail a piece of pine board one inch thick, on which you can thumb-tack your targets. The bullets will go through the board and flatten out on the plate, dropping to the floor, where a box or piece of paper can be placed to catch the splinters. If you put the board directly on the iron the bullets in a very little while will split and break the board up, but when there is a space then simply perforate a little hole

and do no further damage. Of course in a little while the side pieces will be chewed up, as it were, by the splinters of lead and will require renewing. These act for two purposes. First: Keeping the board off the iron, and second, preventing the particles of lead from going off at right angles to the shooting. A better plan yet than this, but costing a little more, is made as follows:

Sketch 2. Instead of using the hard wood side bars have the plate flanged, as shown. With this arrangement it will be but a minute or two to put on a new board and will more than pay for the labor and annoyance to have the plate made in this manner. Either of these target plates can be cut, flanged and drilled for a very little at almost any machine or boiler shop. Mine cost \$2.50.

Whilst you are ordering the wooden boards order a dozen or two from the saw mill, or buy a board of $\frac{1}{2}$ -inch cheap lumber, planed or unplanned, and saw the whole lot up. At the start of your shoot you will probably want to place your single target in the center of the frame, but after you become more proficient you will place four on the board, and as almost every shot goes in or near the bull's-eye, four holes will be cut in the board and the remainder will last for a long time, for excepting the stray or bad shots, the thumb tacks will make the only holes.

And now last but not least, the rifle. I was going to say any rifle will do. There are so many good ones on the market, and they are so cheap that it matters little which you get, as long as it is an American arm and not a Flobert. You cannot go wrong in getting a Winchester, Marlin, Savage, Stevens or Remington, but whichever you do get have it bored and rifled especially for the 22 short cartridge. This is a point overlooked by most people, as they think a gun will shoot any and all, equally good, but this is not the case. While it looks well to say your rifle will shoot the short, long, extra long, long rifle, etc., there is nothing in it, and unless you stick to one you cannot shoot well with any. For your purpose, the short is the best and stick to it. The long and extra long are no good and the long-rifle makes too much noise, and is no more ac-

curate excepting at long range. The short is capable of almost perfect accuracy at 25 yards, and is a good killer for small game when you take your little gun to the woods in the fall, as you should when after large game. Then use the hollow point cartridge. It keeps the camp supplied with grouse, rabbit, etc., and does not alarm everything as the other 22's do. It is an incentive to practice in off seasons with the little fellows and sort of keeps the hunting fever down until you can get away with the larger and more powerful arms. Generally speaking, the heavier the rifle the steadier you can hold, besides a heavy rifle makes less noise, but on the weight question your own strength will settle it. Personally, I can shoot a six-pound rifle better than I can a ten-pounder, but each one will find a weight which will suit him best.

If you have never shot, buy a little \$5.00 rifle and start in, and in a little while you will want something better, or if you know something about this game, start in and get a first class outfit, say a single shot, seven to twelve pound rifle, set trigger, Swiss or Scheutzen butt plate, and specially fitted with a palm rest, if you can shoot better that way.

If you have a rifle that you think anything of, no matter how cheap (and you can get a fine accurate little rifle for \$3.75), take care of it. No matter how late or tired you are, immediately after shooting take it apart and clean it thoroughly inside and out, but especially inside, as smokeless powder residue is ruinous to a rifle if allowed to stand a couple of hours. Run rag after rag well soaked in

any of the good cleaners through the barrel until it is thoroughly clean. Always clean with a brass rod from the breech end. A very small wear on the grooves at the muzzle caused by the cleaning rod will be ruinous to good shooting.

Then as to sighting, no matter what priced rifle you buy, have it fitted with Lyman sights, which will cost about \$4.00 and more than double the value of your arm, besides making it so much easier for your eyes and greatly improving your scores. If you want to go one step further have a low power (say about 4) telescope fitted, costing about \$10.00, instead of the Lyman or open sights. This addition makes rifle shooting even more fascinating, besides making the target and game very distinct. It does away with the strain on ones eyes in focusing, and adds a little to the weight of the rifle, thereby making steadier holding for most people. Although a telescope enlarges the target it also greatly magnifies the tremor when aiming, and the old fashioned view that a man so sighted had lots of advantage is going away.

In most all matches they are allowed without being handicapped, as some shoot better with them and some without. Anyhow they are especially helpful for near or defective vision, so this apparent defect should keep no one from taking up small bore rifle shooting. You will be a more valuable citizen by familiarizing yourself and becoming proficient in the use of fire arms, besides it tends to influence one's habits in his desire to keep himself in the best possible condition for friendly rivalry or to excel his own records.

The Common Juniper.*

Any person who is at all observant must have noticed in dry, rocky or sandy pastures, or in open glades, clumps of a low spreading evergreen shrub, set down in uncertain and irregular order, but with a characteristic and independent individuality. With its low-set, compact form and its

outthrust branches it seems to challenge any intrusion upon its right to occupy its chosen space of ground with a defiance as sturdy as the "Nemo me impune lacessit" of the emblem of bonny Scotland. And he who accepts the challenge will find that it is not altogether an empty one, for the

*Contributed by the Officers of the Canadian Forestry Association.

common Juniper, which we have been describing, will enforce its defence with its sharp, forward-pointing leaves, which make it difficult to grasp the branches of this shrub with the hand, and can make themselves felt even through the clothing. *Juniperus communis* is found in two forms, a somewhat erect one, which is the type, and a low spreading variety distinguished by the name *alpina*.

The leaves are arranged in whorls of three, pointing forward or upward. They are awl-shaped and prickly-pointed. The lower side of the leaf is green and looking from directly above the spreading branches the whole shrub has a green appearance. A view from the end of the branches, however, gives an impression of whiteness and

we see that the upper surface of the leaves are a glaucous white. The flowers are usually dioecious, that is, the male or staminate flowers are on one plant and the female or pistillate flowers, from which the cones are formed, on another. The cones are small and berry-like and of a purple color when mature, but are covered with a glaucous white bloom, which makes them a conspicuous feature against the green foliage. They are more regularly spherical than the cones of the Red Cedar and are marked at the top with a three-fold division, indicating the three seeds into which they separate. The odor of the berries is aromatic and pleasant. From them is distilled the oil of juniper, which is made use of in medical practice.

Dogs That I Have Known.

By M. B.

When the editor of *Rod and Gun* asked me to write something about dogs, I felt that he was rather out of his latitude, as it is now many years since I was actively in the dog circle, but like all old fellows, as age creeps on, I suppose I become reminiscent and will write about things of the past, which may prove slightly interesting to the present and show that even in the long by-gone days dogs had their place and were quite as good as those which the present age is producing and mind you not so much stress was laid on pedigree then as ability. On this point I well remember a very prominent Irish terrier man in Ireland, after looking over his kennel, I was much taken with one of his dogs, which to me appeared by far the best of the lot. I asked him for the pedigree; his reply was: "He carries it on his back." So that many of the dogs of the present age may trace their pedigree to such. But I am getting away from my text—"Dogs that I have known." Well the first dog that I knew of, for I never saw him, he was killed many years before I was born, but his memory was very dear to the family, and as well as I can recollect, his name was Hughie. He belonged to my father, who

was at the early part of the last century a Manchester merchant, who did his own travelling with his own gig and horse, with "Hughie" as an accompaniment. The stories told of what that horse and dog did filled my earliest recollections, but to particularize some of them is rather hard to place on paper. When my father came to Ireland the dog was with him, at the same time he had large interests both in Manchester and Glasgow, Scotland, and he had to make frequent visits to each city, the dog "Hughie" generally going with him. On one occasion he did not take "Hughie", but had him tied up; but Hughie was not to be balked of his trip to Glasgow. So next day, getting away from his confinement, he made for the docks, and took the next ship for Glasgow. On his arrival there he tried to find father at my sister's, but he was told that the Governor (as everybody called him) had gone home. He went straight back to the vessel and came home to Ireland without a slip. I have been told that Hughie knew every day in the week. Sundays, of course, he always went to church, and if none of the family went, the sexton used to open the door of the high pew where the family



COWAN PARTY ON THE TRAIL.
Fording the Pembina River, 100 miles west of Edmonton.



ROUGH TRAVEL.
Cowan party fording the North Saskatchewan River near its source.



AN UNUSUAL HEAD.
One of the largest Mountain Goat Heads on record.



THROWING THE DIAMOND HITCH.
The start of the Cowan party from Edmonton.

worshipped to admit him. He would curl himself up till after the sermon, then he would sit up and give a satisfied yawn, and the sexton would open the door of the pew and he would go home. Tuesday was market day at our nearest town and Hughie would betake himself to a place on the bridge about a quarter of a mile from home on the road to that town, to wait till father came along. Friday was market day at a town the opposite direction. Hughie would be waiting till the Governor came there, and many other stories were told me. His end was tragic. He was killed by the first train that ran over the first railroad in Ireland, the Ulster rail road, which has since merged into the Great Northern R. R. So much for dogs that I have not known.

The first dog that I did know was a Landseer Newfoundland, white and black, called "Mary." She was kept as a watch dog, always tied up, and very affectionate to those she knew, but desperately vicious if strangers came about her. The only peculiar events in her life were connected with deaths in our family. The night my sister died Mary slipped her collar and came up to my sister's room, and laid under her bed. The same thing happened when my father died six years later; she slipped her collar and went straight to his room and we dared not remove her till all was over; she was never loose all the years between these events. How could she know that the Angel of Death was hovering over the house; this is one of those things that no one can explain, they happen. What telepathy could have caused this watch dog to know things that were to happen is beyond us.

The very first dog I ever owned was a little rough broken-haired Scotch terrier, "Dandy" we called him. I was a very small boy when I brought him home in my pocket and kept him shut up in an empty oat bin for several weeks lest my father should find out I had got another dog on the place, but Dandy became one of the family and on one occasion saved my father's life. My father was a very old man at this time and very nearly blind, but Dandy used to accompany him on his walks about the place, and on one occasion my father fell into an open ditch and could not get out.

Dandy was with him and when he saw the trouble he came right up to the house, got mother by the dress and pulled her towards where father was lying. She would not go at first, but Dandy was insistent and she finally followed him and found the Governor lying at the bottom of the ditch and unable to help himself. I don't remember any other facts about Dandy, but he was a good little dog.

My next venture was a big smooth-coated Irish terrier, called "Rock," the best dog on water rats and rabbits I ever knew; he seemed to know exactly the spot that a rat would rise in the water, and would be there. Many a happy evening I spent with Rock after the river rats. As for rabbits bolted by ferrets, he never let one of them pass him. He was most agreeable with the ferrets, although they would nip him sometimes.

These were the days of my childhood, and it was many years before I could again take them up as companions and assistants. School and college were not times when I could follow out my love of dogs, but as soon as I was well over the preparatory stages and launched out with a profession and a living to make, dogs were my hobby and I think I have seen and owned about as many as most of the present generation.

My first venture was in a son of McDonagh's English setter, "Ranger," who was a good field dog and gave me many good days amongst the quail and partridge. Next I became an ardent supporter of Gordon setters, and with a bitch I imported from Ireland, "Moll III." (Duke Leah) I raised some good field dogs; the best of them was from a cross with Moore's "Grouse." He was decidedly the best heavy weight Gordon setter ever in America. I also owned Maplebeck's "Blossom", who was nearer the style of the Malcolm Gordons than any imported Gordon. "Blossom" left me Champion "Argus", than whom a better shooting dog I never owned for style, nose and bird sense, and I imagine there are some of "Argus's" descendants in this country, who are as good bird dogs as their owners wish.

Next to Gordon setters I became interested in Cocker Spaniels. I imported

"Black Bess", who at her first litter by Bob III., gave five first prize winners and some champions; she was a good little dog, and always won, except once, when shown, but was retired when the long and low cockers were brought to the front. Next in succession was "Lass of Breda," a bitch that was never beaten. "Bene", a pup of Black Bess won champion honors on the bench; the two were very much alike, but Black Bess was much heavier feathered, and I may be allowed to tell a tale about these two bitches when on the show circuit; they are both dead and I think the judge is retired, so no harm can be done.

"Black Bess" and "Bene" were entered at a show in Cleveland, when "Black Bess" was turned down as being out of shape and too old, "Bene" was in the puppy class and won. The next week there was a show at Cincinnati, where both bitches were entered under the same judge. The man who had charge of them was very much disappointed at Cleveland about "Black Bess", so at Cincinnati he put "Bene" in "Black Bess'" kennel, and having clipped "Black Bess" in the meantime, he showed her as "Bene" and the result was that both won firsts, the old bitch as a pup, and the pup as a full grown dog. I did not know of this for a long time after, but it shows how a judge may be worked by a clever dog handler.

Among the Cockers that I can remember as making a name before the long and low craze came in was Otis Fellow's "Dandy", and he was a good one, and a son of "Nellie", a bitch I owned, who also gave me a prize winner in "Darkie," also straight and

(To be continued.)

short. About the time "Darkie" won, the craze for the long and low Cockers came in, and in disgust I quit Cockers and took up Irish terriers. The first that I imported was "Norah" (Spring-Nettle), a fine bitch and as a prize winner I never had a better, but as a companion she was all that any one could wish—kind, affectionate and loveable—and at the same time able to take care of herself. Next came a rather smooth-haired son of Gailie, called "Rock" whose chief object in life was to fight; he left me some good pups, but his end was tragic. I could not keep him, as he was in trouble always. A friend wanted a dog to be with his horse and "Rock" was very good with horses, but he did not like the groom, who went after him with a hay fork. "Rock" got the groom by the cheek and in that position he was found and killed by a policeman's revolver.

Next I owned "Garry Owen", who was one of the old sort, not all jaw, but with a good coat and a splendid set of legs and feet; he had the proper Irish Terrier character, ready to fight or be agreeable, and the very best of companions. Old age settled him and I was very sorry. After this Dr. W. H. Drummond gave me a bitch by Commissariat, "Tartar-Gotter," which won me some prizes, and now I have only one of her daughters, a good little terrier.

Thus far I have written of dogs that I have owned or belonged to the family, and yet I am far from through with dogs that I have known, but if the editor will permit, as a continuation in our next, I would like to say something of the dogs I have known during the last thirty years.

Angling Notes.

By WALTER GREAVES.

In boat fishing for trout I generally use a light rod of 10½ feet, an enamelled line and a fine, but strong, cast of 9 feet, to which I usually attach three flies, the stretcher being a size larger than the droppers, so as to facilitate casting. In lake fishing one need not be afraid of using

large flies, as hooks No. 3 are not a bit too large at times. I consider flies dressed on hooks from No. 3 down to No. 7, about right, as a general thing. Sometimes I use them as large as No. 1, and as small as No. 8 or 9. The Pennell-eyed hooks are excellent, for many reasons. In the first

place, you can carry such a large assortment without the troublesome snells always getting twisted or broken at the head, and in the second, you can change in an instant onto gut that is already soaked and ready for use. In making your own flies there is the additional advantage of not having to tie on gut or gut eyes. The flies also wear much better. Anyone accustomed to using these hooks for trout flies will not, I think, return to the ones without eyes. All that they need is a fair trial. The knot, if properly tied, is so satisfactory that it can be done and undone in an instant, and it is very easily learned. It must, however, be tied properly, so as to tie itself, so to speak, the loop running over the eye of the hook when tension is applied to the gut,—it is simply a running noose, in fact. I have used these hooks also for salmon flies and found them very satisfactory; the same for black bass. As a rule, however, I prefer the forged O'Shaughnessy for salmon flies (double hooks). The Dublin Limerick hooks are also very good for this purpose, but they must be A No. 1 quality. On the Pennell hooks I notice that I seldom lose a fish. If I do, I generally feel or know that it is caused through carelessness on my part. If the fish is well hooked and properly handled, you will not easily lose him off a Pennell hook. That is my experience and the experience of several of my angling friends,—some of them very good fly-fishermen.

I have lately made a trout rod of red cedar, 10 1-3 feet long (without dowels), that is the butt and middle joint are red cedar and the tip is lance-wood. So far, I have not put it to a severe test and cannot, therefore, say whether it will stand well. It certainly casts beautifully, and I am inclined to think it will prove an excellent rod. Care must, of course, be exercised in its use or it would no doubt

snap, as red cedar is a brittle wood. It would not be a safe rod to place in the hands of a person not accustomed to a light rod. I will perhaps let you hear more about it some day.

I was much disappointed with the fishing this season. It so happened that the bass did not take well in any of the waters I fished, at least when and where I happened to fish. The opinion expressed by local anglers was that the water was too high. I cannot quite understand why that should have prevented the fish taking. My opinion is that the fish were not there and that the cause of this was the unlawful netting and taking of bass out of season. I know the latter was done to a very large extent in some of the waters where I fished with poor success (no wonder). It seems a great pity that people cannot be made to observe the close seasons for fishing, and also to fish in a legitimate manner. If this were done, the fish would multiply at an enormous rate in some waters and would afford excellent sport to fishermen with the rod and line throughout nearly the whole Dominion, for there are sufficient waters, if properly protected, to furnish sport to all comers and to meet all reasonable demands. If something is not done before long many of our best waters will, however, be entirely depleted. Restocking is very well, but what is the use of restocking these inland lakes if the fish are taken out during the close season or netted at any time? It is simply a waste of money, I think. Until the "natives" can be made to understand that it is to their interest and advantage to see that the Lakes are properly protected, I am afraid little can be done in some localities, as it is impossible to keep a watch on these so-called "guardians" and their friends, many of whom look upon it as their right to take fish at any time and in any manner, to salt down for winter use.

New Brunswick.*

The Province of New Brunswick has been brought prominently before the public recently in a special way by the celebration on the 24th of June of the present year of

*Contributed by the Officers of the Canadian Forestry Association.

the three hundredth anniversary of the visit of one of the great pioneers of France in the New World, De Monts, to the harbor of St. John. On the anniversary of the feast of St. John De Monts landed at the mouth of the river to which the name of the feast day has been given and thus brought it into the light of history. During the French regime, however, no sustained effort was made to colonize the province and the history of its development begins with the advent in 1783 of the United Empire Loyalists, whose devotion to their king and country led them to forsake their homes in the United States after the American Revolution, and begin anew the task of subduing the primeval forest to civilization and of developing among their hard-won clearances and under new skies a loyal community, in which the deep longing of the patriotic heart might find satisfaction and peace. Such devotion to an ideal is the index of a spirit of strength and endurance, which is no mean basis upon which to lay the foundation of a country.

When the Loyalists landed at St. John the province was practically an unbroken forest of pine, spruce, fir and hardwood trees. The means of access to the interior were by the waterways, principal among which is the River St. John. With its source in the State of Maine, and forming for part of its course the international boundary, the greater and more important section of its channel lies wholly within New Brunswick. It has formed a great avenue for the lumber trade of all the district reached by its tributaries and still brings down large numbers of logs from the State of Maine every year to the mills at St. John City, in addition to those coming from the forests on the Canadian side of the line.

The area of the Province is 27,500 square miles, or 17,500,000 acres, and of this probably at least seven million acres would be better suited for timber production than for agriculture. Along the southern border on the Bay of Fundy is a ridge of granite and crystalline rocks more or less interrupted, and which is cut through by the St. John and other rivers, but by which they are dammed back into lake-like ex-

pansions. Immediately to the north like a great wedge driven in from the Gulf of St. Lawrence, lies a triangular tract of carboniferous sandstone, with its apex reaching beyond the St. John River in York county, and including the capital at Fredericton, and its base stretching from Westmoreland county north to the Bay of Chaleur. Situated along the north-western side of this triangle is a belt of slate and limestone, with tracts of granite, which rises to a general height of about 500 feet and forms the principal watershed of the province, throwing off the Tobique and other smaller streams to join the St. John on the west, the Mirimachi, the Nepisiguit and their tributaries to the east, and the Restigouche to the north. This is the great lumbering district of New Brunswick, and down these rivers are floated the logs, consisting largely of spruce, which are the annual contribution of the forest to the wealth of the province. Here is also the haunt of the moose, that has made the hunting grounds of New Brunswick famous, and the streams that form the hiding places for salmon, that delight the heart of many a happy fisherman. Along the northern St. John valley nestles the county of Madawaska, with its happy Acadian population and its fertile fields of intervalle land.

White and red pine in early days formed no inconsiderable part of the forests of the province, but the quantity, especially of white pine, has so seriously diminished that they do not now bulk prominently in the product. Spruce is the principal wood of commerce and is exported largely to the British market. By most eastern operators it is looked upon with more favor than pine. There are three species of spruce, the white, the black, and the sometimes uncertain variant red. Hemlock, balsam fir and white cedar are the other coniferous trees, but they do not occur in any large areas of continuous stand. The deciduous trees include red and yellow birch, and also two species of the white (*Betula alba* var. *populifolia* and *B. papyrifera*), hard and soft maple, white, red and black ash, beech, American elm, and in the southern part of the province butternut and basswood. Red and yellow birch

are the hardwoods of greatest commercial value, but white birch is also in good demand for spool wood.

The lands were at first administered by the Imperial authorities and in 1824 the following instructions were given by His Majesty's command to be observed by Thos. Baillie, Surveyor-General:—

Whereas we have been graciously pleased to give instructions unto our right trusty and right entirely well-beloved cousin and counsellor, George, Earl of Dalhousie, Captain General and Governor-in-Chief in and for our Province of New Brunswick in America, for the regulation of his conduct in granting lands to our loyal refugees, who have taken refuge in that Province, and others who may become settlers therein, and amongst other things to signify our will and pleasure that no grant whatever be made of lands within our said Province until our Surveyor-General of the Woods, or his Deputy lawfully appointed shall have viewed and marked out such districts within our said Province as reservations to us, our Heirs and Successors, as shall be found to contain any considerable growth of masting, or other timber fitting for the use of our Royal Navy; and that our Surveyor-General of Lands in our said Province shall not certify any plots of lands ordered and surveyed for any person or persons whatsoever, in order that grants may be made out for the same until it shall appear unto him by a certificate under the hand of our Surveyor-General of the Woods, or his Deputy, that the land so to be granted is not part of or included within any district marked out as a reservation for Us, our Heirs and Successors, as aforesaid for the purpose before mentioned.

Further instructions to the Surveyor-General in the same year were as follows:

It is therefore our will and pleasure that and you are hereby authorised and empowered to give license in writing to any of our subjects in our Province of New Brunswick, to cut down such white pine and other trees growing upon the waste land which you shall judge to be not proper for the use of our Royal Navy.

Certainly the Surveyor-General of the Woods had a large undertaking on his hands to examine the whole province and mark

out the lands to be reserved for timber, and consequently the instructions were not carried out. These instructions were in accord with the usual practice of the Imperial authorities in dealing with the timber of the North American colonies. Provision for the requirements of the navy, and particularly of white pine for masting, was a matter of supreme importance in the days of the wooden ship and when, as at the present day, the navy was the first great line of defence of the Empire

Previous to 1827 lands in New Brunswick were disposed of on payment of certain fees, but in that year instructions were given that sales should be by public auction, and of not more than 1,200 acres to any one person, provided the land did not contain any considerable quantity of valuable timber.

It is not necessary to follow all the changes of the land administration, but tracing particularly the development of the regulations for timber lands, we find that in 1829 it was ordered that no license for cutting timber was to be granted except after proper survey of the land and precaution was to be taken against waste in the destruction of the timber.

In 1831 the receipts from timber on Crown Lands were £10,820. From the evidence given before a committee of the Legislative Assembly in 1833, it appears that the procedure in connection with the issue of licenses was that on the 1st of April and from that date to the 1st May in each year applications for timber berths, accompanied in each case by a fee of 45s, were received from all persons indiscriminately. On the 1st of May the applicants were advised whether their applications could be complied with. If there were two or more applicants for one piece of land, one of them was given three months within which to pay the tonnage, and the other applications were returned. The dues were one shilling per ton for white pine and 1s 3d for red pine. The survey fee was a special tax of 3d per ton to cover the expense of survey of the limit.

A mill reserve might also be obtained by anyone who erected a mill, of timber lands in the vicinity thereof, but in 1833 instructions were given that such reserves

should only be disposed of by public auction.

In 1831 a reservation for ten years was granted to Jos. Cunard of that part of the Nepisiguit River above the Falls on condition that he should make every effort to improve the navigation at the Falls, and should take out a license to cut one thousand tons of timber per annum. This reserve raised strong opposition, and as there were other serious complaints against the administration of the timber lands, a committee of the Legislative Assembly was appointed in 1833 to make full enquiry. After taking evidence from a large number of persons, the committee reported:

That the existing monopolies of timber and extensive mill reserves have a most injurious effect on the commerce and trade of the country, destroying competition, preventing the introduction of capital and retarding the settlement of the province.

That the additional charge within two or three years past of three pence per ton on timber in lieu of survey fees for laying out the berths operates as a heavy burden, which is greatly aggravated by the surveys being seldom performed.

Partly as a result of this agitation the Imperial Government in 1837 surrendered to the Provincial Government the control and income of the Crown Lands and revenue within the province. New regulations were adopted, which provided for five year licenses, the dues to be 2s. for white pine and 2s 6d for red pine. The average cut for the three years ending 1837 was 116,600 tons timber, 16,829,000 feet lumber, and the dues were £16,416. The average export of pine and birch timber was 249,926 tons, of masts and spars, 6,119, and of deals 73,250,423 feet, the export being considerably larger than the cut on Crown Lands.

The chief market for the forest products of New Brunswick was in Great Britain, in which market colonial timber was given a special preference from 1787, when a duty of 6s 8d per load of fifty cubic feet was placed on foreign timber, increased by 1819 to £3. 5s. per load. Owing to the agitation pointing towards free trade which was, taking place in Britain, the

Legislative Assembly in 1831 passed an address to His Majesty and the Imperial House of Commons, urging that the protective duties against Baltic timber should not be abolished, as it would result in the ruin of the trade of the province, on which practically all its interests depended, and that timber being the only export of the province, it would be impossible to pay for manufactures from the Old Country, and that trade would also be destroyed. Addresses in a similar vein were sent on subsequent occasions, but in spite of all efforts the duties were finally completely abolished in 1866.

The collection of revenue from timber by dues on the cut on the limits was continued till 1844, but in that year an Act, which had previously been before the Assembly on several occasions in some form, was passed, providing that an export duty should be collected on all timber going out of the province, thus obtaining a revenue from timber cut on private lands, as well as from that cut on Crown Lands.

In 1867 New Brunswick entered the Canadian Confederation, and according to the last report of the Surveyor-General, previous to the change in status, the receipts from timber were \$80,882.68, the amount of \$56,415.58 being provided by the export dues. Under the Confederation agreement the export duty was abolished, a special allowance of \$150,000 annually being made to the Province from the Dominion treasury on account of the relinquishment of this source of revenue.

Mileage was then the only source of revenue from timber berths, but in 1874 dues on the cut of lumber were provided for and licenses were made renewable for two years. In 1883 licenses renewable for ten years were granted, and in 1892, before their expiry, a commission was appointed to enquire into the lumber trade. It was then decided that licenses should be granted renewable from year to year for twenty five years, or to the 1st August, 1918. The policy of the Government is to retain possession of the timber lands, and they are disposed of under license by public auction, the upset price in all cases now being \$20 per square mile, and the annual charge for renewal \$8.00. The dues on pine and

spruce logs are \$1.25 per thousand feet, having been increased from \$1.00 during the present year, it being considered that the improved condition of the lumber industry justified the increase. In order to prevent speculative holding of timber berths, ten thousand feet of lumber must be cut each year or the dues paid on this quantity. No spruce or pine trees are allowed to be cut which will not make a log at least eighteen feet in length and ten inches at the small end. The revenue for timber for the year 1903 was \$169,528.

New Brunswick, in common with the remainder of Canada, has been cursed with forest fires, and frequent mention is made of them in the reports of the Commissioners of Crown Lands.

In 1825 occurred one of the greatest fires known in history, generally designated as the Mirimachi fire. During the summer there had been very little rain, and in the fall the whole country was dry and parched. Fires were burning everywhere in the forest, the smoke rose in all directions, obscuring the horizon and darkening the sky. An ominous tint was over the whole atmosphere and the air was close and oppressive. The 7th October was a day of perfect calm, but in the evening a brisk gale sprang up, fanning the flames and sweeping them before it. As one writer describes it: At eight o'clock the wind increased to a swift hurricane from the west and soon afterwards a loud and appalling roar was heard, with explosions and a crackling like that of discharges of musketry. The air was filled with pieces of burning wood and cinders, which were driven along by the gale, igniting everything upon which they fell. The roaring grew louder and sheets of flame seemed to pierce the sky. The people ran hither and thither, some gave up in despair, some took refuge in the river, domestic and wild animals mingled in the general rush for safety. In the space of a single hour the fire swept over the district north of the river, destroying everything in its path. The sweep of the fire in northern New Brunswick extended for one hundred miles and covered an area of 6,000 square miles.

Some indication of the rate of growth of trees in New Brunswick is found in the

measurements of trees in this burned tract as made by a member of the Geological Survey staff about the year 1890, or sixty-five years after the fire. Poplar (*Populus tremuloides*) was found with a girth of fifty-one inches above the roots; white spruce (*Picea alba*), fifty-four inches; black spruce (*Picea nigra*), forty-eight inches; fir (*Abies balsamea*), forty inches; red pine (*Pinus resinosa*), fifty-two inches; paper birch (*Betula papyrifera*), forty-four inches; sugar maple (*Acer saccharinum*), thirty-five inches; hackmatack (*Larix americana*), thirty-one inches.

In 1885 the first Act for the Preservation of the Forests from Fire was passed. This Act follows the general line of such statutes in Canada. Fires are not allowed to be started between the 1st May and 1st December, except for clearing land, cooking or other necessary purposes, and then every possible precaution must be taken both in the selection of the location and in the extinguishment of the fires. The penalty for violation of these requirements is a fine of twenty to two hundred dollars. Railway locomotives must have spark arrestors and other proper means of preventing the escape of fire, and section men must keep careful watch to extinguish and prevent the spread of fires from the railway. In 1897 statutory authority for the appointment of fire rangers was obtained.

While the legal enactments are probably sufficient for the purpose for which they are intended, they are, however, but partially effective, as is shown by the fact that it is estimated that during the year 1903, 200,000,000 feet of timber were destroyed by fire in the Province of New Brunswick, although in many places no estimate was made, and that forest fires caused the destruction of one village and of many buildings and other private property elsewhere. Lumbermen try to protect their limits by putting on fire rangers and the government also appoint wardens. Public opinion is, however, little interested and carelessness is more the rule than the exception. This is clearly exemplified by the statement of a gentleman who was in close touch with the matter of which he spoke that after the 24th May, a public holiday, the numerous fires left by heedless

picnicers and hunters gave a most exasperating amount of labor and trouble to the owners of timber where these visitors had passed. In the depth of the forest the danger is small. Destruction stalks around the borders where an advanced civilization brings its enlightened and enlightening methods into action.

The past history of New Brunswick has been closely bound up with the lumber trade, lumber was her great initial export, and has remained the staple to the present day, the forests have yielded the materials from which her homes have been built, and the settlement of her fertile valleys went hand in hand with, and was in large measure dependent upon the development of the lumber industry, the forests have been an unflinching source of income to the state and have furnished employment to many, and brought affluence to some. In the lumber camps, along the rivers and in the mills are developed a strong and sturdy population with the physical basis for a virile race.

From the 7,000,000 acres of forest land, at the reasonable average of 100 superficial feet per acre there might be drawn an annual crop of 700,000,000 ft., the dues on which at the present rate of \$1.25 per thousand would be \$850,000, a splendid revenue for the province. This is a practical possibility, it is no vague ideal, it is based upon calculations made from the results of forest management, where it is carried on scientifically, and where the annual acre product may reach five or six times the quantity quoted. Such a position cannot be reached without long and strenuous agitation and labor, but the practicability of such a result should surely appeal strongly to the imagination and to the common sense of all thinking people. And the lands which may be devoted to this purpose, and from which this revenue may be drawn, are lands that are almost totally useless for other purposes.

The forests form a great recreation ground for the people. They are the home of the game animals, and they regulate the supply. Brunswick is famed for both hunting and fishing, and at the museum of the provin-

cial capital may be seen specimens of her productions in this respect. Fredericton is beautifully situated on the River St. John, and some good genius must have whispered to its founders of the possibilities of trees in a scheme of decoration, for these have been preserved and the tall, graceful elm is a striking feature of the landscape. One of the most interesting of the many interesting exhibits in the museum are two photographs of salmon, obtained by patient and continuous watching, one showing a salmon in the middle of the leap up a water fall, and the other showing where the leap has been unsuccessful, and the fish is dropping back in failure.

Most unique of all, however, is a copy in the library of the Legislative Assembly of the original edition of Audubon's *Birds of North America*. The great naturalist, after years of study and preparation, and many disappointments, set himself to the task of showing in their natural coloring and surroundings the birds with which his long study in the woods had made him familiar, and which his training as an artist had fitted him to portray. The work was projected on a magnificent scale, the birds were all to be shown of natural size, and for this nothing but a large folio leaf would suffice. The drawings were made by the author, and each plate was colored by his own hand. The task was too stupendous and the expense too great. Only four copies were completed of this large edition, but one of the copies was secured by the Government of New Brunswick. The drawing and coloring are marvellously true and faithful to nature, and the colors are undimmed by the years that have passed since they were laid upon the sheets. They remain as a monument to the greatest naturalist of America, and their testimony to the great industry and ability of their creator is no less striking than the beauty and artistic skill with which the design was carried out. The opportunity of seeing such a monumental work would more than repay a visit to the charming capital of New Brunswick, even if its natural beauties were much less attractive than they are.





TWO GOOD HEADS.

The mountain sheep heads from the Canadian Rockies are the finest of all.

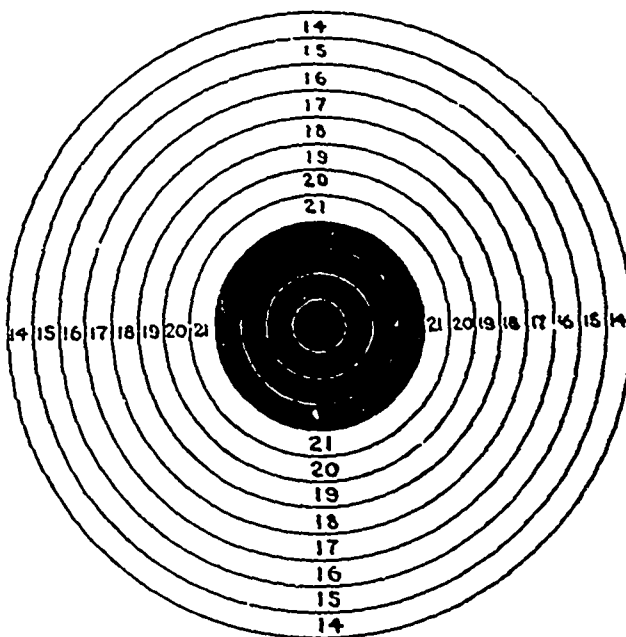


HALF-BREED HUNTERS.

From a photograph taken by Mr. C. G. Cowan in the Rockies.



A BAG OF MOUNTAIN GAME.
It is well to undergo some hardships for such trophies.



GERMAN RING TARGET.
Showing all divisions.

A Search For A Mountain Pass.

By C. L. THOMPSON.

(Concluded from October Issue.)

We overslept the next morning, and it was nearly nine before the immediate necessities of camp life were completed. There seemed, however, no cause for anxiety over the delay. The morning was warm and sunny and a night in the open with a good fire, extra sweater and stockings, is not an unmixed evil. We left the camp by the blazed trail, that stared depressingly at us for a little less than a mile. The last scar was as deep and conspicuous as the first, but circle as we might the axe marks went no further. We walked rapidly as fast as one might through a forest thickening with a growth of young pine—hurrying the faster, as a damp wind was beginning to blow down the valley and the upper peaks were already mist swept. Unexpectedly at about one o'clock, we came upon our first open view on the edge of a gravel pit, where two tributary streams fell in twin water falls to join the main stream above this junction distinctly glacial. As we dropped into the gravel pit, it began raining—another of the storms that made infamous the weather of the Canadian Rockies that summer. Fortunately the clouds were not low and a glance made all plain. The ice and snow from Columbia swept across the col towards Bryce and it was not there, but in the depression between Pallisade Peak and Bryce that the pass, if it existed, lay. The depression was fully as high as I had expected, but scattered trees fringed the sky line, and the slope though toilsome, did not seem difficult. I studied my watch. If the storm continued, it would be invisibly dark in the lower forest by nine. If we could reach the watershed by three, we might have half an hour on the further side (allowing the return down hill to save us that much time) and yet sleep in camp. If we failed in this, it meant a sleepless night, turning interminably before a fire in steaming clothes. The shortness of our remaining time made the excitement of this race against time preferable, but it seemed hardly fair to force it involuntarily upon Frank. I explained

the situation briefly, adding we could return and by an early start make it certain on the morrow. Frank unhesitatingly replied: "If it is there we will get it today."

Across the stream on the lower slopes to the Pass, the character of the forest completely changed. Spruce, not pine, was dominant; a tangle of rotting trunks and branches, half buried in a moist vegetable mold into which the foot sank heavily. Suddenly, about eight hundred feet above the stream we broke across the edge of a basin-like ridge, and looked despairingly down on a beautiful blue lake, that lay directly across our path. On the shore we found a well worn animal trail, the hair of goat, the recent track of bear, a certain promise of a pass and the easiest line of approach. That line led us to the farthest corner of the lake basin directly under Bryce, to a ladder of fallen stones that served our purpose well. It was a quarter of three when we stepped from the top of this stone ladder to a succession of low, rocky ridges or ledges, running transversely from Mt. Bryce. Between the ridges were damp, mossy depressions, and gently trickling rills, pretty certain signs of a height of land. We began to run. On the third ridge our vision changed like the sudden lifting of a fog.

A great trough-like valley lay below us, carpeted everywhere with sombre evergreen, save where a wandering line of grey streaked with silver marked the draining stream twisting through its gravel flood-bed. A blanket of cloud hung five hundred feet above us, below the air was clear and we could see as though a grey tunnel, miles distant, the black rock feet of an unknown mountain range that apparently closed the valley. Bryce towered above us wrapped in a mist that occasionally fell from the shoulders, never from the head. From unseen heights a dirty glacier dropped earthward, then twisting suddenly westward, ended in a depressingly muddy moraine at our feet. Across the width of the Pass, directly beneath the hidden Pallisade Peak.

and much lower than where we stood, a second blue tree-girt lake lay just within the Atlantic drainage. Looking backward, the clouds covered the summits of the low peaks that made the farther side of our camp valley, humbling them to the level of a mountain plateau. For all we knew, we were miles from human contact, in a dripping mountain fastness, where none save Indians and possibly a forgotten white hunter had ever stood. The mysterious unfolding of the storm clouds added to the loneliness of the scene.

It was three o'clock, curiously enough the very last moment that could give us a hope for a return to camp. Scattered flakes of snow were beginning to drift eastward, and the drawing of the wind through the pass chilled us, no longer exercising thoroughly. We ran down the Pacific slope to the shelter of some dwarfed spruce, and there ate ravenously.

At half-past three we turned to go. A race through dripping woods, balancing on slippery logs, stumbling, splashing, rolling through boulder-strewn streams, a race

that was not won until we stumbled at half-past nine in complete darkness into camp.

I might tell you how on the next day we explored the Alexandra glaciers to the foot of thin ice falls, of our homeward journey, how we picked our way through a groaning patch of burnt timber, while a suddenly arising thunder storm sent the standing trunks swaying and crashing around us; of how the bell mare, whom Frank was riding, bucked at the Saskatchewan Forks, sending him flying into the stream; of how we finally swam the ford, riding so low in the water that only the horses nostrils and the riders head and shoulders swam above it; of the wonderful summer snow storm on the twenty-fourth of August, the last full day out; of an all-day tramp through it to a supper of damp biscuit and condensed milk, the last save dry flour of our provisions, and of our sound sleep that night in wet blankets, on the damp floor of a deserted miner's cabin, but an account of all this would make my story too long in the telling.

Planting of White Pine.*

The Bureau of Forestry of the United States has recently issued a bulletin on "The Planting of White Pine in New England" prepared by Harold B. Kempton, which contains much information of interest in regard to this tree, which holds such a prominent place in the Canadian lumber industry.

Between the years 1820 and 1880 was a period of enthusiastic white pine planting in New England. Men were then able to foresee the time when the marketable white pine would be gone and the rise in prices would make the planted timber of economic importance. Those owning lands covered by shifting sand began to realize that their property might be put to more profitable use in forest production. Large plantations were made by private owners

and some few by corporations. At the end of this period there were said to be in Massachusetts alone forest plantations of white pine to the extent of over 10,000 acres. About 1880 the interest began to decline, largely because it was found possible to bring lumber from the immense supply in the region of the Great Lakes at a lower transportation rate than had been expected, and until the past few years little other planting was done.

The methods used during the first period varied greatly in different places, for little was known about practical forest planting. The initial outlay was frequently so great that when the interest on the investment is considered the planting proved to be very unprofitable. In most cases it was done by men of considerable wealth,

*Contributed by the Officers of the Canadian Forestry Association.

who desired to establish a forest as quickly as possible. They, therefore, bought trees which had been several times transplanted and which were 8 to 20 inches high. Such trees usually cost not less than \$10 per thousand. Counting about 2,000 trees to the acre, which was the average number used, the outlay for seedlings alone is \$20 per acre. Compound interest at 5 per cent. during the period of growth brings this single item of expense to not less than \$80 per acre for mature trees. Adding to this taxes and other expenses, the commercial impracticability of such planting is readily seen.

In some instances the first outlay was small, and it is these plantations which now prove that white pine can be planted in New England at a profit.

Special examination was made of several of these old plantations. Some of them were on pure drifting sand, and others on sandy loam of a mixed character. These plantations show satisfactory results when the objects for which they were planted, which were not in all cases timber production, are considered. The general results of the investigation show the following conclusions:—

While seedlings grown in a nursery may be profitably used, those grown in the forest, when properly treated, grow successfully. Experience elsewhere shows that it is not necessary to leave a portion of sod adhering to each seedling. If the earth be carefully shaken off, and the roots puddled in a mixture of rich earth and water to prevent drying, as good results are obtained and at much less expense. In a few cases successful seeding has been practised. The seed was sometimes sown broadcast, and sometimes in prepared spots. It has frequently proved successful where practised on rather bare areas, or on pastures under conditions which favor natural reproduction. On the other hand many failures have resulted from experiments in broadcast sowing of white pine seed. In all recorded cases it has been unsuccessful on cut-over lands having a heavy sprout growth.

Close planting, that is, 4x4 feet, is practicable whenever thinning can be done within twenty years. but unless the de-

mand for small timber is great, it is not advisable to plant so closely, for the first thinning cannot be made except at an expense that it is unwise to incur. Planting at 4x4 feet causes a decrease in growth between the fifteenth and thirtieth year. Shortly after that time the best trees become dominant and resume a rapid growth, while a large percentage become suppressed and die. Closely planted trees, however, produce the straightest and cleanest boles and hence timber of the finest quality.

A moderate width, 6x6 feet, yields the best results where early thinning cannot be practised. Wide spacing, 8x8 feet, should never be adopted unless the object be protection, for the result is usually a low, dense, bushy tree, of little or no timber value.

In early planting a great variety of mixtures were used. Some of these proved successful, but others were not suited to the growth of white pine. The pure white plantation has usually made a satisfactory growth, but its use, when nursery stock has to be bought, involves a greater outlay than is necessary. A less expensive tree may be used in mixture with it, and if properly chosen will not diminish the products of the plantation. Red and scarlet oak have been used with success, but white oak is of too slow growth. Scotch pine makes a useful mixture, but is as expensive as the white pine. Norway spruce grows satisfactorily on account of its early maturity and the quality of its wood. Red pine is not a good neighbor for white pine, for in most cases it grows more rapidly than the latter and, when planted in equal quantity with it, shades it too heavily with its broad spreading crown. There is also another difficulty that the white pine is more tolerant of shade than the red, and consequently shades out the side branches of the latter, forming a clear bole, while the branches of the white pine continue, so that the tree is almost valueless for timber. The dead branches of the red pine decay and fall, while those of the white pine adhere tenaciously to the trees.

For economic forest planting there is probably no other tree which can be used in mixture with white pine to greater advantage than the sugar maple. Its shade

enduring quality, its relative growth, and the readiness with which it may be obtained are all in its favour. The main disadvantage in planting pure white pine forests is the large initial outlay. Sugar maple seedlings may be obtained for one-half what pine costs, and the mixture makes it necessary to plant only just enough pines to form the future stand. For the first twelve years the annual height growth of the two species is about equal. Then the maple begins to spread out, while the pine continues to grow rapidly until, by the time it is twenty years old, it has secured a substantial lead. Meanwhile the thick and spreading crown of the maple has killed out the lower branches of the pine. It has now fulfilled its part and may be removed if use can be made of it. If not, it will gradually be killed by the rapidly advancing growth of the pine, which will by this time form a complete forest cover.

In case planting is decided on and the planter wishes to grow his own plants from seed, white pine seed may be purchased at a cost of \$1.50 per lb. when the seed is plentiful, or at \$3.00 or \$4.00 per lb. during the period between good seed years. "Seed years" occur once in four to seven years. Seed-bearing cones are found usually in small numbers on scattered trees in the interval between seed years. Since white pine seed requires two years for development, it is possible to predict a seed year twelve months previous to the time for collection. The cones of white pine, which average about six inches in length, bear from 50 to 75 seeds each. There are about 28,800 seeds to the pound. The percentage of germination of fresh seed is 70 to 90, and if the seed is sown carefully in drills on suitable soil and cared for in the proper manner, fifty per cent may be expected to produce seedlings which will live to the transplanting stage. If, however, seed be sown broadcast on soil not properly cared for, a frequent result is not more than 2,000 to 5,000 seedlings to the pound. At that rate it would pay the planter better to buy two or three year old seedlings from a nursery, or collect them from the forest.

The best soil for seeding is a deep, porous, sandy loam. In such a light soil there

is less danger of damping off from excessive moisture or of heaving from frost action. The land should be ploughed moderately deep and harrowed until thoroughly pulverized. The beds may preferably be four feet in width, and the rows of seedlings 6 to 12 inches apart. Under favorable conditions germination takes place in from ten to fifteen days. Growth for the first year is slow and the young plants are very tender. They, therefore, require shade and care. Movable frames of lath, giving half a shade, should be placed over the beds at a height of almost twelve inches.

Either hilly, level, gently undulating land or low, moderately dry land is suitable for white pine planting, provided the ground covered be not too dense. Low land, which is wet or marshy, is entirely unsuited for planting; on such land the roots decay and the trees fall before they are big enough to use. Cleared land is best adapted for pine plantations. Land with scattering brush growth may generally be used without any cutting. Land where the brush growth is dense should be partially cleared before planting is attempted. Cut-over lands, where the tendency to sprout is slight and where natural reproduction is of inferior species, may frequently be planted to advantage in whole or in part, such planting depending on the present stand of valuable seedlings or sprouts and the density of the shade. Burnt land usually shows a tendency to support rapid-growing, worthless species. Planting may frequently be practiced the season after a fire, or on land where the growth is not very dense.

Fall planting is sometimes advisable in the north, but spring planting is usually best. Trees planted in the fall are subjected to the heavy frosts of winter, and unless the soil is particularly well adapted to hold them the plants are likely to be heaved out.

Correct pruning is of great value. It changes inferior to first-class timber. It should be done about ten years after the trees have been planted, before the limbs have died. The trees will then average from ten to twenty feet in height. They should be trimmed as high as can readily be reached with a hand axe. Pruning should

be done in July or August, when there is just enough secretion of pitch to cover the wounds, preventing the access of air and excluding fungi. The cut should be made close to the stem to insure a thorough covering of pitch and the more rapid healing of the wound. The healing over and complete disappearance of the wound is then very rapid. In most cases it will be practically completed in two or three years.

An estimate is made of the return from such a plantation on the following basis. Taking the value of the land per acre at \$100, all the expense incident to planting at \$4.84, and taxes at two per cent. for forty years \$3.20, and allowing compound

interest thereon for the whole period at four per cent, the total is \$50.99 per acre. At the age mentioned the trees would be from eight to twelve inches in diameter, and although not of sufficient size for timber, would sell for box boards, for which they are worth from \$3.00 to \$5.00 per cord on the stump. Reckoning forty cords to the acre and the price at \$1.00, this would give a return of \$160 per acre, being the exact figure received for such a plantation a few years ago. This would leave a net profit of \$109.01, or a net annual rental of \$1.15 per acre, paid at the expiration of forty years, in addition to four per cent compound interest in the money invested.

The Growth of Tree Roots.*

The Forestry Research Station of Switzerland has published its Seventh Annual Report, and according to a statement in the *Revue des Eaux et Forêts*, gives some most interesting results of a series of investigations of the laws under which the subterranean portions of trees are developed. The observations have been carried on for three years on young plants aged from one to six years and belonging, among others, to the following species, namely, silver fir, white and Scotch pine, beech, oak, birch and maple. Two methods of making the observations were employed.

The first was to take up young plants periodically, and at short intervals, from the soil of the nursery, which had been softened by watering, and to examine their roots.

The extremities of the rootlets in the coniferous trees are colored with a deep tint when they have ceased to increase in length. If elongated filaments of a clear color are found a rapid growth may be concluded; if the filaments are short, the increase is slow; if they are wanting, vegetation is suspended. However, the newly-formed extremities become colored only at the end of a time, sometimes fairly long.

Eight to twenty days is necessary for the color to appear in resinous trees, and for deciduous trees it varies from three to six weeks. In summer the rootlets color more quickly than in autumn or winter.

The second method was to place the plants in glass-covered boxes, sunk in the soil in such a way that the roots could be kept under observation.

The results established by the investigations are as follows:—

The development and production of roots are not continuous during all the year. They are interrupted by periods of repose, which, in addition, do not correspond exactly to those when the aerial parts are at rest.

Among the resinous trees vegetation of the roots is entirely suspended from November to March or April. Among the deciduous trees on the contrary this vegetation does not undergo any complete interruption in winter, since the roots were seen to develop even in the middle of that season when the temperature became mild. The month of February and the beginning of March are the least favorable seasons for the growth of roots.

The deterrent effect on vegetation in

* Contributed by the Officers of the Canadian Forestry Association.

winter is a consequence of the lowering of the temperature of the soil. Its complete suspension among the coniferous trees during the winter is without doubt a fact of adaptation to more rigorous climates and has become a hereditary quality.

If the times of reawakening of the aerial and subterranean organs in spring are compared, it is established that in general the roots develop first. The beginning of their growth may precede by several weeks the opening of the first buds, but sometimes this period is reduced to only a few days. The larch seems to be an exception to this rule: Mr. Engler established a delay of more than a month with that species of the roots over the aerial growth. The same fact has been observed for the alder. This phenomenon of the precedence of the roots is the more remarkable that the soil has in early spring, as is known, a temperature lower than the air. It may then be accepted as proved that the roots of most of the species are developed at temperatures lower than those which are necessary to the vegetation of the aerial shoots. The difference appears very small, however, for the four species of pine observed (Scotch, mountain, white and Austrian). For the coniferous trees in general the minimum temperature necessary for the growth of the roots is from 5 to 6 degrees centigrade; for the sycamore, maple and the beech, it is only 2 to 3 degrees.

Besides the winter rest the growth of the roots undergoes another interruption due to the dryness of the soil during the summer. This interruption may last three to eight weeks, according as its beginning is more or less early. It occurs at the end of the summer, that is to say, in August and September, a time at which the water content of the soil reaches its minimum at Adlisherg. According to the meteorological character of the summer, the period of summer rest may last a longer or shorter time and be advanced or retarded.

To the summer rest succeeds in October a new period of activity, more intense and more prolonged among the deciduous than among the coniferous trees.

It is at the beginning of summer that the roots develop most rapidly. Mr. Engler has measured increases up to 21 milli-

metres (about four-fifths of an inch) a day with a plant of oak; the mean maximum for all the plants of that species observed being eleven millimetres, and occurring in the first days of July. For the oak the maximum occurs at the end of June, or the beginning of July; the growth is then 9 millimetres a day; for the fir and Scotch pine 6 millimetres.

These entirely new observations throw light on the question as to the most favorable time for planting the coniferous and deciduous trees. The French foresters had noted and the rule had been formulated that it was better to plant deciduous trees in the autumn and coniferous trees in the spring.

According to Mr. Engler, it is the custom in Mediterranean countries to plant in the autumn, as it appears that the Romans used to do. From the experiments carried out by the Austrian station of forestry research it appears to be clearly settled that the spruce and the pine should be planted in the spring, while the deciduous trees may also just as well be planted in autumn. These diverse facts of experience are explained, Mr. Engler says, with much reason if one considers that the essential conditions for the success of a plantation are the following:

Immediately after being placed in the earth, the roots should enter upon a period of active growth in order to produce quickly organs of absorption capable of providing for the expenditure of water caused by evaporation from the aerial parts

On the other hand, it is necessary that the plantation should be made at a time when transpiration is reduced to a minimum.

These conditions are best filled in spring when vegetation commences to revive. In a country where the summer is dry and the fall mild and humid, and especially when there is reason to expect a dry spring, it is on the contrary the autumn which is the most favorable season.

If the deciduous trees stand well planting in autumn, it is because they lose very little water by evaporating in winter, and that their roots form hairs before the arrival of the great cold.

While the result of these observations

cannot be transferred to Canada without modification, still they throw some interesting light on the influences that affect the growth of trees, and may serve to

show the direction in which we may look for an explanation of the facts observed in regard to the best time for the setting out of plantations.

How to Collect Plants.*

By W. T. MACOUN.

While Nature Study does not necessarily involve the accumulation of natural history specimens for the purpose of forming a herbarium, a collection of insects or of bird skins, the making of a collection is undoubtedly of great value both as a means of bringing the student into closer contact and more intimate acquaintance with natural objects, and of inducing a continued and well directed study of them. If one decides to make a collection, it is of the greatest importance that he begin in the right way. It frequently happens that young people, and adults as well, in their enthusiasm, begin collections; but, through ignorance of the best methods of collecting and preserving their specimens, these are improperly made, or, through not knowing the way to preserve them, are soon destroyed by insects, and the collector's enthusiasm is dampened. It is then difficult to get him to start again.

It was felt by the Council of the Ottawa Field Naturalists' Club that very useful work would be accomplished by giving a demonstration of the best methods of collecting and preserving natural history specimens so that anyone who wished to begin a collection might do so in the right way. Accordingly, a special meeting of the Club was held on April 26th, 1904, and demonstrations were given by experts in various branches of science. Mr. A. G. Kingston described his methods of observing and identifying birds with a field glass. Dr. Jas. Fletcher spoke on the advantages of the study of Entomology. Dr. H. M. Ami discussed the collecting and preserving of geological specimens. Demonstrations were given of the mounting of plants by Miss Macoun; of insects, by Mr. A. Gibson and

Mr. W. Metcalfe; inflating caterpillars, by Mr. C. H. Young; preparing geological specimens, Mr. Geo. Burland.

In addition to the addresses and demonstrations already referred to, Prof. J. Macoun told how to collect, mount, and preserve botanical specimens, and, in order that as many as possible may get the information thus given by him, the most important points with regard to collecting and preserving, are made the subject of this Nature Study article, and it is hoped that the other addresses which were given will be published also.

Prof. Macoun said that it was necessary, first of all, to have the desire to make a collection of plants before beginning the work. Unless the student had the desire, little benefit would be derived from it. A good herbarium was a proof that there had been a desire. In collecting plants, it is not very important what they are carried in while out in the field, providing they do not wilt before pressing. The lack of a tin case should not deter one from getting specimens, as a basket answers the purpose very well; but the best practice is to put the plants when collected into the plant press at once. A trowel or a strong knife are convenient for digging up the plants; but these again are not really indispensable, as strong fingers will dig up almost any specimen. A good plant press is made with two boards, each made of three pieces of wood nailed together. Each piece is very thin, but great strength is obtained by having the middle piece with the grain crosswise. Joined in this way the boards will stand all the pressure they will get without breaking. The best dimensions for a plant press are 12x18 inches. When tak-

*Reprinted by permission, from the Ottawa Naturalist, July, 1904.

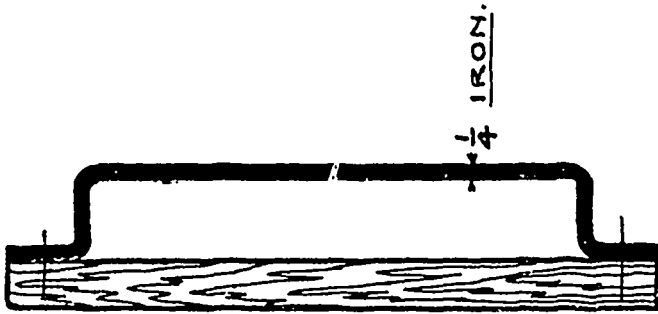
en to the field, the boards may be kept in place by means of a stout shawl strap, by which also sufficient pressure can be given. If possible, there should be two extra boards at home made of ordinary inch wood, between which the plants may be put the day after they are collected, and pressed by means of a strong strap or some heavy weight. When one is going on a collecting trip, enough papers should be put in the press for all the specimens that are likely to be obtained; but, the lighter the press, the better. Newspapers cut to about the size of the press or a little smaller and of a single thickness of paper are very convenient for putting the plants on, and filter paper or blotting paper for covering the specimen and to absorb the moisture.

When one is making a collection, it is well to try and obtain a typical and perfect plant of the species, as, once an inferior specimen is dried and mounted, one is not likely to get a better one, and perfect specimens add very much to the attractiveness and value of a herbarium. It is sometimes puzzling to the beginner to know what is a good specimen, as a sheet will apparently only take a plant of a certain size. If the plant is a small one, the whole of it should be taken, the roots being carefully separated from the soil so as to injure them as little as possible. If flowers and fruit can be obtained on the same specimen, so much the better; but usually it is necessary to collect a plant when it is in full flower, and then when the fruit is nearly or quite full grown. In order to get the whole of a large plant on a sheet, it may be bent either once or twice, in order to do it. It is much better to do this than to lose the roots or root leaves, the latter especially being sometimes necessary in identifying specimens. If the stem or root of a plant is thick, it may be cut down its centre, leaving one side intact. Specimens of trees and shrubs may be made of branches a little smaller than the sheet, the important point being to get the whole of the flower cluster, if possible, and one or more well developed leaves. When a plant is laid on the piece of newspaper in the press, the temptation is to spread the leaves out carefully to prevent

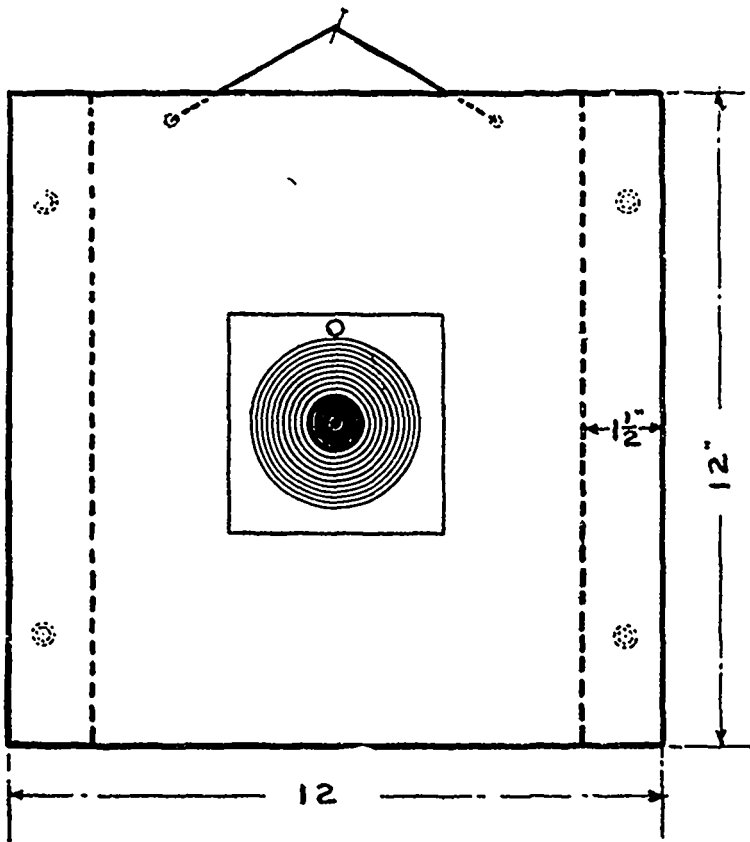
their creasing. This is a great mistake and many a fine specimen has been spoiled in this way. Some plants will stand such treatment, but many will not. As a rule, the most satisfactory way to do, is to lay the plant on the newspaper, placing the leaves or flowers so that the specimen will look fairly symmetrical, and then without trying to take out all the creases in the leaves, put on the filter paper or blotting paper and press the specimen with the hand or between the boards, if there is only one plant to put in. The next day, when the plant has wilted, some of the creases can be readily smoothed out; but, after the plant is pressed, these are not noticed nearly as much as when fresh; and, indeed, they sometimes look better, as when the under side of the leaves show here and there, it makes a pleasing contrast, and it is important also at times to show the under side of the leaf as well as the upper side. Some of the more delicate ferns may be dried with advantage between two pieces of newspaper, the drier being put on top of the newspaper. This avoids disturbing the specimen when changing the driers, as the upper piece of newspaper need not be removed until the plant is dry. The specimen when once laid on the newspaper should not be removed from it until it is dry. When a plant is wilted and not dry, it is very difficult and sometimes impossible to replace the specimen without injuring them. An exception may be made with very succulent plants or fleshy plants, when both upper and lower papers should be changed to get rid of the moisture as soon as possible, and sometimes it is necessary to dip the plant in boiling water in order to kill it. Some plants retain their color fairly well, even if improperly dried, but the majority lose their original color unless they are dried quickly and properly. Plants should be dried as rapidly as possible after the first day, and in order to do this the driers should be changed at least once a day, and, if possible, twice at first. After the first day or two, when the excess of moisture has been removed, the hotter the driers are, the better the results will be, and, in order to have the driers quite hot, they should be heated on or at the stove and put on the specimens at once.



SKETCH 1



SKETCH 2



A MINIATURE TARGET.
Mr. Stephen B. M. Tasker's design.



RED CEDAR.
Juniperus communis.

If it is not convenient to heat the papers in this way, they may be dried outside and not especially heated. As some plants dry much quicker than others, the best results will be obtained if a thin piece of wood is kept between the plants which are in different stages of drying, as, if this is not done, a plant which would dry very quickly is kept moist by others of a more succulent nature. Some plants will dry in two or three days, and some take nearly two weeks. One can easily tell by the touch when they are dry.

Many a collection of plants has been ruined by insects after it has been made, and

(To be Continued.)

the enthusiasm of the collector may die with the loss of his specimens. The poisoning of plants after they have been dried should never be neglected, and the sooner it is done, the better. One of the best formulas for this purpose is: Corrosive Sublimate $1\frac{1}{2}$ drachms; carbolic acid, $1\frac{1}{2}$ drachms; alcohol, 12 ounces. A small brush is used to apply the poison, which should be painted over all the plant that is exposed, the flowers especially getting a full share, as the insects will frequently destroy the flowers when they will not injure another part. Alcohol is used instead of water, as it evaporates without leaving a stain on the paper.

Our Medicine Bag.

Dr. Sterns, an American sportsman, and his party, have been most successful on the Athabaska. A large collection of trophies that fell to their rifles has been brought to Banff.

Sportsmen should not forget that owing to the bad breeding season last spring and the hard winter, the Ontario government has wisely prohibited the shooting of quail until November 1st, 1905.

Two Semenoz sportsmen, Messrs. McNeil and Mutter, made a bag of twenty brace of pheasants upon the opening day for that game in British Columbia, namely Oct. 1st. This is the record bag so far recorded from Vancouver Island, to the best of our belief.

Dr. Mayo Robertson of London, one of the leading English surgeons, who attended the medical convention in Vancouver a short time ago, spent two weeks near Alberni on a hunting trip and secured two splendid elk heads, a panther and several deer.

The King Edward Hotel at Banff was saved from burning the other night by a faithful dog. It seems that "Carlo" began to howl so loudly about two o'clock in the

morning, that the stablemen had to go out to chastise him; when they found that the Chinese cook had thrown some live ashes against the side of the building, which was beginning to burn merrily. Yet some people think a dog has no sense.

Since the announcement of the extension to November 20th of the open season for moose and red deer in Ontario, north and west of French River, Lake Nipissing and Mattawa River, requests for extensions in other parts of the Province have been numerous. The Ontario Act, however, only gives authority by order in Council for extension in the territory named. Other extensions can only be made by the Legislature.

We hear very good accounts of a trail leading from Emerald Lake, British Columbia, to the Beavertail and its tributary, the Kitwetnok. It is said on head waters of the latter system there are large pasture meadows, where big game abounds, and numerous lakelets, well stocked with trout. This trail, if followed, leads to the head waters of the Blaeberry, or through Houses's Pass to the head waters of the North Saskatchewan.

One of our contributors writing from

Minnedosa, Manitoba, says: "The crop of chickens is very good in this district, but they are hard to find sometimes. I have made some very nice mixed bags—not too large, as the weather is very hot, and we did not want to waste." If all shooters in the Northwest were as full of the proper spirit as "Niven", we should not hear so much about the scarcity of game in some of the more thickly settled portions.

Somebody has been seeing large numbers of passenger pigeons in Southern Manitoba—but we are very much afraid that an examination of any of these birds by a competent naturalist will show that they are not passenger pigeons. The passenger pigeon is undoubtedly gone with the Dodo and the Great Auk, and nevermore shall we see this magnificent bird flashing past us, with the sun reflected from the beautiful bronzed feathers of the head and neck as from a golden armour.

A Montreal sportsman, whose chief victim is the erratic snipe, walked off the gang plank of the Longueil boat the other night humming the following lines:

"When your heels hit hard, and your head
feels queer,
"And your thoughts rise up like froth on
beer ;
"When your knees are weak, and your
voice is strong,
"And you laugh and laugh at some old
fool song—
"You're drunk, my boy—you're drunk."

We think he was right.

To skin game heads, cut neck skin from shoulders, cut up back of neck to a point between horns, then right and left to base of each horn, peel skin carefully around horns, cut through ear roots, pull skin over face, being careful not to cut eyes and the tear duct or pocket below eye, nostrils and lips; leave inner skin of lips and nostrils; shave off all flesh adhering to skin, salt well and dry, flesh side out; avoid folds or wrinkles in skin while drying; clean skull and keep the jawbone.

The new road which is now being built from Sudbury to Toronto, will open out

the best territory for fishing and shooting of any of the new roads now being built in Northern Canada. The country is dotted with lakes and river expansions from ten to fifty miles in length, containing bass, trout, and maskinonge. All who take advantage of the opening of this new country should help in protecting the game from the commercial pirate, and out-of-season poacher. We shall feel extremely thankful for any information that will stop the devastation of these virgin lakes by netting or dynamite.

Hunters and guides from the north of Quebec, and the north of Ontario report an increasing number of wolves. Some of them say that the deer runs are covered with what looks like dog tracks, but which are in reality wolves' tracks. In view of the fact that deer form a great attraction for money-spending tourists, should not the Government put a good bounty upon wolves, so that the increasing number of moneyed men who come into the north hunting may not be decreased. When one realizes that the State of Maine enjoys an annual revenue from summer residents and tourists of five millions of dollars, and that we have ten times the territory of the State of Maine, surely it is a good economical government that will legislate in the

Rod and Gun in Canada,

Montreal, Quebec:—

Gentlemen.—We have completed arrangements for the manufacture of a two trigger gun, hammerless, fitted with our patent hand detachable locks, non-ejector, and special steel barrels for either game or trap shooting. These guns could be retailed in Canada at about \$125, and considering they will be first rate weapons, fitted with the latest detachable locks, they should be very popular in the Dominion amongst men who are looking for a thoroughly sound gun of English manufacture. Interchangeable locks can be fitted at an extra cost of 55 shillings per gun.

Yours faithfully,

Westley Richards Co. Ltd.
Bournbrook,
Birmingham, Eng

direction of protecting the deer, both from the poacher and the wolf.

A correspondent, R. L. M., of New York City, sends a very kind criticism of Rod and Gun. After paying it some pretty compliments, he is good enough to point out a few of its defects. Realizing that R. L. M. is animated by nothing but the kind-

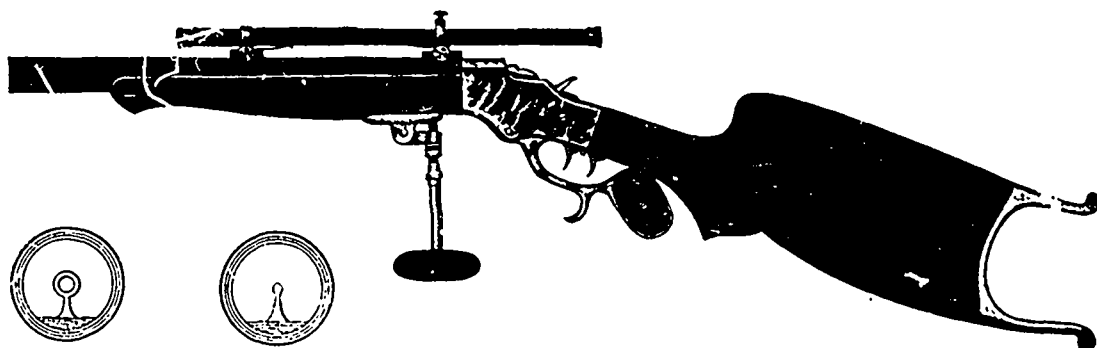
est feelings towards the magazine, we read what he has written with a great deal of interest and heartily agree with most of his conclusions. Several of the changes he suggests have been under consideration for some months, and we think that before long he will be better pleased than ever with Rod and Gun, but this magazine will not follow the lead of certain competitors

Rod and Gun Pub. Co.,

Gentlemen.—We believe your readers in general are becoming more and more interested in telescopes, as the demand for telescope sights has more than quadrupled during the last two years, and we think this is largely due to the popular prices we have placed on high grade goods. Our line today is the most complete offered by any maker of telescopes, and we are just placing on the market the Stevens "Little Off-Hand." The tube is only one-half inch in diameter, and 12½ inches long, with proportionately small detachable mountings, which can be instantly removed from the

get glass, it will be found useful for hunting purposes as well. The power is four diameters, and the price, including mountings and rib, \$25.00, without rib \$20.00.

We have also brought out a telescope with Aper'ure and Pin Head. This is a decided innovation in telescope making. Heretofore rifle telescopes have been fitted with cross-hairs, and while it is generally conceded to be the best form of sight, there are some who think they cannot use them, and to accommodate this class of shooters, we have designed a telescope with aperture and pin head. They are made in exact proportion to the ordinary sights, and in one size only. The telescope is designed



rifle and replaced without disturbing its adjustment. Has narrow, steel rib sliding in groove in forward mount, with fine screw adjustment for both windage and elevation. The field is not quite so large as the ordinary telescope, but as this is designed for target work exclusively, the matter of field is not important. As regards brilliancy and definition, it is equal to large 'scopes of the same power. Is a most convenient little glass, as it does not necessitate an extra case for the rifle. The rifle can be carried in the regular case and the glass instantly removed and carried in the pocket. Although intended for a tar-

especially for these sights, and they cannot be applied to telescopes of other make. They are furnished with detachable mounts; power, five diameters; price, \$18.00.

All Stevens Telescopes can be fitted to rifles of any standard make: We are sending you under separate cover electrotype, illustrating the Stevens "Little Off-Hand" and telescope with Aperture Pin-Head, and the latter will be the most interesting of anything that you have ever published in regard to telescopes to subscribers that are interested therein.

Yours very truly,
J. Stevens Arms & Tool Co.

and start a "correspondence department," in which it would be necessary to write letters under a *nom de guerre*, in order to provoke a discussion. Whatever appears in *Rod and Gun*, is what it purports to be, and we think that any measure of success that has been achieved has been largely owing to the honesty of the course pursued.

We have a letter from Warren Station, Ontario, in answer to inquiries, saying that starting from that station, which is 43 miles west of North Bay, Neepawassing Lake, 18 miles long and dotted with islands, abounds with fish, and the country round it is famous for its game. The Indians say that moose, deer, and bear are plentiful, and that it is a good canoe trip from Warren. One can get a very good canoe trip by leaving Sturgeon Falls for the West Bay of Lake Nipissing, going by steamer across that great Lake, which is some 70 miles long, canoeing up the west Bay of Lake Nipissing, and connecting lakes, to the Neepawassing Lake, paddling from that lake down to Veuve river, to what was the old Veuve River station, now Warren. There are fair hotels at Warren, and the same may be even more truly said of Sturgeon Falls. Sturgeon Falls is also a very good outfitting place. From Nov. 1st to 15th, which is the open season for moose and deer, it is a very good territory.

"Our Big Game," is the companion volume to the one published a year ago upon the winged game of the United States, by Mr. Dwight M. Huntingdon.

That work received an unusually favorable reception at the hands of the sportsmen of this continent, and, no doubt, the present volume will meet with a ready sale. Like everything else that comes from the press of Charles Scribner's Sons, the book is admirably printed and the illustrations are as good as can be. The description of our bears, deer and other game is strictly in accordance with the best authorities, so Mr. Huntingdon's work is really a first-rate manual of the big game of North America.

We have read the book with a great deal of pleasure, yet we do not think it is quite

equal to Mr. Huntingdon's first work; he not seemingly have had the same experience in big game shooting that he has had in wing shooting. Especially is this noticeable in his descriptions of our more strictly Canadian game, such as moose, caribou and bear. As we have said, the publishers are Charles Scribner's Sons; and the price is \$2.00.

A sportsman living at Ridout, the next station west of Winnebago, Ont., writes that the trout at Nemegos, two stations west of Ridout, are speckled trout of large size. They are taken in the river running into the Lake at the Station and weigh from one to four pounds.

The trail to Pishkinogama, north of Ridout, is by water, with a few portages.

The river is within a hundred yards of the station, and is very high now, which will make it easy paddling, though there may be danger of the water being too high for the portages. Our informant says:—"I cannot give you more information of the trail to the south from Ridout, as I have not seen any Indians for some time. The Indians are all on the hunt now. The Hudson Bay post at Pishkinogama is closed, which is a good thing for the hunting. The trail to Lake Wakamagaming, south of Winnebago, is probably better from Winnebago. I will wait and see the Indians and find out what they advise as to the best way to Pishkinogama, and also if it can be reached from Winnebago. The Ridout River runs west on the south side of the track instead of east. There is a lake at Kinogama, the station next west of Ridout, which is full of pike, and it is a very good place also for deer. There are a few good places for deer near here. They can be reached by taking the hand car in the morning with the section men." This is intelligent information, and full of interest.

The most notable paper in an excellent number of *Baily's Magazine of Sports and Pastimes* is that on the "Agnes Family of Racehorses." The author is well up in his Stud Book and in turf history, and he makes an exceedingly interesting and suggestive story of the family which owed its being to the mighty Priam and whose ma-

ternal ancestor was the £14 Annette, with her daughter Agnes. A review of this line involves notice of such horses as Orville, Agnes's daughter, Lily Agnes, and of course Ormonde; some portraits illustrate this article. A description of the way to obtain trout fishing in Norway, includes some good reproductions of photographs, and should be found helpful as well as entertaining. "G.T.T.B." writes with knowledge and discernment on a timely subject, "The right way to beat a Grouse Moor." Mr. Augustus Grimble contributes a capital paper on "The Salmon and Trout Rivers of England and Wales." An appreciative review of Mr. T. A. Cock's new "History of English Racing" with illustrations therefrom, occupies a few pages, and Captain Miller reviews "Irish Polo". He is inclined to think that Irishmen on the average ride much better than Englishmen, but they don't keep their ponies long enough to be really well mounted. Mr. Watkins Williams writes on the "Migration of British Game Birds." General Sir John French, the most brilliant of cavalry leaders, furnishes the subject of the usual portrait and biography.

Rod and Gun has received the following letter:—

Dear Sir.—I thought I would drop you a few lines and let you know how I got along with the Austrian Princes.

We got nine goat and some deer. They were actually with us about fifteen days. We had a try for some moose, but the weather was very bad while we were down in the moose country, and although we saw some we were unable to get any.

We saw some black bear at the foot of a slide, when we were stalking some goat one day, but we did not go after them as we thought our chances were better for goat than they were for the bear.

The Princes were very much pleased with their trip, and asked me to write them and give them a full report of all the parties that were at present in the mountains under our care.

They also said that they would try and come out again and send all the parties they knew that hunted in America to this district, as it was the finest scenery in

America according to their thinking, and had the best chances of game.

In about a week I again leave here with the Earl of Suffolk and Fred Hussey's brother. They will be here about a month or six weeks. This will be our last party very likely, and then we will be ready to go east at your call.

Excuse bad type writing, as I am only an amateur at this kind of work

Yours very truly,

James Brewster.

Banff, N. W. T.

Little, Brown & Company, Boston, have published a book by Francis M. Ware, called "First-Hand Bits of Stable Lore." Mr. Ware is the manager of the American Horse Exchange in New York, and has been recognized for years as one of the foremost American horsemen.

This is an eminently practical work and the outcome of a life's experience among horses. Mr. Ware goes straight and hard to the point, and he has packed away an immense amount of information, advice, and suggestion in a volume that is, withal, extremely interesting. It is a pleasure to read a book by a man who knows his subject so thoroughly and writes with such humor and point. It treats nearly everything,—from buying a horse to the management of a pack of hounds,—but its burden throughout is on the thousand and one details connected with the management of the individual horse by the individual rider or driver. The contents consists of the following: I. Horse Buying and Horse Trying. II. As to "Soundness." III. Stabling and Stables. IV. Stable Management. V. Condition and Conditioning. VI. The "Green" or Unacclimated Horse and his Care. VII. The Horse's Education. VIII. Mouths and Manners. IX. The Foot and its Treatment. X. The Appointment Pad. XI. The Saddle - Horse. XII. The Hunter and his Education. XIII. The Steeple-chaser and his Schooling. XIV. Riding for Women and Children. XV. Four-in-Hand Driving. XVI. Coaching and its Accompaniments. XVII. Management of a Pack of Hounds. XVIII. Showing Horses.

The price is \$2.00 nett.

I spent three weeks in Belleville during the month of August, and while there fished a good deal on the Bay of Quinte for black bass, writes our correspondent, Mr. Walter Greaves, I used the fly nearly all the time, but occasionally trolled with a spoon, a thing I, however, would not have done if bass had been fairly plentiful. The fact is that black bass have become very scarce in recent years in the Bay of Quinte, at least in that portion lying near Belleville. I heard of some good catches being made near Northport, and at the head of the Bay, near Trenton and Nigger Island, but I did not visit those localities. My best catch was made in the mouth of the river, where I landed nine black bass one evening, all on my "Massassaga" fly. They were, however, small fish, with the exception of one of about 2½ pounds.

What a pity it is that owing to the netting,—at least I presume that, is the cause, from what I heard,—the fishing is so poor in this beautiful sheet of water. I remember the time when my brother and I used to go down to "Massassaga" Point, or Ox Point, and, with the fly, catch a dozen or more beautiful black bass in a very short time. If the parties at fault could only be made to understand what an advantage it would be to the locality if the fishing were brought up to its former excellence (and this could be very easily done) surely they would stop this netting for the sake of what might be made out of the American and other sportsmen who would visit the locality in considerable numbers. I hope the matter will be taken up before it is too late. For one, I certainly will not visit the Bay of Quinte a-

gain for fishing, with matters in their present shape.



All Western papers deal more or less with the protection of game. At Calgary there is a decided movement in favor of putting some restriction upon the killing of game, which it is claimed, is being indulged in too freely. No doubt more game has been killed, both in and out of season, than was good for the stock, yet we cannot help thinking that much of this outcry is prompted by selfishness. In all the little Western towns there are storekeepers and clerks who like a day with the gun, but are not able to go very far a-field, in consequence of the limited time at their disposal. They find, of course, that the game is decreasing and without going into the why or the wherefore very deeply, they jump at the conclusion that some change should be made in the game laws. Alas, all the tinkering of the game laws in the world, will not prevent the gradual decrease of game as civilization advances, unless we follow the European plan and fence in large estates, restocking them from season to season. This is entirely opposed to the free and easy ideas natural to a new country, where sport has heretofore been free as the air to all.

Further west, even in the City of Vancouver, sportsmen are clamoring for more protection, but the British Columbian sportsman is, as a rule, the shrewdest of his class, and there the legislation demanded is so eminently in accordance with reason that we trust it will eventually become law. The sale of blue grouse, willow grouse, pheasants and quail is sought to be prohibited, and this seems the most effective way of limiting the game killed out of season, which is almost invariably shot or snared by market hunters, for the sake of the few dollars they can obtain from the hotels, restaurants, and game dealers. According to the *Victoria Times*, a game license should be enforced, as it is stated there is no efficient machinery for enforcing the law, and that it is only just that the sportsman should provide that machinery about the protection of game, and oblige, seeing that most people do not care a ject to putting their hands into their poc-

It may be interesting to remember that our Canadian furs are just now the most fashionable of all known furs. Prices rule higher in consequence, but when made up by expert furriers their beauty is such that they amply repay any reasonable outlay. Messrs. W. E. Orr & Co., Toronto, are showing the newest and prettiest designs in all Canadian, as well as in all European and Asiatic furs, and correspondence with them, or a call at their show rooms, will repay the intending purchaser.

kets even to save it from extermination. It will be rather interesting to know what sort of reception this proposition meets with down on the Coast.



"Stalking Sketches" by Capt. Hart Davis, is the latest contribution to the literature of English sport. When a Briton speaks of stalking, he generally means stalking in Scotland, where the sport is undeniable, even though it be somewhat artificial. Capt. Hart Davis is a famous stalker, and a good writer. His book, which is illustrated from his own sketches, is one that should find a resting place on the shelves of every man who is fond of what we call, still hunting.

Of course, tracking wild deer in the North American forest is a very different matter to stalking an animal, whose appearance and previous history is well-known, by the aid of a professional stalker, who carries your rifle and when the right moment comes, takes it from its case, hands it to you and bids you shoot. We Canadians have to do a little more for ourselves, and naturally we do not envy the Britisher his Scotch stalking, seeing that we have something a good deal better over here. But it must not be thought that Scotch sport is anything but delightful. The writer once asked Dr. Rainsford, now of New York, but then of Toronto, where he had had the best deer shooting, thinking, that as he had crossed the Rockies in the old days before the Railway, and lived with the Indians for months, he would name some point in British Columbia, but to our surprise the reply came: "In Scotland."

It will surprise many Canadians to learn that a red deer stag sometimes weighs 310 pounds clean. This makes him as heavy or heavier than the biggest Ottawa deer. It is a very good buck that will weigh 325 pounds as he falls, although larger animals have, of course, been frequently shot.

Capt. Hart Davis gives some useful advice as to the outfit necessary to a stalker in Scotland, and part of this advice will apply in Canada. He is very much in favor of a single barrel rifle, to carry the .256 Mannlicher cartridge, but is very much opposed to a repeater.

We have no doubt that Capt. H. Davis is

perfectly correct so far as Scotch shooting is concerned, but for our forest work, where we have to jump a deer and take snap shots at him, the repeater is a much more serviceable weapon.

British Columbia sportsmen, who stalk big game in the mountains, will find Captain Hart Davis' experience of considerable value, because the stalking on the mountain uplands of that Province is very much akin to Scottish sport.

The book is published by Horace Cox, Bream's Buildings, London, E.C.



The successful breeding, exhibiting and management of dogs are arts, and fine arts at that. Moreover those who are proficient are by no means numerous, and the masters are conspicuously rare. Practice, experience, reading and a natural aptitude are needed to make a perfect breeder, handler or exhibitor. Yet much, very much, may be learned by a careful study of such a work as "Kennel Secrets," a new edition of which has just issued from the press of Little, Brown and Company, Boston.

"Ashmont" has acquired the confidence of thousands of dog owners, by the excellent advice given in the first edition of this book, as well as in a companion volume, "Kennel Diseases," and they will no doubt welcome the present greatly enlarged volume.

Part I. treats of Management, and discusses foods, kennels, exercise, grooming and insect pests.

Part II. is devoted to exhibiting, one of the branches of dog management about which there is much needless mystery, and the reader is told how to order the necessary preparatory work, how to feed and condition, and is given some excellent advice as to handling a dog in the ring and on the bench.

Part III. is for the breeder; the man who is not content to merely buy, but must join the select band of fanciers who are ever striving to improve the breeds they have taken in hand. Kennel Secrets is abundantly illustrated by half tone portraits of many prize winners, which should educate the eye of the young dog owner, so that he will acquire an intimate knowledge of the correct conformation of the different breeds.



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Communications on all topics pertaining to fishing, shooting, canoeing, the kennel and amateur photography, will be welcomed and published, if suitable. All communications must be accompanied by the name of the writer, not necessarily for publication, however.

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This Association is engaged in a work of national importance in which every citizen of the Dominion has a direct interest. If you are not a member of the Association your membership is earnestly solicited.

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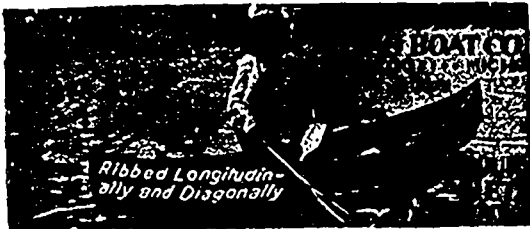
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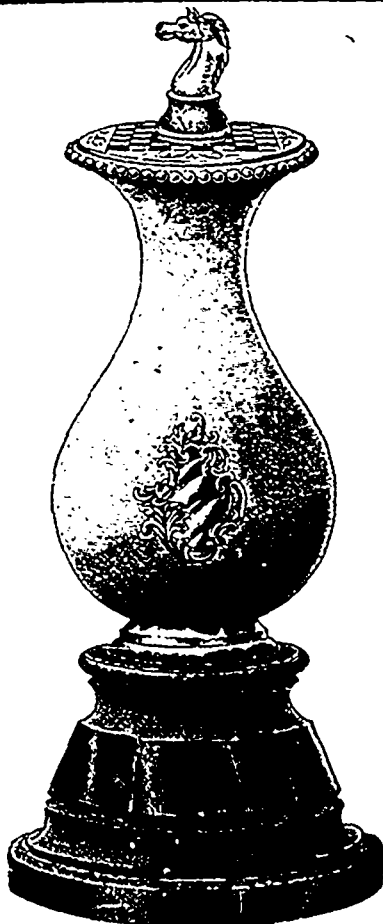
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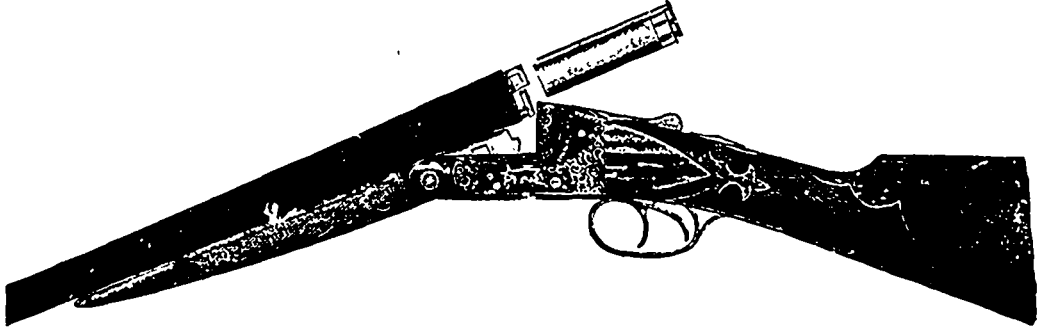
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On the 1st of September they stand at \$ 7,909,086 49

Showing an increase for the month of September of..... \$ 93,530 47

This is a most satisfactory result for the month.

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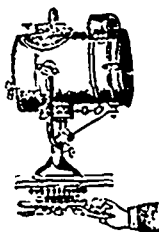
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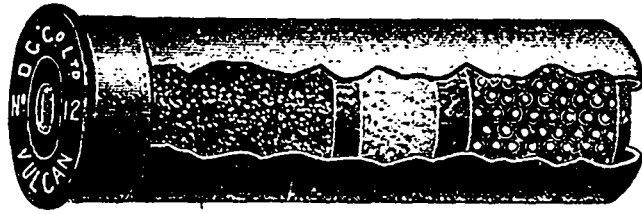
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America's Only Dense Powder

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Grand American Handicap Winner.

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At the above shoots he had runs of 58, 64, 64, 55 and 74 unfinished.

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"It stands in a class by itself. The highest exponent of intellect, ingenuity and enterprise." From a writer in the American Field.

The latest Westley Richards hammerless ejector gun is equipped with hand-detachable locks, and reliable one-trigger mechanism. The locks of these guns can be **instantly** removed without taking out a single screw or pin. Duplicate locks can be ordered with any gun.

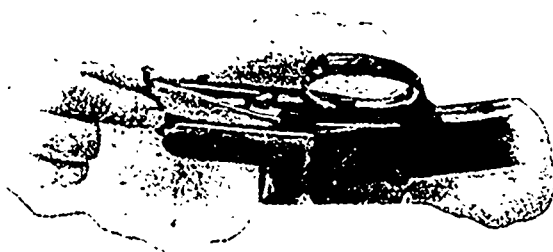


Fig. 1.

Note the absence of SCREW or pin-heads on the side of the gun.



Fig. 2.

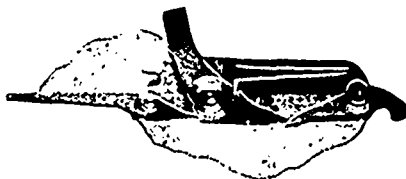


Fig. 3.

Fig. 1 shows the simple manner in which the lock is detached or replaced. Fig. 2 shows the bottom cover plate with spring catch at end to secure it in position. Fig. 3 shows the detachable lock, containing hammer, mainspring spring, sear, sear spring and cocking lever.

In every hammerless gun there are hammers, mainsprings, sears, sear springs, and cocking levers. Some of these are liable to go wrong. When attending a tournament, or starting on a three weeks' hunting trip, it makes you mighty comfortable and easy to know that in case of a mishap to your lock you have a duplicate which can be inserted in ten seconds.

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Write for special pamphlet and prices direct to the

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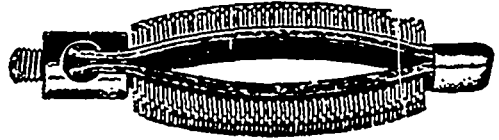
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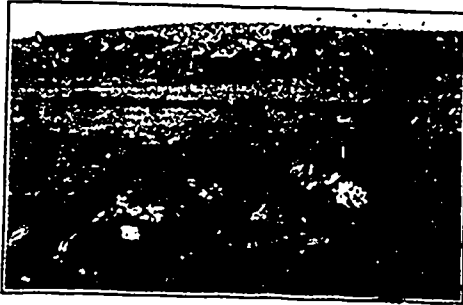


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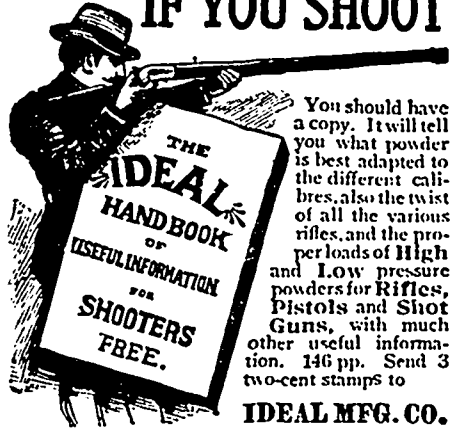
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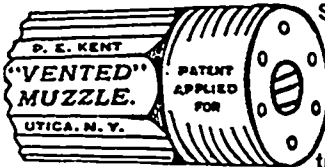
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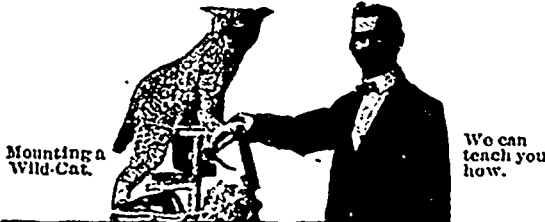
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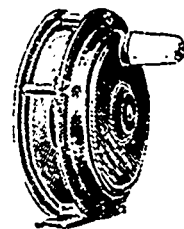
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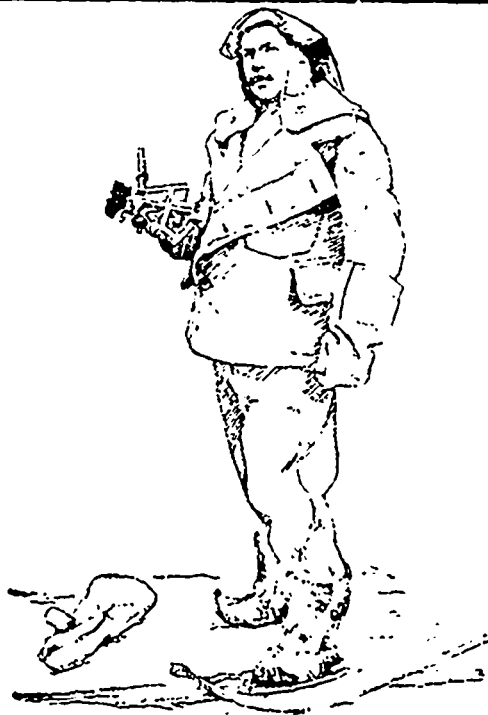
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